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"Stability & Biomolecular interaction studies with ultra-sensitive analytical techniques: ITC, SPR & DSC"

Speaker:

Dr. T. Muraleedhhara Reddy (Scientist, Applications)

Toshniwal Brothers (SR) Pvt. Ltd. Bangalore

Date: January 20, 2021

Time: 03:00 PM - 04:00 PM

Venue: SLS Classroom, Sector 30, CUG

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Webinar on
Coronaviruses Protective Physicochemical Sciences and Technology Using Borosil Mansingh Survismeter

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School of Chemical Sciences
Central University of Gujarat and
Gujarat Council on Science & Technology
Dept. of Science & Technology, Govt. of Gujarat

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Vice-Chancellor
Central University of Gujarat,
Gandhinagar

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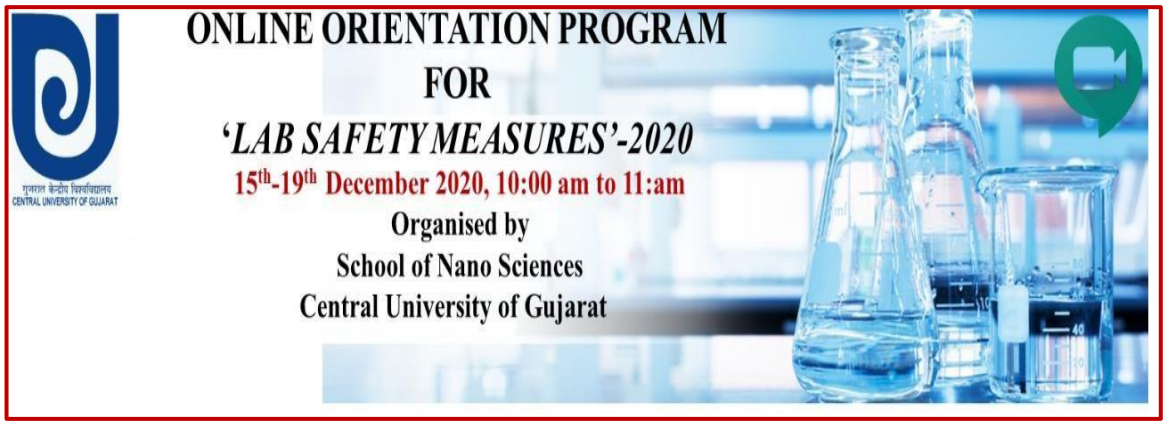
REPORT



Online Orientation Program for Lab Safety Measures – 2020

Organized

by

School of Nano Sciences,

Central University of Gujarat, Gandhinagar

December 15th -19th, 2020: 10 AM to 11 AM

Scope:

The report covers the initiatives drive by the School of Nano Sciences to boost the knowledge about the chemical uses and possible safety measures.

Objectives:

- **To provide the basic knowledge about the hazardous chemicals, solvents and fire.**
- **To discuss the safe use of different chemicals/equipment in Physical, Chemical and Bio laboratories.**
- **To deliver the various information for Lab safety training.**
- **To provide the knowledge for the proper handling, storage and disposal of hazardous chemicals/materials.**

Activities during the orientation programme:

The online orientation programme for lab safety measures was held on 15th -19th, December 2020 at 10 AM to 11 AM. This programme was organized by School of Nano Sciences for all PG and Ph.D. students of sciences. In this programme, Our Hon'ble Vice Chancellor Sir, Prof. Rama Shanker Dubey was the Patron of this programme and the Chief Guest was Prof. Debi P. Sarkar, University of Delhi.

During the orientation programme, first welcome address was given by Dr. Umesh Kumar, Asst. Prof., School of Nano Sciences, CUG. The programme was started with the Invocation of Kulgeet. Prof. Indrani Banerjee, Dean, School of Nano Sciences, CUG introduced about the Orientation programme. Prof. Alok Gupta, Registrar, CUG has presented his preliminary remarks. The programme inaugural session was started by the Chief Guest, Prof. Debi P. Sarkar, University of Delhi. This five-day orientation programme was focused on the lecture series about the hazardous chemical uses, safety and their disposals by the faculties of School of Nano Sciences. The large number of students were attended the event and get b benefited. The all lectures were very interesting and knowable for the research students. The Schedule of the events is summarized below.

Schedule of the Events

15th December 2020: Time 10:00 am	
Welcome address (10:00am to 10:05am)	Dr. Umesh Kumar, Asst. Prof., School of Nano Sciences, CUG
Invocation of Kulgeet	
Introduction of Orientation programme (10:10am to 10:15am)	Prof. Indrani Banerjee, Dean, School of Nano Sciences, CUG
Preliminary remarks (10:15am to 10:25am)	Prof. Alok Gupta, Registrar, CUG
Inaugural address (10:25am to 10:45am)	Prof. Debi P. Sarkar, University of Delhi (Chief Guest)
Presidential Remarks (10:45am to 10:55am)	Hon'ble Vice Chancellor, Prof. R.S. Dubey, Central University of Gujarat
Vote of Thanks (10:55am to 11:00am)	Dr. Charu lata Dube, Asst. Prof., School of Nano Sciences, CUG
16th December 2020: Time 10:00 am	
Lecture	Dr. Charu lata Dube, Asst. Prof., School of Nano Sciences, CUG
17th December 2020: Time 10:00 am	
Lecture	Dr. Manu Sharma, Asst. Prof., School of Nano Sciences, CUG
18th December 2020: Time 10:00 am	
Lecture	Dr. Umesh Kumar, Asst. Prof., School of Nano Sciences, CUG
19th December 2020: Time 10:00 am	
Lecture	Dr. Hitesh Kulhari, Asst. Prof., School of Nano Sciences, CUG

Virtual International Conference on Statistical Tools and Techniques for Research Data Analysis

ICSTRDA 2021

21 & 22 January 2021

"Statistical Tools and Techniques for Research Data Analysis"

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Proceeding

Virtual International Conference on Statistical Tools and Techniques for Research Data Analysis

ICSTRDA 2021

21 & 22 January 2021

"Statistical Tools and Techniques for Research Data Analysis"

School of Library and Information Science
Sector-29, Near Jalaram Temple, Gandhinagar-382030, Gujarat, India.

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School of Library and Information Science

The School of Library and Information Science at Central University of Gujarat was established as Centre for Library and Information Science in the year 2012. The Centre was upgraded to School of Library and Information Science in 2016. The School of Library and Information Science has been established with the objectives to train competent human resources to build and maintain the reservoir of memory, to conserve and communicate culture, heritage, science, art and folk tradition of the nation.

The school offers 03 programs viz. Master of Library and Information Science, Post Graduate Diploma in Digital Library and Information Management and PhD in Library and Information Science. The program syllabi are characterised by their distinctive, interdisciplinary, and multidisciplinary focus on the interactions between people, information, and digital technologies. The school through its broad objectives has the goal of enhancing information access, and the management, sharing and use of information, to benefit society.

The teaching process involves interactive lectures, video tutorials, field visits, internship, assignments and seminars, projects, and hands-on training. The pedagogy style adopted is supplemented with scholastic events organized such as conference, seminars, and workshop on cutting edge themes from the Information domain. The school encourages student initiatives in participating and organizing local, regional, national, and global events of importance on themes such as Hindi Pakhvada, Open Access, Peer Review, and many others. Research is a key criterion for growth in the LIS domain. The school focusses on research areas in IT Systems in Libraries, Knowledge Management, Information Discovery & Access, Digital Libraries, Bibliometrics & Scientometrics, Information Seeking Behaviour, Applications of Web Technologies to Libraries, and Digital Archives.

Prof. Mohapatra
Dean, SLIS, CUG

Message

It is with great pleasure and humility that I acknowledge the participation in the editorial committee for the proceedings of the two-day virtual 'International Conference on Statistical Tools and Techniques for Research Data Analysis' organized on 21st and 22nd January 2021 by the School of Library and Information Science, Central University of Gujarat, India. The proceedings are a collection of research papers received from across the country and the globe emphasizing the wide-ranging aspects of research statistical tools and techniques. We have ensured the selection of papers reflecting the multidisciplinary domain of the conference theme with topics ranging from Artificial Neural Network, Bayesian Models & Methods, Bio Statistics, Communicative Statistics, Statistical Quality, Data Analysis, Graph Analysis, Data Visualization, Research Data Management to Social Media Analytics. I take this opportunity to thank the convenors of the conference in inviting me to be a part of this committee.

Dr. Bhakti Gala
Assistant Professor, SLIS, CUG

Message

A great change is taking place in the utilization of statistics in daily life of researchers. Evidently, it has become an inevitable part of any organized study either for data collection in society or experimental works by academicians and researchers. Growing importance of statistics and application of statistical tools need to be revisited then and there to match up with the advancements in the area of statistical research and application of various new tools available for analysis of research data.

The instant lock down and pandemic bound people to stay within four walls created new avenues of technological utility. It also brought together people working together from different continents on a common platform. Such an idea of online practice was utilized by Central University of Gujarat by arranging Virtual International Conference on 'Statistical Tools & Techniques and Research Data Analysis' (ICSTTRDA) – 2021 (21-22 January 2021).
School of Library and Information Science and School of Environment and Sustainable development jointly planted a seed of statistical knowledge. In this era of climate change and advancements of technology at a faster pace the present generation need to come together in common forum.

This conference could do it successfully by the kind co ordination from different research and academic organization. The organizing team is grateful to the administration for providing the opportunity and helping through various means for successful conduct of the event.

Individual commitment to a group effort--that is what makes a team work, a company work, a society work, a civilization work."

Vince Lombardi

Dr. R.Y. Hiranmai
Professor, SESD, CUG

Virtual International Conference of Statistical Tools and Techniques for Research Data Analysis ICSTRDA, 2021

ISBN: 978-81-950016-7-5

Published by

CENTURY PUBLICATIONS
46, Masih Garh, New Delhi-110025
Tel: +91-11-26914943, 26927908, +91-9868010950

In Collaboration with
ADVANCED RESEARCH PUBLICATIONS
LG-37, Arora Shoppers Park, Shakti Khand-2, Indirapuram, Ghaziabad-201014
Tel: +91-12-4128816, +91-9810116442

Printed by
VPS DIGITAL PRINT
A-1/18, Ambedkar Place, Najafgarh, New Delhi-110043
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Research Article

Role of Data and Statistical Analysis for Assessment of Urban Water Security in the Global South

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I N F O

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How to cite this article:
Mukherjee S, Sundberg T, Sikdar PK et al. Role of Data and Statistical Analysis for Assessment of Urban Water Security in the Global South. *J Proceedings ICSTRDA* 2021; 1-11.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-02-16

A B S T R A C T

There is an intrinsic importance of baseline data collection and availability in the public domain at the appropriate scale for the assessment of urban water security. Data at the national level are much easier to access than the city or household level, particularly for emerging countries in the Global South, such as India. Involving citizens in data collection also has potential to resolve this lack of data related to urban water security. The necessity of data availability on urban water security at all levels in the Global South is highly underestimated. Even if data are available, they are either 'summaries' of data or 'representations' of data, which are of little or no use for future research works. Therefore, the value for baseline data collection, cleaning and further statistical analyses to fill the gaps for further assessments, apart from the need of full data from published works of individuals or departments, are still crucial factors for the sustainable management of the global water resources. This conference paper presents a review of academic literature, policy documents from government organizations and international agencies, and reports from industries and popular media on the role of data collection, utilization and required statistical analyses in key urban water security issues and its worthwhileness, usefulness and relevance. Amongst issues and concerns to be addressed in this paper are the primacy of institutional responsibilities for data collection, the level and standard of existing data availability with an example from Kolkata, India. This paper also discusses about the existing statistical data analysis options for 'gap-filling' and measurements to provide evidence-based guidance to policy makers and practitioners on securing a city's water future.

Keywords: SDGs, Data Attributes, Scales, Data Attributes, Data Collection, Measurements, Indicators

Introduction

Water Security is one of the most strategic challenges confronting humanity (ADB, 2016; OECD, 2016; UN-Water, 2017; WE-Forum, 2017; World Bank, 2020). Currently, almost 30% of the world's total population do not have access to an improved and safe water source WHO/ UNICEF 2019). More than 4 billion people lack access to improved sanitation (WHO/ UNICEF 2019). Water security is ''the availability of an acceptable quantity and quality of water for health, livelihoods, ecosystems and production, coupled with an acceptable level of water-related risks to people, environments and economies'' (Grey and Sadoff, 2007). Water insecurity is increasing, particularly in the Global South and at the same time we have issues of lack of high-quality data that can help us understand the situation and what drives the increase. The issues related to statistical data can be mainly divided into issues around collection of data, lack of skills in analysing data, lack of access to public data (and when accessed it is of poor quality) as well as issues around communicating the results (which in some areas are done very poorly as the analysis is of low quality). Hence, this study considers 5 major dimensions of UWS: water availability, water accessibility, water quality, water risks/ hazards and governance to focus on the overview of these issues related to data and measurements.

Water insecurity in urbanized areas generally depends on additional socio-economic factors such as uncontrolled and rapid population growth, poor or inadequate governance and mismanagement of the urban water supply and distribution system. Simultaneously, bio-physical processes such as climate change must also be deemed as a catalyst to the water related threats. Countries in the Global South lack substantial financial capability to mitigate water insecurity issues (Mukherjee et al., 2021). In 2006, Sub-Saharan Africa (31%), Eastern Asia (65%) and Southern Asia (33%) had the lowest coverage of "improved" sanitation (UNICEF, 2006) and the situation has not been improved substantially yet (WE-Forum, 2017). Gender inequality and socio-cultural exclusion factors impact the chance of access to sanitation and hygiene, low income and deprivation are also major drivers in influencing water insecurity in urban deprived areas (Mukherjee et al., 2020).

Impeding our understanding and creating solutions to water insecurity is a lack of good quality data and data analysis. As a result, we are not able to create neither a good understanding of the issues at hand nor the drivers of water insecurity which together leads to difficulties in creating good and sustainable policy solutions to the issues. Disparities among national, regional and local data availability, accessibility and transparency affect policies and ultimately produce inadequate and inefficient management plans. As a result, management decisions regarding water purification, allocation, withdrawal facilities and reducing loads regarding sewage disposal are flawed or missing (Watkins, 2006).

The overarching aim of this study is to assess issues related to poor quality data and data analysis and to offer strategies to address these. To do so the paper will review academic literature, policy documents from government organizations and international agencies and reports from industries and media to give an overview of issues and strategies covered.

SDGs and Urban Water Security

Despite of the efforts to channelise development pathway to meet the priorities of employment, economic growth, and poverty alleviation, urban areas in the Global South are continuously facing the emerging challenges of climate change impacts, increasing inequities and lagging human development indices (Mukherjee et al., 2021a). The post 2015 UN Sustainable Development Agenda framework provides an opportunity to renew and integrate efforts to meet, to a significant degree, national and global aspirations in a defined time frame (Bureau of Meteorology, 2017).

SDG 6 calls for the water and water-using sectors to collaborate and move beyond their traditional fragmented 'silos' to include the environment and ecosystems and manage water to achieve impact-oriented integration (Table 1). Under the SDG-6 goals, member states of the United Nations have committed to safeguard availability and sustainable management of water and sanitation for all by 2030 (Mukherjee et al., 2021a). This is an exceptionally large task as the world faces significant water challenges today and well into the future. The data and statistics play a crucial role in this regard. On our current path, the world is estimated to face a 40% shortfall in water availability by 2030 and water scarcity is expected to be a significant brake on economic growth (Bureau of Meteorology, 2017). Without a proper set of adequate, standard and easily accessible database, the analysis of the required indicators set for SDGs cannot fulfil the goals to achieve water security, globally.

The High Level Panel on Water (HLPW), jointly convened by the United Nations and the World Bank, released a Water Action Plan in September 2016 (United Nations, 2016), setting out a detailed approach to the steps that need to be taken to avert a future global water security crisis. The HLPW identified access to water data as a key enabling requirement for delivering all other elements of the Water Action Plan (United Nations, 2016),. Experience from around the world demonstrates that sustainable water management can only be realized with rigorous evidence-based decision making. That in turn requires a solid information base, and reliable water data is a vital pre-requisite for this.

Table 1. Indicators for Global Assessment of UWS in SDG 6

SDG	Global indicators
6.1.1	Proportion of population using safely managed drinking water services.
6.2.1	Proportion of population using safely managed sanitation services, including a handwashing facility with soap and water.
6.3.1	Proportion of wastewater safely treated.
6.3.2	Proportion of bodies of water with good ambient water quality.
6.4.1	Change in water use efficiency over time
6.4.2	Level of water stress: freshwater withdrawal as a proportion of available freshwater resources.
6.5.1	Degree of integrated water resources management implementation
6.5.2	Proportion of transboundary basin area with an operational arrangement for water cooperation.
6.6.1	Change in the extent of water-related ecosystems over time.
6.a.1	Amount of water- and sanitation-related official development assistance that is part of a government coordinated spending plan.
6.b.1	Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management.

(Source: Bureau of Meteorology, 2017; Mukherjee et al., 2021a)

Key Attributes of Water Data Required for UWS Assessment

The requirement of data for UWS assessment needs to meet the goals set to reach the objectives (Bureau of Meteorology, 2017). Data attributes are characters by which a data object can be judged and scrutinise its applicability, validity and comprehensive nature. Data attributes are necessary to know about data and their interrelations with the factors associated with the data. The following list presents the key characteristics on which quality, relevance, and consistency of data rely upon:

- Location: geographical coordinates of the location where measurement is taken
- Scale/ Level: at which spatial level the data is taken from
- Parameters: types of data needed for UWS assessment
- Temporal Resolution/Frequency: the time gap between two measurements
- Latency: whether real time or not
- Precision level: the exactness of the data
- Legitimacy and validity: requirements setting the boundary of data governance
- Completeness: how comprehensive the data is fulfilling all the requirements

Scale and UWS issues

Scale is a crucial component to consider while assessing UWS. Recent studies illustrate scalar variability of hydrology affects the assessment of water security where scale is critical (Phare, 2009; Vorosmarty et al., 2010, Cook and Bakker, 2012; Bureau of Meteorology, 2017). The coarse spatial resolution of the study hides significant variables despite its focus on inter-country comparisons (Table 2).

Table 2.Scale Factors and Issues in UWS Assessments: Crisis and Conflicts in Different Levels

Scale	Urban Water Security Issues
Meta (International)	Climate Change, Integrated Water Resource Management (IWRM), Transboundary water conflict, Global ecology, Global economy, Global politics and international relationship.
Macro (National)	Inter-state water conflict Intra-state water conflict Disaster management Right to equality National water policy.
Meso (Regional/ County/State)	Watershed/River Basin management, Public health, Society, Water tax, Waste management.
Micro (Household)	Water accessibility, Water quality, Water-borne diseases, Exposer to risk and hazards, Pollution Exclusion Affordability, Waste management.

(Sources: Cook and Bakker, 2012; Mukherjee, et al., 2018, Mukherjee, et al., 2021a)

Types of Water Data Needed for UWS Assessment

To assess water security for urban areas, particularly in the Global South, an integrated and comprehensive bio-physical and social framework is needed. To reach the goals set in an integrated assessment framework, the data must be acquired from all possible aspects of environment, society as well as governance. Table 3, lists the possible parameters

to be considered while collecting the data. However, the requirements may vary depending on the objective of the assessment framework.

Use of Water Data for the UWS Assessment

Use of data for UWS assessment depends entirely on the objectives, priorities and over all requirements of the users (Bureau of Meteorology, 2017). Nevertheless, a general flow of steps for assessing UWS (Table 4), is followed in the literatures across the broad areas of water security studies. The levels of details and uniqueness needed vary according to the defined criteria and decision-objectives. Analytical tools such as statistical packages are also a decisive factor based on the need of the assessment.

Table 3.Types of Water Data Required for UWS Assessment

Parameters	Examples
Meteorologic	rainfall, temperature, wind speed, humidity, radiation, evaporation, transpiration
Hydrologic	surface-water level, discharge, inundation area and depth
Hydrogeologic	groundwater level, hydrostatic pressure, aquifer thickness, hydraulic conductivity, transmissivity, storage coefficient
Storage	bathymetry and level, accessible storage volume, storage inflows, outflows, and offtakes
Usage	amount of supplied water from rivers, aquifers, and other storages, spatio-temporal usage patterns and distribution
Quality	physico-chemical parameters (electrical conductivity, turbidity, temperature, pH, odour)
	bio-chemical parameters (concentration of various metals, non-metals, pesticides, fertilisers, industrial effluents, biologic elements such as algae, virus, bacteria)
Wastewater	volume of wastewater (sewage and sullage), industrial water and stormwater generated
Recycled/ regenerated water	volume of wastewater, saline water and stormwater treated, volume of generated potable and nonportable water for reuse
Ecosystem	water needed for maintaining ecosystem needs, health and services obtained from various land use and land cover types
Rights	water ownership, conditions of water license, water transfers (permanent/ temporary), water restrictions
Governance	land tenure, number of water connections, household water supply provisions, water revenues and prices, boundaries of water management territories, access to domestic water and sharing rules, inventories of water infrastructure, transboundary water arrangements and treaties

Table 4.Steps and Determinants for UWS Assessment

S. No.	Step	To estimate/determine
1	Dimensioning	Sufficiency of water storage to fulfil the water demand, Utilization patterns, Spatio-temporal variability in usage and distribution of water resources, Tarde offs between water demand and supply during the extreme events
2	Reviewing	Efficacy of water policy and governance instruments, Water sharing arrangements between upstream and downstream, Allocation of water for environmental water needs, Changes in water quality due to anthropogenic activities
3	Monitoring	Realtime monitoring of water parameters for infrastructures in operation, Hydrometeorological conditions, Allocation of water for various purposes from the storage
4	Estimating	Current and future changes in storage, allocation capabilities, usage and forecasted scenarios, Running the models for prediction and decision making for water demand -supply trade-offs for various scenarios

5	Designing	Selection of appropriate parameters for water infrastructures, Calculation of the optimum size, capacity, and timing for water infrastructure, Idealise and planning for alternatives
6	Evaluation	Measuring accountability of the water system, Maintaining transparency, Necessitating arrangements for water management, Ensuring water security, environmental justice and sustainable future
7	Capacity building	Providing water literacy, Strengthening people's involvement in decision making process, Public engagement for awareness generation

(Sources: Bureau of Meteorology, 2017; UN, 2017; World Economic Forum, 2017; WMO, 2017; Mukherjee, et al., 2018, Mukherjee, et al., 2020, Mukherjee, et al., 2020a, Mukherjee, et al., 2021).

Table 5.Sources of Data Required and their Advantages/ Disadvantages for UWS Assessment

Provenance	Methods	Advantages	Disadvantages
Direct measurement	Hydrometeorological measurements, Survey	Higher accuracy More representative Ground truth correction is easy Higher periodicity Greater frequency Higher quality	Prone to human error, Depends on weather and other biophysical and social circumstances, Instrument calibration and other machinery issues can occur, Time consuming, Sometimes relatively expensive, Difficult or impossible for physically or socially inaccessible areas, For sample surveys, representativeness may issue Need to focus more on detailing than other methods
Remote Sensing	Active sensor: A measuring instrument in the earth exploration-satellite service or in the space research service by means of which information is obtained by transmission and reception of radio waves (RR) waves. Visible/Infrared: Light detection and ranging LIDAR Microwave: 400 MHz to 94 GHz Synthetic Aperture Radar (SAR) Passive sensor: A measuring instrument in the earth exploration-satellite service or in the space research service by means of which information is obtained by reception of radio waves of natura, origin. Visible/ Infrared: Imagers, cameras, spectrometers Microwave: 1 000 MHz to 2 500 000 MHz	Larger area coverage for multiple scales, Repetitive coverage for time series analysis, Access to inaccessible areas and objects Wide ranges of usage Availability of state-of-the-art technology for various analysis and interpretation, Easy and harmless to objects and the environment for data collection, Relatively cheaper in some cases	Comparatively expensive in most cases Requires special technological training skills and sometimes expensive. Prone to have human error Instrument calibration can lead to accuracy error Difficult for socio-economic data collection and analysis Storage issues for high resolution data

Estimation from derived variables from statistical models	Mathematical transformation of a direct measurement (ex: river discharge, water quality index etc) Gap filling in continuous data records Predictive modelling for analysis and forecasting Sensitivity analysis Model fit Uncertainty analyses Synthesise the large amount of complex information (ex. PCA) for both bio-physical (such as climate models), source apportionment (ex. Sources of Air pollutant identification) and socio-economic (ex. cost benefit analyses) assessment	Low cost Useful for creation of coefficient Data gaps can be filled scientifically Minimal response issues User defined outcomes for better analysis Scientific production	Variability of acceptance of terms and usability Human error can mislead the entirety Transformation of scale may produce ambiguity Inefficient or poor analysis produce higher and inevitable errors and scopes Access to metadata and microdata may not be easily available, Usability can be limited
Admini-strative data collection	Household and business survey National/regional census, Tax collection Administrative documentation through public, legal and business agencies	High productivity and updating capacity (if possible) Data collection from different scales can be achievable	Low periodicity in many cases, particularly for the Global South Updating, maintenance and accuracy can be questionable Missing or low capacity of efficiency in the public sector to handle such data and measurement/analysis techniques Lack of coordination between departments and agencies Political will
Participatory data generation	Focus group survey, Household survey, Community fora, Newspaper reports, Other communication media posts such as social media posts	Representative and inclusive data collection, In depth issues can be noted, Local and individual issues which can be absent from the other sources, such as Census, can be obtained, Visually engaging methods for socio-economic data collection Generation of new ideas and aspects are very likely	Difficult to compress raw data, Subjective, contradictory and opinionated views can create complexities, Time consuming, Difficult to organise, Efficiency to conduct the interviews matters highly

Sources of Water Data with their Advantages and Disadvantages

Data for UWS assessment can be obtained from various sources. Broadly, there are 5 major sources (Table 5), from which data can be collected by direct measurement, inference from Remote Sensing of stationary (normal handheld photographic camera), airborne (arial cameras) spaceborne (satellite) platforms, estimation from statistical modelling, government reports or census repots used for administrative purposes and data generated through public/ community participation (collective data production). There should be different advantages and constraints associated with these data collection/ generation processes related to accuracy, comprehensiveness, spatial coverage, consistency or temporal frequency, acceptability and cost. Framework must determine and prioritise the data required and then its probable sources can be identified and selected.

The Problems and Consequences of Having Inadequate Water Data and Analysis

Across the globe, water management practitioners, water security researchers and other different agencies who deal with water have a common issue, i.e., data. With discrepancies in data, the analytical interpretations vary and become unusable or misinterpreted or inadequate in most of the cases. This problem ultimately reflects on the decision making and finally people suffer. Particularly, in the Global South, the problem is manyfold and when it comes to the mega cities with a few millions of populations within a short spatial boundary, data issues and related water security management becomes a nightmare and stagnant forever.

The problems associated with the poor quality or inadequate data are as follows (Kumar and Ballabh, 2000; Bureau of Meteorology, 2017):

- **Blindness:** When water data lacks information regarding the locations, sources, quality and the end users of the water, identification of risk, taking proper and pragmatic management decision and mitigation strategy fails
- **Ignorance:** When data are not reliable, inconsistent, and contradictory, wise policy and planning decision cannot be solidified
- **Wastage:** Poor or inadequate data and resulting issues such as inconsistency, invalidity and incomplete decision fail to address the problems and finally conclude in less investment in water infrastructure and unsustainable resource allocation. These creates void in generating and integrating environmental, social and economic values together

The consequences of the inadequate data and poorly carried out statistical analysis are (Bureau of Meteorology, 2017; Mukherjee et al., 2021):

- **Mistrust:** Inadequate and inaccessible data sources generate confusion and uncertainty among water users, policy makers and national/ international communities, making water insecurity at its worst
- **Summaries of data:** Means, medians, modes, maxima, minima concentrations/ water level for a data set, rather than the entire data which denies the reader the opportunity to assess the quality of the data or to use them for further mining of the data/ future research
- **Non-inclusive:** Having no or inadequate data on socio-economic objectives including data on caste, class, gender, sexual orientation which are considered to be separated or excluded in the society, particular in the conservative set up of the governments in the Global South ends up in a silo or fragmented conclusions which lack the completeness of the UWS assessment to achieve the holistic approach.

Table 6.Strategic Steps and Elements in Statistical Analysis used in UWS Assessment

Steps	Elements	Considerations
Formulation of specific objectives	Prioritising objectives	Setting up an effective UWS assessment strategy for identifying the priority objectives to select the data requirements
Data collection and management	Strengthening institutional arrangements	Identification, selection and establishing collaborative networks with best equipped and important institutions for collection, distribution, analysis, usage of data already identified for optimise the collective benefits of the stakeholders
	Improving monitoring systems	Setting up or improving the established networks required to gather necessary data
	Standardising data	Maximising the utility values of the data for monitoring, collection, curation, analysis, dissemination and transmission among the stakeholders, institutions, and academia globally with transparent and efficient methods
	Provisioning of access and licensing water data	Recognising and evaluation of policies and governance for data access and licensing arrangements to make the process of data access easy and unburdened
	Designing and operation of information systems	Focusing on maximising the effectiveness of the water data information systems to meet various levels of accuracy, feasibility, maintainability, and dependability of the UWS assessment strategy
	Quality management	Assuring the quality for adapting measurements and curation practices for long-term, trustworthy, and efficient use of data

	Participatory activities for data generation, collection, and management	Engaging individuals and community participants in the data collection, generation and management decision making process for the holistic analysis of UWS
Initial exploratory detective analysis	Cross examination of data	Includes detection of outliers, errors, bias, faking, internal consistency, external validation, special features, effective population represented by data
Statistical Modelling	Specification or choice of Stochastic models	Determining how to use expert opinions and findings from the previous experiments through cross validation, Bayesian analysis etc.
Inferential data analysis	Application of statistical methodology based on a chosen stochastic model for observed data	Estimating unknown parameters such as points, intervals etc., testing specified hypotheses, prediction of future observations, regression analysis, discriminant function analysis, Maximally Separated Cluster Analysis, Canonical coordinates, Principal Component Analysis, and other related analyses
Results display and decision making	Presentation of assessment results and guiding future direction	Presenting summary statistics or graphical display, making decisions etc. Communicating the results of the statistical analyses with the public and more importantly to policy makers in a comprehensible manner as well as provide a guideline for future investigation(s).

(Sources: Rao, 1994; Parvathi, 2011; Bureau of Meteorology, 2017; UN, 2017; World Economic Forum, 2017; WMO, 2017; Mukherjee, et al., 2021)

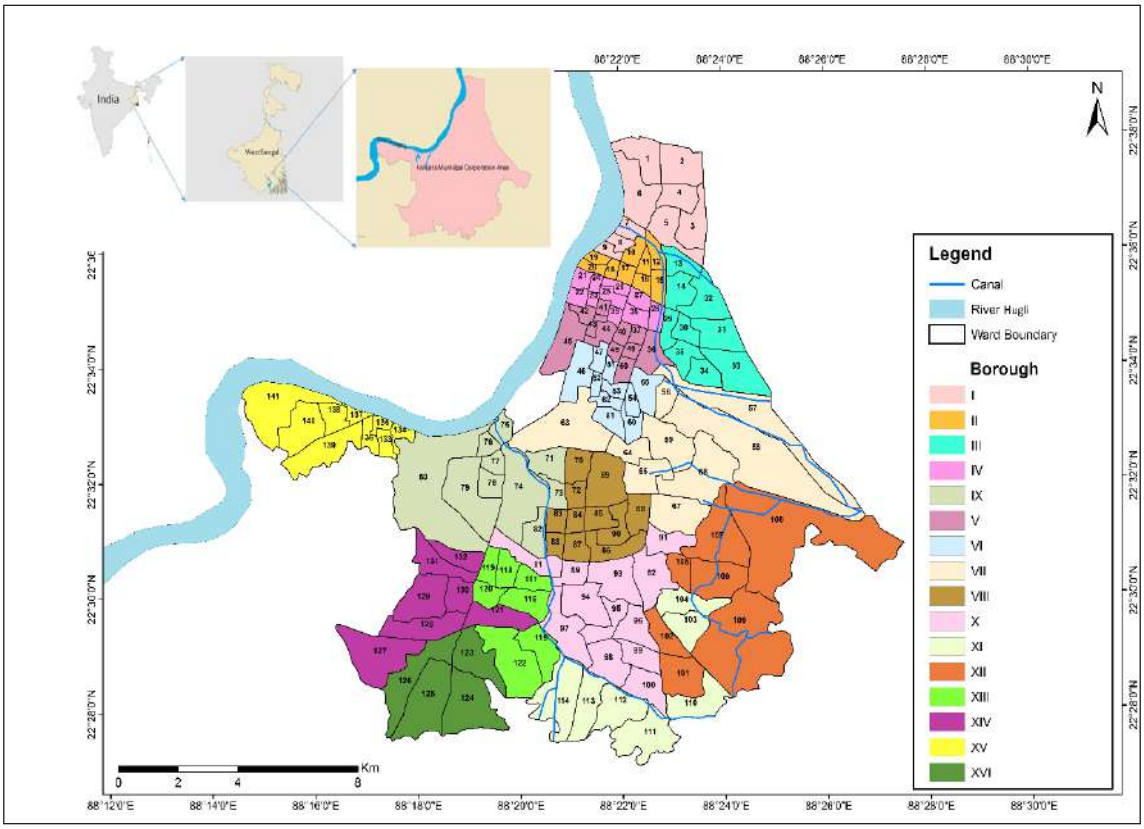

Figure 1.Location of Kolkata Municipal Corporation Area

(Source: Mukherjee et al, 2018)

Strategies for Statistical Analysis for UWS Assessment in the Global South

To overcome the data and issues related to analysis of UWS assessment in the Global South careful planning and sensible selection of data and thorough execution of strategic framework based on statistical analyses are required. Statistical analyses present quantitative information about the status and shifts in water security conditions based on spatio-temporal changes in adequacy, accessibility and quality of the water resources, the impact of natural events and human activities on the physical and social environment. These tools generate usable knowledge about both the bio-physical and socio-economic instruments, transforming uncertain knowledge with the knowledge of the amount of uncertainty, to help taking essential decisions to mitigate the negative impacts and reinstate water security (Rao, 1994). Cities in the Global South where data is sparse, inconsistent, and mostly inadequate due to various reasons (mainly financially burdened), Statistics play a crucial role providing a range of multi- and interdisciplinary information based on wide variety of data (UN, 2017). Therefore, the logical and methodological steps in statistical analysis required in UWS assessment are suggested in Table 6.

In the field of UWS, statistical analyses are essential to enable a synthesized arrangement of data from various sources, streamlines the complex urban water issues for easy and correct measurements, helps to prioritise the objectives for decision making according to the relevance, finally integrate the issues together within an umbrella assessment framework reducing redundancy and discrepancies present in the data.

Case study: Assessment of Kolkata's UWS

Kolkata (Figure 1), one of the megacities in India, is facing critical water issues. Here available water resources are abundant but poorly managed, causing water insecurity at household levels (Mukherjee et al., 2018).

According to Gray and Sadoff (Gray and Sadoff, 2007) five dimensions of water security can be identified while defining the term 'water security'. These are: availability, accessibility, water quality, risks and hazards, and governance (Mukherjee et al., 2021). For assessing urban water security at the household level scale, the term 'security' has been conceptualized as a function of these dimensions. Specific indicators are identified and accordingly, data for individual indicators are collected from separate sources, ranging from direct measurements, statistical modelling output to different government reports and literature survey.

The primary data is based on a household survey using Stratified Random Sampling method. The data was collected from 45 households from 16 Boroughs of Kolkata Municipal Corporation (KMC) area. Altogether 720 households were surveyed within November-December 2018. Water Availability component contains the physical availability of water and presence of toilet in the house, other options to fetch water from, the number of users and the waste management systems available. Water Accessibility comprises of the households' intersectional characteristics focusing mainly on the gender dimension of the users and the WaSH provision. Water Quality encompasses the reason for using different sources of water for drinking and other purposes. For this component secondary sources were used. Surface water quality data were derived from the West Bengal Pollution Control Board (WBPCB) and groundwater quality data were taken from MacArthur et al., 2018. Water Risks and Hazards component includes the risks related to physical/ meteorological hazards such as flood and human-health hazards, i.e., water-borne diseases.

Water governance data which includes data on different water policies (national and state), accessibility and transparency were derived from secondary data sources such as reposts and periodicals of the State Water Investigation Department, Department of Urban Development of Government of West Bengal, Kolkata Municipal Corporation (KMC) (Department of Slum Development, Department of Water Engineering), West Bengal Pollution Control Board (WBPCB) and Kolkata Municipal Development Authority (KMDA).

Along with them, satellite data were used to calculate the shifting patterns and degree of land use and land cover changes in the study area, where Maximum Likelihood Classifier was used to classify the entire study area. The results were used to quantify the changes in physical availability of surface waterbodies in the areas.

To overcome the challenges associated with inadequate, poor quality and nonstandard databases to meet a range of bio-physical (mainly related to water availability, quality, demand-supply, and infrastructure) and socio-economic (related to marginal population, migrants/daily commuters to the city, economic status etc) objectives, a comprehensive assessment strategy was considered.

The comprehensive urban water security assessment index (UWSI) was, therefore, designed and computed by aggregating the indicators' value (normalized) using spatial Multi-criteria Analysis (MCA) methods. We have considered both simple additive weighting (SAW) and Principal Component Analysis (PCA) methods. The steps are described below (Figure 2). The result is a graphical display (Figure 3) showing the spatial distribution (Borough wise) of UWS Index, within Kolkata Municipal Corporation (KMC) area, which can be used for further analyses and decision making in prioritising objectives for sustainable and secured urban water future of the city.

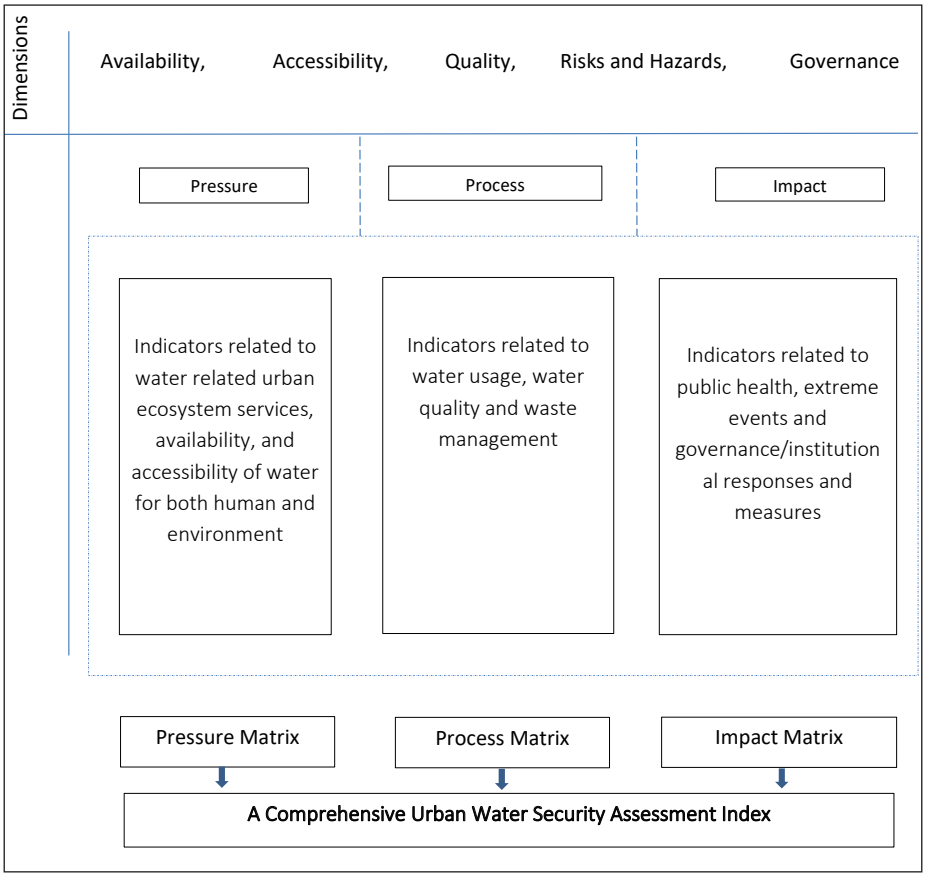

Figure 2.Comprehensive UWS Assessment Framework (Based on Mukherjee et al, 2021)

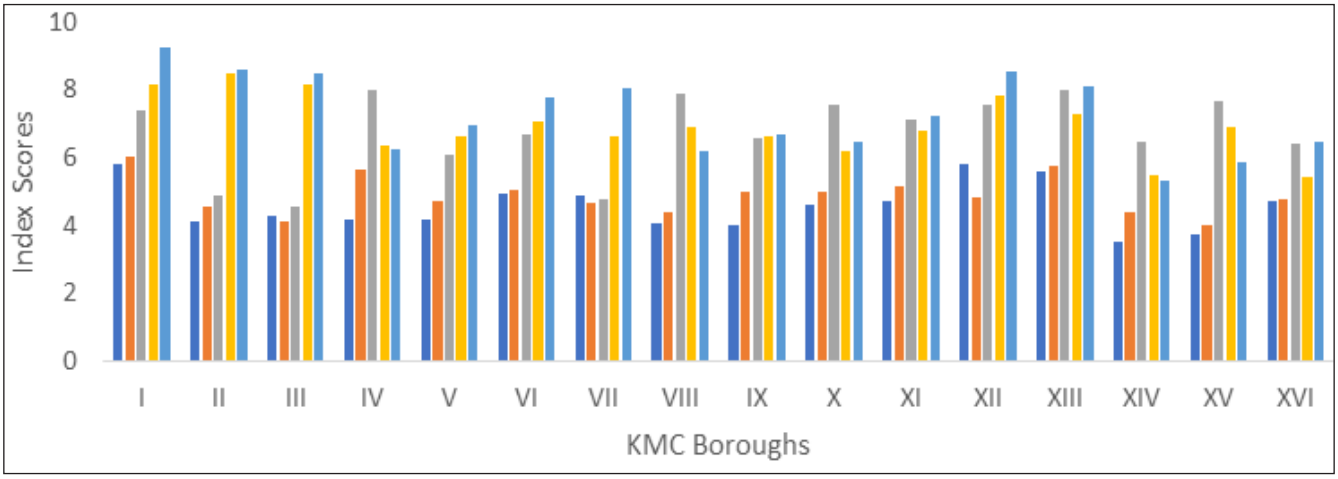

Figure 3.Borough Wise Distribution of UWS Index Status within Kolkata Municipal Corporation (KMC) Area Roman Numbers Mark the Borough Numbers

Table 7

Score Range	Status
8-10	Very Secured
6-8	Secured
4-6	Around acceptable threshold of security
2-4	Unsecured
0-2	Very unsecured

Conclusion

One of the biggest challenges the Global South face regarding UWS is data. Inadequate, unreliable, low quality, socio-politically as well as technologically biased, non-inclusive and unorganised databases are among the many issues that the Global South experiences regarding data collection, generation and properly assessment through well-selected statistical techniques. Hence, without a strong scientific knowledge on UWS, the cities in the Global South

lack proper management of its water resources and the demand of the growing population. With the progress in Remote Sensing technology, global bio-physical databases can be easily available and accessible with cheaper or no cost, but it only provides bio-physical data bases up to a certain scale and without direct data or information on the larger socio-economic objectives. Therefore, the UWS assessment is losing its holistic and inclusive properties which can never achieve water security.

Steps for identification, collection and analysis of data and statistical tools for UWS assessment need to start with prioritising water security objectives. Thus, strengthening water data institutions, establishing sustainable water data monitoring systems, adopting water data standards and embracing an open data approach to water data access and licensing are essential. Employing water data quality management processes and generating different scenarios for future data requirement, management and archiving through sophisticated and advanced research based on well-selected statistical analyses are proven to be important. Therefore, this review concludes with a note on implementing effective water data information systems and engaging communities for participatory activities for data generation, collection and management must be prioritised for the assessment of UWS for a sustainable water future of the cities in the Global South.

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Article

An Overview Scholarly Research Output and Data Visualization: A Scientometric Study

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I N F O

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How to cite this article:
Ahirwal AK, Pathak SK. An Overview Scholarly Research Output and Data Visualization: A Scientometric Study. *Proceedings ICSTRDA* 2021; 12-20.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-02-15

A B S T R A C T

The current study focused on "Indian Institute of Science Education and Research Bhopal (IISERB) research publications, retrieved using Web of Science (WOS) world's largest citation database from 2010 to 2019 for this scientific visual analysis. In this study, we focused Scientometrics perspective and analyzed co-authorship analysis, co-citation analysis and co-word analysis, we considered 1529 suitable records for this analysis. According to the results IISERB scholarly publications, the annual growth rate is 36.02%. The highest citation per year found is 7.97 in 2011, the document collaboration index of IISERB publications is 6.15. The author "Chopra Deepak" has 99 documents with highest links strength in authorship collaboration and highest citation received by "Konar, Sanjit". The author Row, Tayur N Guru, is top in average citation received with 80.4% (402 citations) for 5 documents. The research focuses on highly cited and co-cited documents and their source journals, which are most active during the research output time frame. The current analysis also described the co-occurrence of keywords analysis to describe the institutes' current research trends by subject domain.

Keywords: Data Visualization, Visual Analysis, Scientometrics, IISER Bhopal

Introduction

India's government has established the Indian Institute of Science Education and Research (IISERs) to integrate and promote interdisciplinary science education and research. IISERs were established under the National Institute of Technology act 2007 and 2010, throughout India. Seven IISERs have been established across the country viz. Kolkata in West Bengal, Pune in Maharashtra, Mohali in Punjab, Bhopal in Madhya Pradesh, Thiruvananthapuram in Kerala, Tirupati in Andhra Pradesh and Berhampur in Odisha. All IISERs have been designed to reach the prestigious position in the global setting that IISc, IIMs and IITs presently enjoy. All IISERs are devoted to imparting high-quality education and research in all area of science to young and academically motivated undergraduate and postgraduate students.

This bibliometric study evaluated the published scientific literature to assess the evolution of knowledge on Indian Institute of Science Education and Research, Bhopal (IISERB) publication trends, identify the leading research stakeholders, analyze the conceptual areas of knowledge development in institutes' domains. Bibliometric data on IISERB related published literature from 2010 to 2019 were retrieved from the Web of Science Citation Database. Major areas identified through evaluating keywords and text data, including Co-authorship networks of authors, the geographical collaboration of organization and countries

co-authorship networks, Bibliographic coupling of sources associated with the institutes. The current status of institutes research shows early development in different areas of knowledge.

The analysis of research productivity has been undertaken by the researcher in the discipline of Basic Sciences. It helps to get to know the research trends of an academic and research institute/ s. Research output analysis is a new approach to evaluate production at the micro-level. The "IISER Bhopal" is an autonomous academic research institution under the Ministry of Education. IISER Bhopal aims to integrate and promote interdisciplinary science education and research. The Institute's vision is to provide high-quality education to undergraduate, postgraduate and doctoral students. The Institute also aspires to contribute to society through teaching and research to help achieve global sustainability. Further, the Institute aims to produce leaders in Basic Science and related disciplines. This study will analyze the productive growth of IISER Bhopal during 2010-2019. This study will provide a tool to find the most preferred publication, most productive faculty and most cited articles.

Method

The present study was done using the world well-known and popular citation database Web of Science (WOS). We created bibliographic dataset on December 15, 2020, to analyze IISERB scholarly research output and contribution to the academic community. Authors carried out a comprehensive bibliographic search provided by WOS using the words "Indian Institute of Science Education and Research (IISER), Bhopal" or ("IISER Bhopal" and "Indian Institute of Science Education and Research (IISER) Bhopal") ("IISERB" and "Indian Institute of Science Education and Research (IISER) Bhopal") ("India Inst Sci Educ Res Bhopal" and "Indian Institute of Science Education Research (IISER) Bhopal") ("Indian Inst Sci Edu Res Bhopal" and "Indian Institute of Science Education and Research (IISER) Bhopal") ("Indian Inst Sci Educ Res BhopaL" and "Indian Institute of Science Education and Research (IISER) Bhopal") ("Indian Inst Sci Educ Res Bhopal Bhauri" and "Indian Institute of Science Education and Research (IISER) Bhopal") ("Indian Inst Sci Educ Res Bhopal Govindpura" and "Indian Institute of Science Education and Research (IISER) Bhopal") ("Indian Inst Sci Educ Res Bhopal Iiser Bhopal" and "Indian Institute of Science Education and Research (IISER) Bhopal") in the advanced search field by organization and time span selected January 2010 to December 2019. We obtained 1641 records in primary or first stage search then we selected only journal articles, reviews, proceeding papers for this study, other types of documents are excluded from our records list and we found 1529 records are suitable for this study. We conduct the analysis and visualization with the final records 1529, which have full bibliographic and citation information from 2010 to 2019. However, in the present study, we focused only on journal articles and reviews published during the selected time, as mentioned above.

Literature Analysis and Interpretation of Result

In the current study, the authors used 'R Studio Bibliometrix' to obtain basic analysis about the data collections, 'Vosviewer' cite space for mapping and network visualization of IISERB scholarly research output literature in a specific context. The primary analysis of IISERB published documents and their collections are defined in Table 1. In a study of 1529 documents published by IISERB, we found about that total contributing authors 9114. The 422 journal sources used for research publication during the study period also analyzed and observed keywords trends on keywords plus (5505) and author keywords (2705). The basic analysis has demonstrated that the average citation per document is 17.48, co-authors per document are 208 because several documents are. During the analysis, we also observe that multi and single-author documents are 9083 and 31, respectively. Documents per author are 0.168, authors per document are 5.96 and also observed the document collaboration index is 6.15.

Table 1.Annual Scientific Production and Citation Average

Year	N	TC	Mean TC per Article	Mean TC per Year	Longevity (in years)
2010	17	845	49.71	4.97	10
2011	29	2080	71.72	7.97	9
2012	44	1613	36.66	4.58	8
2013	93	2201	23.67	3.38	7
2014	141	3772	26.75	4.46	6
2015	156	3313	21.24	4.25	5
2016	250	5140	20.56	5.14	4
2017	275	4692	17.06	5.69	3
2018	253	2039	8.06	4.03	2
2019	271	1037	3.83	3.83	1

Scholarly Literature Growth

The present study focused on IISERB publication trends and citation growth during the ten-year time frame. According to the analysis, we found that the annual growth rate of IISERB publication is 36.02% yearly. The first eight-year 2010 to 2017, have observed steady growth in the scholarly research output, while the growth rate shows fluctuation. The year 2017 has the highest publications, with 17.98% (275). In terms of citation received the year 2016 have highest (5140) citations in a very few longevity time. Mapped and

represents the citation pattern of scholarly publications, to present the citation pattern, found the highest number of citations, 5140 (19.22%) in 2016, the lowest citation found 847 (3.16%) in the year 2010. We also analyze and present the mean citation per article and per year in above Table 1, the highest mean citation per article (71.72) found in the year 2011, followed by 49.71 (2010) and 36.66 (2012), respectively. The highest citation per year found is 7.97 in 2011, followed by 5.69 and 5.14 in 2017 and 2016. The 2019 publications have 3.83 mean citations per year in the lowest longevity time, more than 2013 (3.38) publication has 7-year longevity time. N= Number of Article, TC= Total Citation.

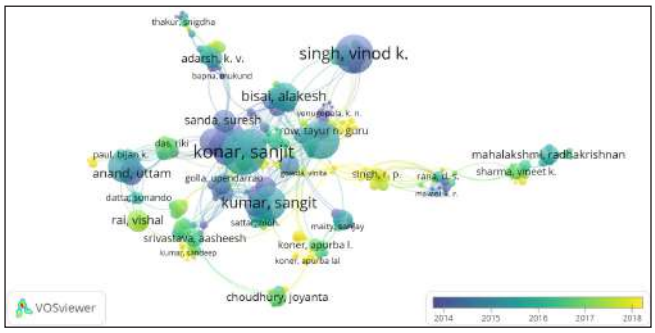

Figure 1.Liserb Scholarly Publications, Co-Authorship Collaboration Network of Authors

Co-Authorship Analysis of Authors Network Visualization

According to Figure 1, presents co-authorship network visualization of author's documents, presented in association strength year-wise overlay visualization of co-authors by documents frequency, the minimum frequency threshold 5 of an author. The overlay visualization is divided into 19 clusters the overlay clusters are presented in 4 different colours to show each cluster frequency by publication year. The overlay visualization has 231 node items representing scholarly research output and 907 connected links representing co-relations between each node. The biggest clusters #4 is in a central position in the overlay visualization have 17 items appear with the highest documents, links, total links strength, the number of citations such as 285, 205, 780 and 8966, respectively. Cluster 9 in the second position with 5251 citations and cluster 5 (248) also in the second position in terms of documents. The lowest cluster #19 has only three items, including 33 documents and 211 citations are in lowest position with the lowest links and total link strength. In terms of authorship collaboration, Chopra, Deepak has 99 documents with the highest links, and the total link strength weight is 29 and 202, respectively. Followed by Konar, Sanjit, Singh, Vinod Kumar have 77 and 53 documents, respectively. The author Konar, Sanjit, received the highest 2323 citations, followed by Singh, Vinod Kumar, Chopra, Deepak with 1816 and 1745. The author Row, Tayur N Guru, is in cluster 5, is top with 80.4 average citations with only five documents and received 402 citations. Bhakuni, Bhagat Singh 9 documents with (63.33 average citations) and Biswas, Soumava 21 documents (53.33 average citations).

Co-Authorship Analysis of Organisations Network Visualization

The IISERB scholarly publications network build based on a contribution by the countries and institutions. The co-institution network visualization has 138 nodes and 476 links connection. The node size demonstrates the publication strength of institutes and link connections are indicated co-relationship between two or more institute nodes. In the network thickness of the link represents co-relation strength. As shown in Figure 2, the node "Indian Inst Sci Educ and Res" is biggest with others in the network, the node is shown burstiness highly, spotlighted and betweenness centrality with the red, yellow and purple colour ring. The other nodes linked and co-related direct or indirect point with this most significant or base node of visualization represent collaboration publications and organizations' strength.

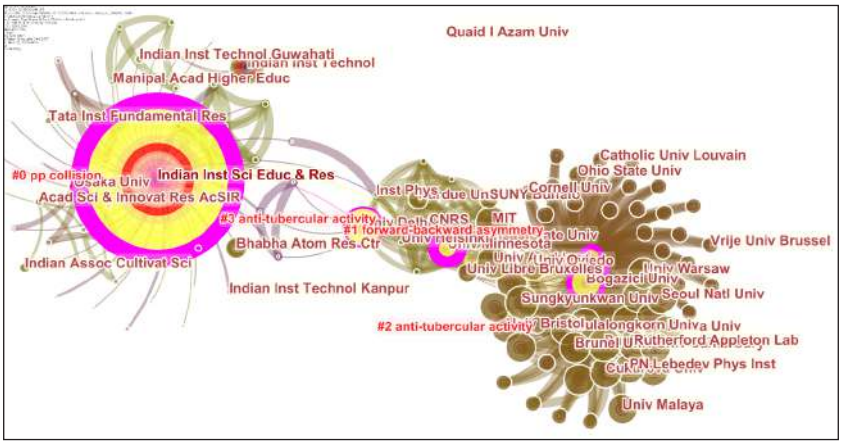

Figure 2.Institutions Co-Authorship Networks Visualization of Iiserb Authors Collaboration with other Organizations

The top collaborated institute with IISERB in terms of publication frequency is University of Delhi (145 documents) and Paul Scherrer Institute (141 documents). Furthermore, it also identified the betweenness centrality of nodes in the network highlighted by the purple ring. The highest degree centrality 62 have of "Bogazici University Istanbul, Turkey," followed by Baylor University and Boston University, has 57-degree centrality.

In Figure 3, also illustrates the top 5 burst institutes with his burst strength and duration to define the top citation bursts of institutes, in Figure 3. The highest bursts recorded "Indian Inst Sci Educ and Res" is the highest burst institute with 286.54 and duration from 2010 to 2015. Followed by "Indian Inst Technology", "Osaka University", "Lehigh University" and "Tata Inst Fundamental Res" the others details are given in Figure 3.

Institutions	Year	Strength	Begin	End	2010 - 2019
Indian Inst Sci Educ & Res	2010	286.54	2010	2015	
Indian Inst Technol	2010	25.56	2010	2015	
Osaka Univ	2010	6.92	2011	2015	
Lehigh Univ	2010	3.26	2011	2014	
Tata Inst Fundamental Res	2010	2.88	2013	2015	

Figure 3.Top 5 Cited Institutions with the Strongest Citation Bursts in the Shortest Duration

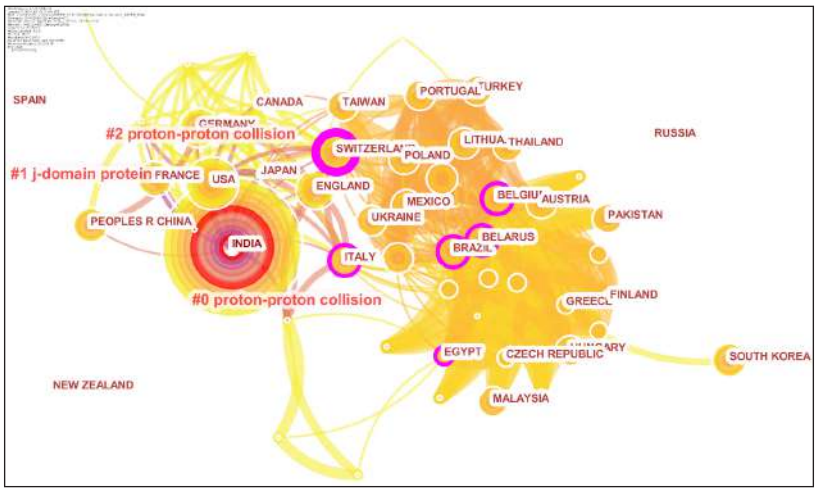

Figure 4.Countries Co-Authorship Network Visualization to Collaborative Research with IISERB

Co-Authorship Analysis of Countries Network Visualization

With reference Figure 4, represents the geographical analysis of countries' co-authorship network to demonstrate local and global collaboration of IISERB scholarly research output. The countries collaboration network has 56 nodes and 380 links with 0.2468 network density. The network density in the map represents the co-relation link between countries. The network consists of the documents frequency of countries such as India (1524) is in cluster #1, followed by the USA (247) and Germany (184) are top collaborated countries. The lowest co-authorship was found with Israel and Australia, each collaborated frequency is 2. India had a big ring with a spotlight in the network, purple and the red color presents the highest publication frequency, betweenness centrality, and burst value among the co-related countries. The spotlight nodes color yellow highlights the countries' paths connectivity with high betweenness centrality.

The top 10 countries' strongest publication burstiness between the countries demonstrated in Figure 5, by frequency and shortest duration timeframe. The highest burstiness pointed to India (232.56) from 2010 to 2015, with 295.53 burst strength value, followed by Japan, Canada, the USA and South Africa with strength 11.24, 6.62, 6.29, and 2.75, respectively. Canada has the lowest duration from 2012 to 2015 and has 6.62 strength.

Top Cited Journals Analysis and Network Visualization

Figure 6, represent the top-cited journal sources, the network analysis map has 67 nodes, 321 links, with a network density, is 0.1452. the network visualization means

silhouette value is 0.9175 represents the perfect separation of clusters. The cited journals network divided into 3 broad clusters by LSI terms, the largest cluster #0 (Synthesis), silhouette value of 0.935 is perfect cluster separation of 25 cluster members. Top research-focused by cited sources is Beta-unsaturated Ketone, Enantioselective Synthesis, Enantioselective Organocatalytic Sulfa-Michael Addition, Enantioselective Friedel-Crafts Alkylation etc.

As stated, results are obtained from the admire journal analysis; the top-ranked highly cited journal is "Journal of the American Chemical Society" with 754 citation frequency. Followed by "Angewandte Chemie International Edition" and "Chemical Communications" frequency is 632 and 593, respectively. According to Figure 7, the "Journal of High Energy Physics" has the highest burstiness 51.23 in the shortest 2 years duration. Followed by "Physics Letter B" and "The European Physical Journal C," burst strength has 49.58 in the same 2-year term duration. The "Nature Communications" and "Inorganic Chemistry" have the longest 3-year citation burstiness duration with strength 36.54 and 32.27, respectively. The "Journal of the American Chemical Society" has the highest (0.38) betweenness centrality, which is in cluster #0 is reflects strong relationships between the nodes used the shortest path and highest connectivity.

Countries	Year	Strength	Begin	End	2010 - 2019
INDIA	2010	**295.53**	2010	2015	
JAPAN	2010	**11.24**	2011	2015	
CANADA	2010	**6.62**	2012	2015	
USA	2010	**6.29**	2011	2014	
SOUTH AFRICA	2010	**2.75**	2010	2014	

Figure 5.Top 5 Countries Burstiness Frequency in Terms of Short Duration

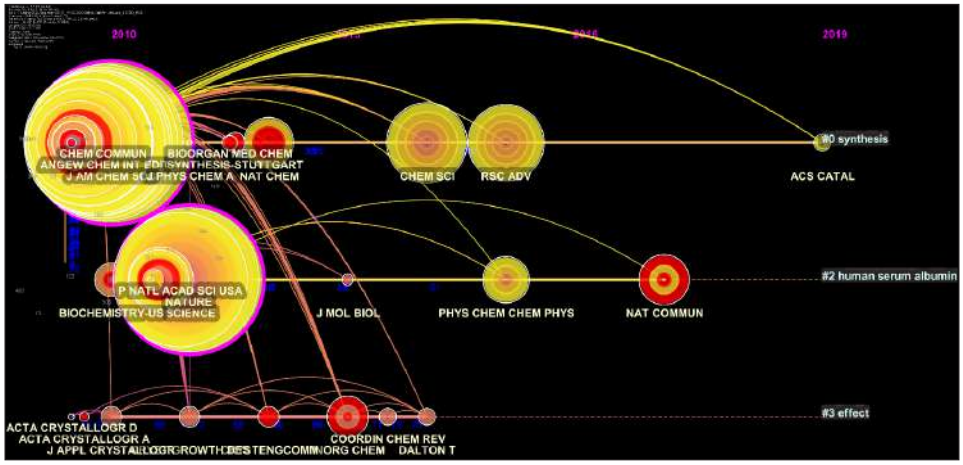

Figure 6.Top-Cited Journals Visualization in a Timeline view with Cluster

Cited Journals	Year	Strength	Begin	End	2010 - 2019
J HIGH ENERGY PHYS	2010	**51.23**	2016	2017	
PHYS LETT B	2010	**49.58**	2016	2017	
EUR PHYS J C	2010	**49.58**	2016	2017	
PHYS REV D	2010	**49.2**	2016	2017	
J INSTRUM	2010	**48.45**	2016	2017	
NUCL INSTRUM METH A	2010	**46.57**	2016	2017	
COMPUT PHYS COMMUN	2010	**41.82**	2016	2017	
NAT COMMUN	2010	**36.54**	2017	2019	
NUCL PHYS B	2010	**35.88**	2016	2017	
INORG CHEM	2010	**32.27**	2013	2015	

Figure 7.Top 10 Cited Journals with the Strongest Citation Bursts Sorted by Strength

Top Cited Author Analysis and Networks Visualization

With reference Figure 8, network visualization of top-cited authors, presented in cluster view by citation frequency, threshold minimum frequency is 25. The network is divided into five broad co-citation clusters where clusters are labelled by Link-Log-likelihood ratio from their own citers with a maximum threshold of 10 top-cited documents in each cluster. Network visualization has 303 nodes and 1168 links representing top-cited authors and their co-relations between each other. The largest 2 clusters are summarized of the network to understand whole visualization, the largest cluster #0, "organic framework," has 62 members and a silhouette value 0.897 represents straightforward separation, second-largest cluster #1, "intermolecular interaction" size has 42 members with 0.923 silhouette value represents perfect cluster separation under the 0.7~1.0 value range. The highly cited author "Chatrchyan S" (2016) received the highest citation frequency of 134. The details of citation bursts of authors illustrated in Figure 9.

Co-ward Analysis, Co-word analysis can assist in estimating IISERB scholarly research output patterns and frontiers research trends.

Network of Co-occurring Subject Category

Co-occurrence analysis of the subject categories allows us to understand and consider the key and trending subjects included in the research via recent years or studied duration. Figure 10 focused main and most impacted subject categories used by IISERB, which are the highest used research and scholarly publications.

The visualization represents the cluster network view by clusters and the visualization selection criteria are top 25 per slice, frequency threshold each cluster at least 10. The subject category network has 55 nodes and 213 links connected with network density 0.1434. The ring, colors of ring, thickness and colors of links represent the frequency, bursts, spotlight and collaboration pattern in each and main subject categories. The boldness of items and ring size indicates the frequency capacity between other items

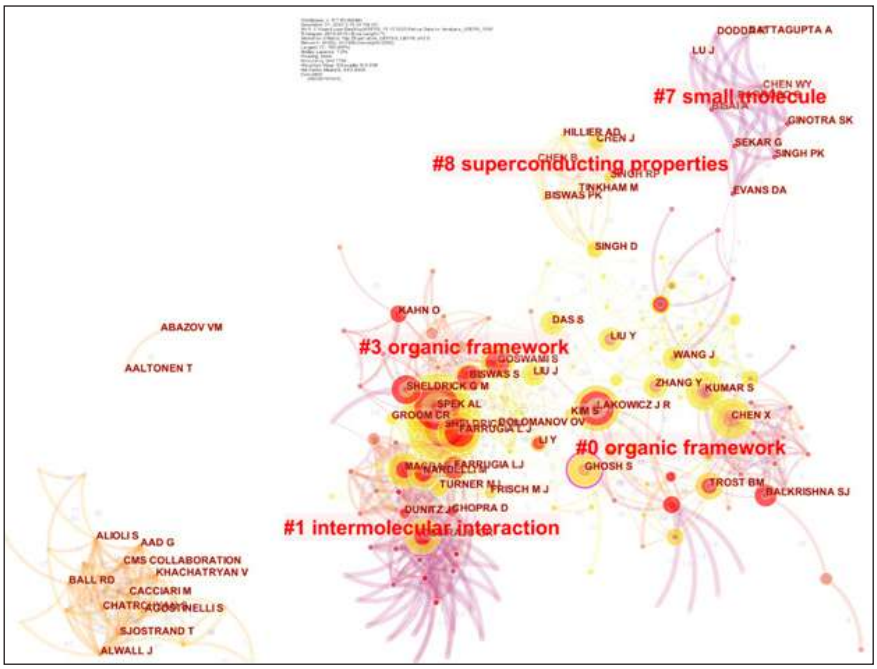

Figure 8.Top-Cited Journals Network Visualization within a Cluster View Threshold Frequency 10

Cited Authors	Year	Strength	Begin	End	2010 - 2019
FARRUGIA LJ	2010	6.77	2010	2019	
CHOPRA D	2010	5.28	2011	2019	
NARDELLI M	2010	5.12	2010	2019	
BISAI A	2010	3.35	2010	2019	
SINGH PK	2010	3.35	2010	2019	
EVANS DA	2010	3.35	2010	2019	
ALLEN FH	2010	2.79	2010	2019	
SEKAR G	2010	2.79	2010	2019	
GINOTRA SK	2010	2.79	2010	2019	
SIBI MP	2010	2.4	2010	2019	

Figure 9.Top 10 Highly Cited Authors with Strongest Citation Burstiness

in the network. Concerning Figure 10, the most impacted subject in terms of WOS retrieved publications of IISERB are "Chemistry" "Physics" "Chemistry Multidisciplinary" "Chemistry, Organic" and "Materials Science" the detailed information given in the network.

Network of Co-occurring Keywords: In the keyword analysis, we observed a total of 8210 keywords used (5505 keyword plus and 2705 author keywords) of IISERB research literature. All types of keywords co-occurrence (including author and keyword Plus) were analyzed of IISERB research publications. We examine and explored the top occurred keywords in the visualization and mapping criteria, top 25 keywords per year slice and threshold criteria minimum 10 times. With reference Figure 11, the keyword co-occurrence network presented by cluster in timeline view, having 136 nodes and 350. In the IISERB research publication most associated keywords "Derivative" (Freq. 81), followed by "Crystal Structure" (Freq. 76) and "Complexe" (Freq. 62), details the top 10 keywords listed in Table 2.

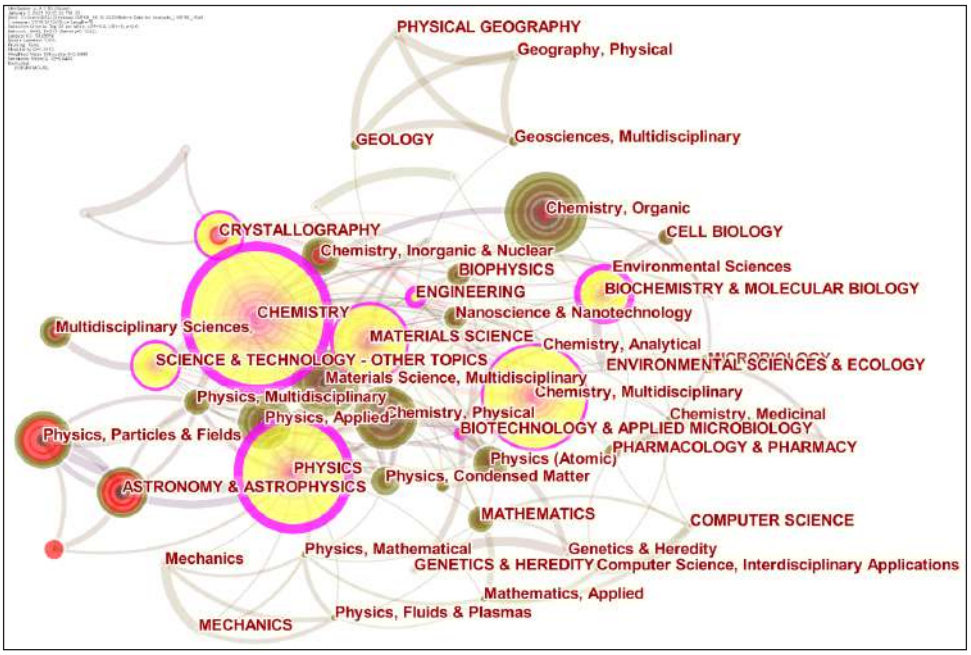

Figure 10.Top Subject Categories by Cluster, Labelled by Frequency Strength

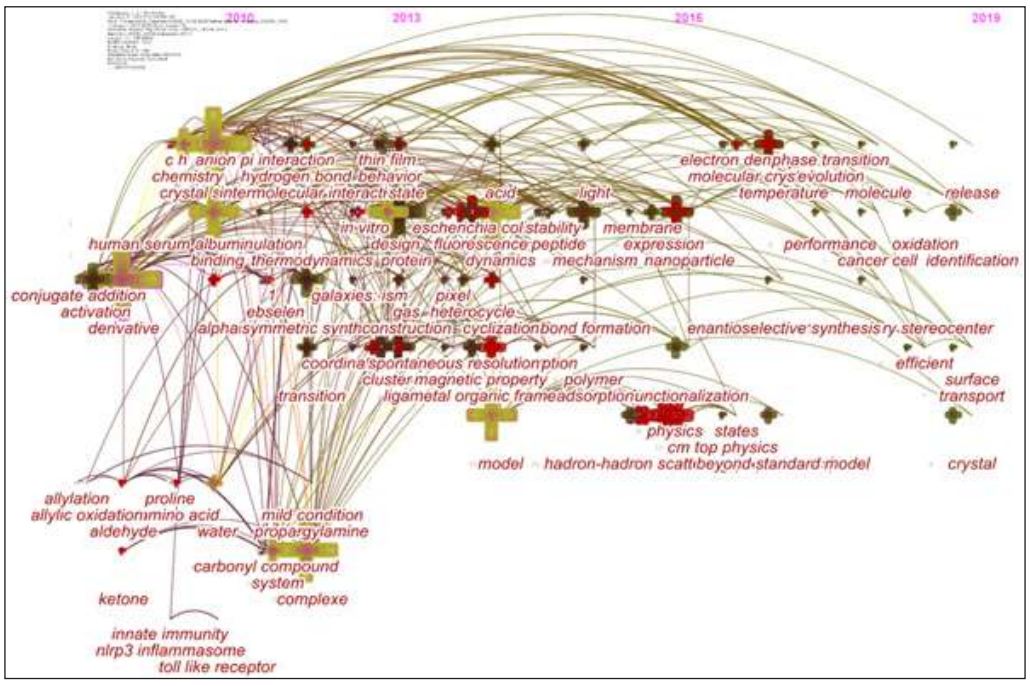

Figure 11.Associated Keywords with High Frequency in a Timeline View Via Clusters

Table 2.Top 10 Keywords by Occurred Frequency, Degreeand Centrality

Frequency	Keywords	Degree	Centrality
81	Derivative	32	0.43
76	Crystal structure	29	0.18
62	Complexe	27	0.13
54	Model	18	0.23
51	Dynamics	20	0.12
45	Protein	16	0.02
44	Binding	23	0.12
39	Hadron-hadron scattering (experiments)	8	0
35	Design	18	0.1
35	Activation	18	0.1

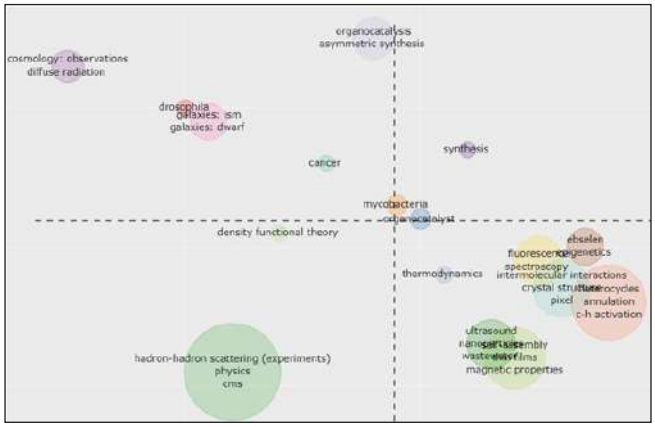

Figure 12.Thematic Map of Author Keywords used by Iiserb Authors, Scholarly Publications

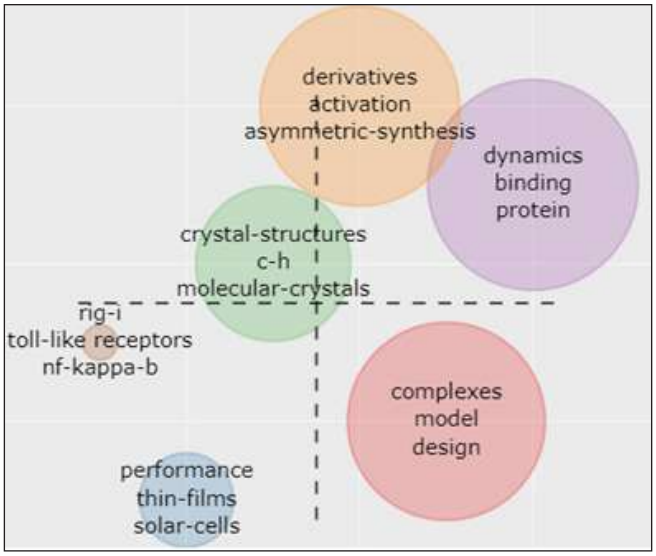

Figure 13.Thematic Map of Keywords Plus IISERB Assign by WOS Scholarly Publications

Thematic Analysis of Author and Index Keywords

According to Figures 12 and 13, we display thematic maps of the author and indexed keywords on IISERB scholarly research publications. The author and indexed keywords prepared to use the top 500 keywords and minimum item frequency set 5 in 'R studio package' software. The maximum 3 labels are set in each theme to represent the map by high centrality and network visualization density.

Trends Topic Analysis used Title Terms

Trends topic analysis was done using title terms through 'R studio package' software tools. We illustrate the trends map, used title terms of IISERB scholarly research outputs. The title terms select from 2010 to 2019 with minimum word frequency set 5 and number of words 3 for labelling in each year log.

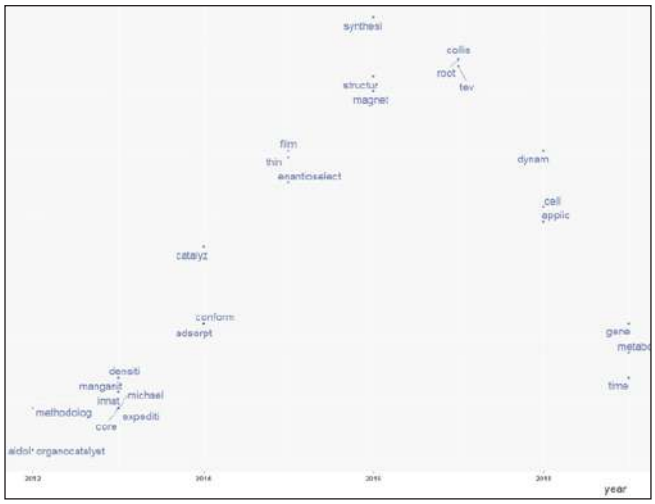

Figure 14.Top Trend Topic by Title Terms Presented in Yearly Log Frequency

Conclusion

The current study focused on "Indian Institute of Science Education and Research Bhopal (IISERB) research publications, retrieved using Web of Science (WOS) world's largest citation database from 2010 to 2019 for this scientific visual analysis. In this study, we focused on and analyzed 1529 journal articles, reviews and proceeding papers. This paper conducted data mining with the Web of Science Analyse Results tool and identified 1529 records of IISERB.

We used scientometric parameters to analyze the publication data and describe the visual networks of co-authorship networks of authors, institutes and countries' collaboration. The research focuses on highly cited and co-cited documents and their source journals, which are most active during the time frame research output. The current analysis also described the co-occurrence of keywords analysis to describe the institutes' current research trends by subject domain.

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Article

Application of Bayesian Statistics to Assess the Aquifer Vulnerability to Groundwater Pollution in and Around Gandhinagar City, Gujarat, India

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How to cite this article:
Gokhlani P, Siddha S, Sahu P. Application of Bayesian Statistics to Assess the Aquifer Vulnerability to Groundwater Pollution in and Around Gandhinagar City, Gujarat, India. *Proceedings ICSTRDA* 2021; 21-27.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-02-12

A B S T R A C T

Bayesian statistics is a method for defining epistemological ambiguity by the mathematical language of probability. In the 'Bayesian paradigm,' extents of certainty in circumstances of nature are stated which are not negative, the entire belief in all circumstances of nature is set to be one. Bayesian statistical techniques begin with present 'prior' beliefs, update these by the data to provide 'posterior' beliefs, which may be treated as the origin for inferential decisions. In the present study this method is applied to demarcate areas of Gandhinagar vulnerable to groundwater pollution. Due to the over-growing population, industrialization and urbanization, many aquifers are vulnerable to contamination. Remediation of groundwater is very challenging, expensive, time-consuming and sometimes even unfeasible if once it is contaminated. Therefore, the most important aim of the vulnerability maps is to categorize the area into numerous parts, which have different levels of vulnerability to be polluted now or in near future. In the present study, a probability-weighted approach has been utilized to generate the final vulnerability map of the study area. To demarcate different groundwater vulnerable zones, four thematic maps such as (i) hydraulic conductivity of the aquifer, (ii) groundwater velocity within the aquifer, (iii) the thickness of top confining layer and (iv) height of the piezometric surface above the bottom of the top confining layer, were used. The analysis reveals that the entire Gandhinagar Sub-district can be classified into three following aquifer vulnerability zones: (i) Low, (ii) Medium and (iii) High. The spatial distribution indicates maximum parts of the study area is covered with medium aquifer vulnerability to groundwater pollution. Only 4.7 % aquifer, located in the south-western part of the study area, is highly vulnerable to groundwater pollution. Different management plans for different vulnerable zones are suggested. Further groundwater withdrawal is not recommended for highly vulnerable zones.

Keywords: Groundwater pollution, Hydraulic Conductivity, Isopach, Management Plans

Introduction

For sustaining life on earth, water is one of the essential components. Groundwater is the second largest freshwater reserve. In most of the areas of the world, groundwater signifies the key source of drinking water, particularly where the surface water resources are inadequate or polluted to considerable extent (WHO, 2006, Chae et al., 2004). In those regions, groundwater consumption is much more than it is naturally replenished and therefore, as a consequence aquifer are rapidly depleting (Postel, 1993). The growth of population is expected to stress water availability even many folds in the near future (Shiklomanov, 2004, Zektser et al., 2004) specifically in underdeveloped and developing countries where most of the people are already not being able to access safe drinking water (Bretzler, Johnson, 2015). Further to complicate this matter, it has to be considered that due to contamination, many aquifers are vulnerable to pollution (UN, 2003, US Global Change Research Program, 2000).

Vulnerability assessment for groundwater management encompasses with a systematic information of the geological settings of any region are most appropriate approach to deal with safe water scarcity problems (Chaminé, 2015, Krishna et al., 2015; Bernard-Jannin et al., 2017; Azimi et al., 2018; Mondal et al., 2018; Ray and Ray, 2019). The groundwater vulnerability models evaluate the chances of groundwater contamination and articulated in the form of vulnerability map. This map then categorises the specific region into numerous hydro-geological sub-regions with diverse stages of severity in the form of contamination (El-Naqa et al. 2006; Kumar et al., 2015; Jesiya and Gopinath, 2019).

In semi-arid regions across India, where groundwater is the only source of about 33% of the usable water that country and city water departments supply to both the households and industries (USGS, 2005). It supplies drinking water for more than 90% of the rural population. Among the various source of water, groundwater is considered as the safest freshwater source for drinking purpose. The total annual groundwater recharge in India is estimated to be around 432 BCM (CGWB, 2014). The semi-arid state, like Gujarat, depth to water level for 10 % of the wells analyzed have shown the water level in the range of 0-2 m below ground level (bgl), 33 % of the wells have shown the water level in the range of 2-5 m bgl. About 29 % of the wells analyzed have shown the water level in the range of 5-10 m bgl and 21 % of the wells have shown the water level in the range of 10-20 m bgl. The deeper water level in the range of 20-40 m bgl and more than 40 m bgl are shown by about 8% of the wells analyzed (CGWB, 2014). Therefore, it indicates a severe depletion in the quantity of groundwater of Gujarat. In many parts of Gujarat, groundwater levels are declining significantly. Piezometric levels have been a secular decline in the alluvial tracts of Mehsana, Gandhinagar, Banaskantha, Patan, and Ahmedabad. As a result, farmers moved from open wells to dig wells to dug-cum-bore wells and then to tube wells to tap water from lower aquifer strata. On the other hand, during lean seasons, seasonal depletion of groundwater and drying up of wells takes place in parts of Sabarkantha district which are underlain by hard rock (Kumar and Singh, 2007). Here, it is important to investigate the dynamicity of groundwater of this region. Hence, in the present study, Gandhinagar, the State Capital of Gujarat, is preferred as the study area.

Material and Method

Study Area

The study area (Figure 1) is located at 23.56˚ to 23.01˚ N latitude and 73.33˚ to 72.33˚ E longitude. The district Gandhinagar is surrounded by four districts in different directions such as Sabarkantha district to the north-east, Kheda district to the south-east, Ahmadabad district to the south-west, and Mehsana district to the north-west. The city Gandhinagar is placed on the River Sabarmati bank.

There are four sub-districts under the district Gandhinagar namely Mansa, Kalol, Dehgaam and Gandhinagar. Though the study of entire Gandhinagar district is required, the present work is limited to sub-district Gandhinagar due to constrain of time.

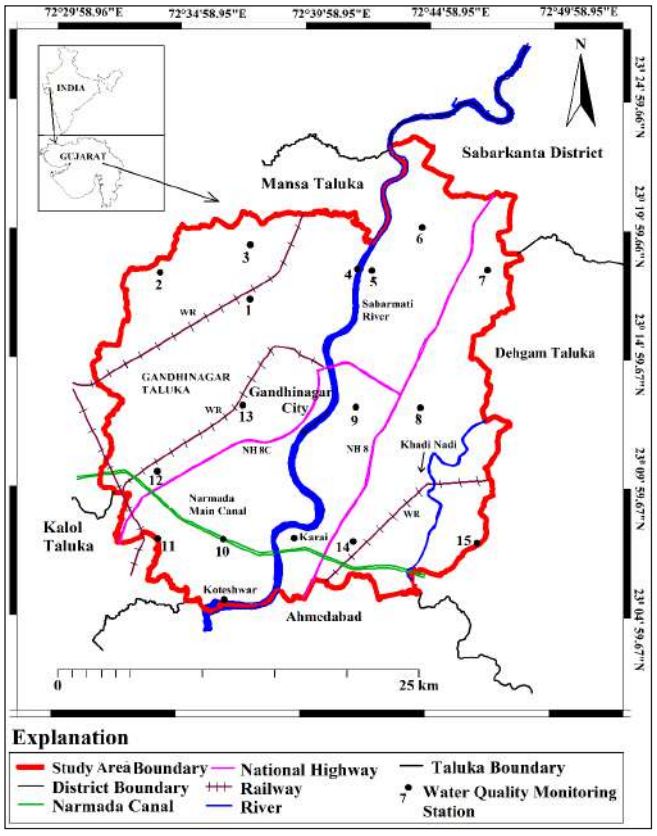

Figure 1.Location Map of Study Area

The groundwater quality is dependent on many factors of which the geology and climate of the region play a vital role in influencing the character of the groundwater. The succession of stratigraphy met in Gandhinagar differs from even features of dark grey to black fissile shale, carbonaceous grey shale's with thin coal beds, silts and sandstone and micaceous sands with multi-coloured clay stones and thin carbonaceous streaks (Geology and Climate, Forest Department, 2014). The total district is a part and parcel of the North Gujarat plain with neither hilly features nor any prominent natural water bodies. Sabarmati and Khari are the major rivers draining the sub-district.

The overall temperature of Gandhinagar district rises hastily from February to May and May is the warmest month with average diurnal temperature maximum and minimum of 41°C and 26°C respectively (CGWB, 2014).

This district is a portion of Cambay basin and formed with quaternary alluvium which is mainly containing clay, gravel, kankar, sand and silt. This region has a multi-layer aquifer system with the phreatic aquifer from confined to semi-confined condition (UNDP, 1976).

The usual elevation of this region is about 48 m above mean sea level (AMSL). On the bank of river Sabarmati, isolated high grounds with elevations more than 60 m AMSL, are detected.

Mostly, the soils in this area are sandy loam type with grey to brown colour, deep and have moderate to good permeability and drainage. The alkali and saline types of soils are demarcated in the western part of the district. They are characteristically deep, grey, calcareous, sandy loam with very low permeability (CGWB, 2014).

Preparation of Different Data Layers

The demarcation of diverse groundwater vulnerable zones is established on the collective weights of different criteria like hydraulic conductivity of the aquifer, groundwater velocity within the aquifer, the thickness of top confining layer and height of the piezometric surface above the bottom of top confining layer. Out of these four thematic maps, two were already prepared by Siddha and Sahu (2018) and used in the present analysis.

Pre-monsoon and post-monsoon data of groundwater level of the study area were collected from GWRDC, Himatnagar. Some background data about the study area were collected from CGWB, Ahmadabad. Toposheets of Gandhinagar Sub-district ware collected from Survey of India, Sector-10, Gandhinagar, Gujarat, India.

The Thickness of the Top Confining Layer (Th)

The thickness of the top confining layer of 8 locations of Gandhinagar sub-district was estimated from the lithologic data. These values were plotted on the sheet and contour map was prepared manually. The scanned map was georeferenced (Geographic Lat/ Lon WGS84-UTM-ZONE-43N) with ground control points obtained from the topographic sheet (SOI) by ERDAS IMAGINE 2014 Intergraph software. ILWIS 3.7 Academic Version GIS software was used to digitize the entire map.

Height of Piezometric Surface Above the Bottom of the Top Confining Layer

This parameter gives an idea about the nature of the aquifer. If the piezometric surface is above the base of the confining bed and is saturated with groundwater, then the aquifer is definitely a confined one. On the other hand, if the piezometric surface drops below the base of the confining bed then the aquifer will become an unconfined one. On lowering of the piezometric surface due to a high abstraction of groundwater, the hydrostatic pressure in the confining bed also decreases leading to an increase in the lithostatic pressure. The increased lithostatic pressure results in the decrease of the porosity of the confining bed material and release of water from the aquifer. This water from the overlying clay body may contain toxic material and hence will pollute the water present in the aquifer. Height of piezometric surface above the bottom of the top confining layer of 8 locations of Gandhinagar Sub-district was calculated from the lithologic data of Gandhinagar district.

Preparation of Vulnerable Map

The definitive aim of vulnerability maps is to categorize the area into numerous parts, which have different levels of vulnerability. A comprehensive theory on groundwater vulnerability mapping can be learned in Vrba and Zaporozec (1994) and also in Zhang et al., (1996).

The groundwater vulnerability mapping was carried out using the ILWIS3.7 Academic Version, GIS software. Generally, this method is known as a multi-criteria evaluation (MCE) (Voogd, 1983). There are numerous methods and techniques available for determining interclass/ intermap dependency. In the present study, a probability-weighted approach has been implemented. This approach permits a linear amalgamation of probability weights of each thematic map (W) with the individual impact value (IV) (Sarkar and Deota, 2000; Sikdar et al., 2004, Sahu and Sikdar, 2008, Siddha and Sahu, 2018). Depending upon their suitability to hold groundwater, the thematic maps have been ranked on a scale of 0 to 5. Different parameters have a distinct character of measure on groundwater vulnerability analysis.

The rank of each of these criteria has been converted to a probability map weight (Wi) using Bayesian statistics. This statistical tool is a mathematical technique that operates probabilities to statistical questions. It delivers the techniques to update the beliefs in the suggestion of

new data set using the Bayes' theorem. Bayesian statistics was termed after Thomas Bayes, who articulated a detailed definition and theory of Bayes' theorem in 1763. In this study, The maps have been divided into ranges of values and rating has been ascribed to each of the range. These scores are again converted to Capability Values (CVi) using Bayesian statistics. These Capability Values (CVi) are then multiplied with the respective map weights of each thematic map to arrive at the final weight map. The procedure of weighted linear combination dominates in raster-based GIS (Geographic Information System) software systems (Eastman et al., 1995; Eastman, 1996). Mathematically, this can be defined as:

GWp = Groundwater pollution,

Th = Thickness of top confining layer,

V = Groundwater velocity within the aquifer,

K = Hydraulic conductivity of the aquifer and

Ps = Height of piezometric surface above the bottom of top confining layer.

Groundwater pollution vulnerability map values can be expressed as:

GpV = Groundwater pollution vulnerability,

Wi = Map weight and

CVi = Capability value.

Result and Discussion

Height of Piezometric Surface Above the Bottom Layer

The spatial distribution of the height of piezometric surface above the bottom layer is shown in Figure 2(a). This map depicts the height variation of piezometric surface above the bottom of the top confining layer.

The height of Piezometric surface above the bottom of the top confining layer is maximum at the central part of the study area. It gradually decreases while moving the eastern and western part of the study area. The south-western corner of the study area shows the lowest depth.

Groundwater Velocity

The spatial distribution of the groundwater velocity is shown in Figure 2(b). This map indicates that the regions have variable groundwater velocity. The highest groundwater velocity is observed in the central part of the study area whereas lower groundwater velocity is reported along the western margin and south-eastern part of the study area.

The Thickness of the Top Confining Layer (Th)

The spatial distribution of the thickness of the top confining layer is shown in Figure 2(c). The map reveals that the lowest thickness of the top confining layer is found at the south-western corner of the study area whereas maximum thickness is observed at the north-central part of the study area.

Hydraulic Conductivity of the Aquifer (K)

The spatial distribution of the Hydraulic Conductivity of the aquifer is shown in Figure 2(d).

The map indicates maximum hydraulic conductivity is found north-eastern part of the study area whereas the western and southern part of the study area show medium hydraulic conductivity.

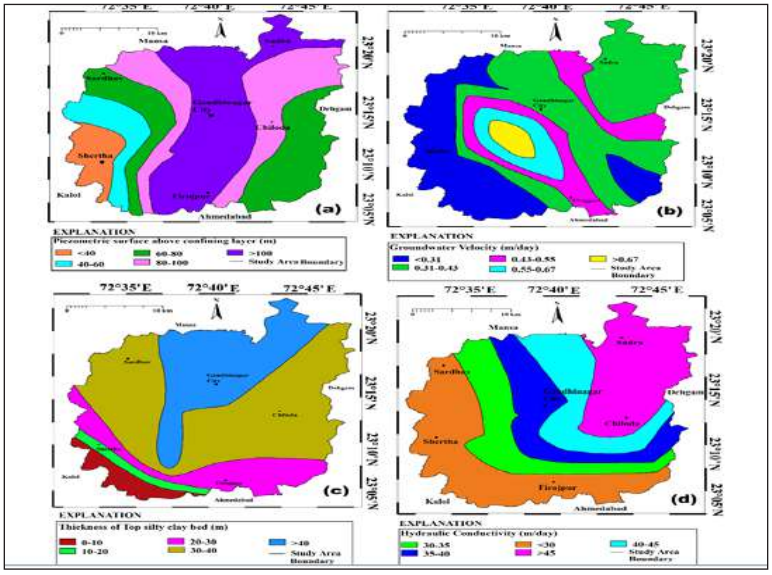

Figure 2.Thematic Maps Showing Spatial Distribution of (A) Height of Piezometric Surface Above the Bottom of Top Confining Layer (B) Groundwater Velocity (C) Isopach of Top Silty Clay Bed (D) Hydraulic Conductivity of the Aquifer

Table 1.Thematic Map Weights and Capability Values Of Vulnerability Analysis of the Aquifer with Respect to Groundwater Pollution

Thematic Layers	Rank	Map Weight (Wi)	Category	Rank	Capability Value (CVi)
Piezometric surface above confining layer (m)	3	3/13=0.231	<40	5	0.33
			40-60	4	0.27
			60-80	3	0.20
			80-100	2	0.13
			>100	1	0.07
Hydraulic Conductivity (m/day)	3	3/13=0.231	<30	1	0.07
			30-35	2	0.13
			35-40	3	0.20
			40-45	4	0.27
			>45	5	0.33
Groundwater Velocity (m/day)	2	2/13=0.154	<0.31	5	0.33
			0.31-0.43	4	0.27
			0.43-0.55	3	0.20
			0.55-0.67	2	0.13
			>0.67	1	0.07
Thickness of top confining layer (m)	5	5/13=0.384	0-10	5	0.33
			10-20	4	0.27
			20-30	3	0.20
			30-40	2	0.13
			>40	1	0.07

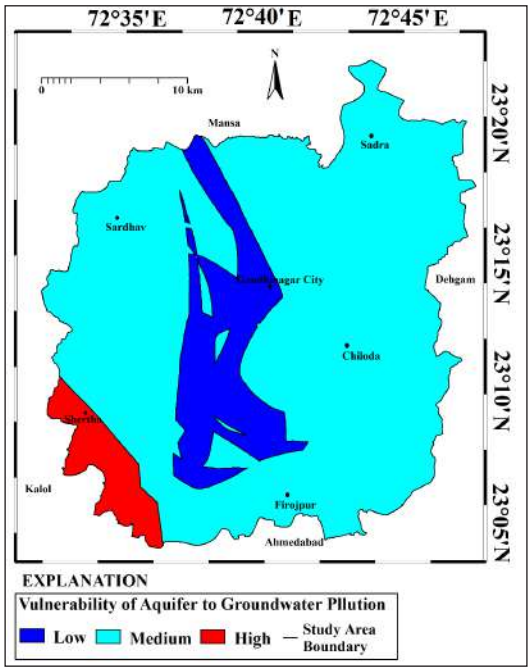

Figure 3.Aquifer Vulnerability Map of the Area in Gandhinagar Sub-District

Aquifer Vulnerability Analysis

Overlay analysis is carried out to determine different aquifer vulnerability zones. For overlay analysis, different rank and map weight are assigned to different thematic maps and capability values are assigned for the different categories of each thematic map shown in Table 1.

The resultant final weight indicates the vulnerability of the aquifer to groundwater pollution in the area in Gandhinagar Sub-district.

The spatial distribution of the aquifer vulnerability Figure 3.

This map depicts that regions with high to low vulnerability are present at the west-southern parts and central parts of the study area respectively.

The vulnerability value ranges from 0.09 to 0.27 and is classified into three categories low, medium and high. About 4.7% of the total area falls under the category of highly vulnerable class.

The area in sq.km and the percentage of the total area covered by each category are given in Table 2.

Table 2.Area Covered by Different Zones Vulnerable to Groundwater Pollution

Category	Weight range	Area covered (sq.km)	Percentage of the total area
Low	0.09-0.18	95.951	14.02
Medium	0.18-0.27	557.082	81.28
High	>0.27	32.277	4.70
Total	---	685.31	100

Conclusion

The idea of groundwater vulnerability is primarily centred on the hypothesis that the physical environment may deliver some grade of safety to groundwater against the natural effects, particularly relating to contamination inflowing the subsurface environment. Subsequently, some zones are more vulnerable to contamination of groundwater than others. The fundamental aim of vulnerability maps is to allocate the region into numerous parts, which have dissimilar stages of vulnerability to the contamination of groundwater.

Present study reveals that the entire Gandhinagar sub-district can be classified into three following aquifer vulnerability zones:

- Low
- Medium
- High

In Maximum part of the study areas like Sadra, Chiloda, Firojpur and Sardav fall under medium aquifer vulnerability category. In this area, the status quo of groundwater withdrawal should be maintained. Low aquifer vulnerability to groundwater pollution is found in the central part of the study area, particularly in Gandhinagar city. In this area, further development of urban and agricultural practices is recommended. Only 4.7 % aquifer, located in the south-western part of the study area, is highly vulnerable to groundwater pollution. In these areas use of chemical fertilizers, pesticides and insecticides for the agricultural purpose should be minimized and further groundwater withdrawal is not recommended.

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Article

Application of Graphical Analysis Techniques to Evaluate the Usefulness of School Library Services During COVID-19 Pandemic

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How to cite this article:
Satpathy M. Application of Graphical Analysis Techniques to Evaluate the Usefulness of School Library Services During COVID-19 Pandemic. *Proceedings ICSTRDA* 2021; 28-35.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-02-20

A B S T R A C T

Graphical analysis is a powerful method to analyse data in a quick matter and present in an appealing visualize manner. It includes various techniques and can be done through different tools such as Excel, SPSS, R, Python and MATLAB. To work with techniques practically, a study on the services of select school libraries will be conducted. School Libraries play an essential role in providing resources for the intellectual development of the students. Other than the classroom, the library provides a space for the students for affirming the teaching and learning process. Resources, references and space are the three essential services that the library offers. COVID-19 pandemic has brought in an unprecedented situation and forced the physical closure of the academic institutions. Somehow libraries have found ways and means to deliver their services in the virtual mode thereby benefiting its users in teaching and learning process. These may include virtual reference services, e-document delivery services, organising virtual literacy events, etc. The evaluation of the usefulness of the services delivered virtually is required by the libraries to identify their success rate. The study is based on the objective to apply techniques of graphical analysis to evaluate the usefulness of the school library services delivered during the pandemic. The study will use survey methodology to collect the data from school students of different age groups and restricted to four schools from Odisha. The checklist, rating scale, opinionnaire, questionnaire and interview method will be used to collect data. The collected data will be presented in the graphical format. They will be analysed using one-way displays of one-way data, two-way displays of one-way data, two-way data, multivariate data techniques which will include time series, plots, charts and histograms. The study will depict the various techniques in graphical analysis and show their implementation using collected data. Additionally, the study will reflect the outcome of the evaluation of role of library services during COVID-19 pandemic.

Keywords: Graphical Analysis Techniques, Survey Methodology, Check List, Rating Scale, Opinionnaire, Questionnaire

Introduction

Across the world, the Corona virus pandemic (COVID-19) shut down schools and forced parents to take charge of their children's schooling which could enhance existing inequalities in children's learning opportunities due to the ability to provide effective home schooling, resources available (Jæger and Blaabæk, 2020). This virus is highly contagious and forced people to change their lifestyle. This unprecedented situation leads to a change in the system of teaching and learning process also (Ishtiaq, Sehar and Shahid, 2020). The regular education changed to distance education while classroom learning changed to self-learning. And this possible with the help of advance technology and modern tools. To cope up with this situation, school libraries and librarians played an important role along with other institutions. The challenge for school librarians was to support the school curriculum, maintain a continued interest in reading (Suraweera, et al.,2020). As usual the challenge is whether the school librarians possess the competencies to adopt technology with proper training, as they play a main link between digital resources and users in times of crisis. (Kumbar and Pattanshetti, 2013).

Many school libraries stopped providing services to their users due to lack infrastructure and funds, while many libraries continued to provide their services online to their users to cope up with the mission of their parent organisations. Students are the major stakeholders of the school library. Though all the students have no equal access to resources to adopt with the changing technology it is important to study the usefulness of the school libraries from students' perspective. To evaluate the usefulness of the school library services, the graphical analysis techniques were applied to the collected data. It was found out that Government school libraries were somehow unable to provide the required information in comparison to Private school libraries.

Background Study

Schools work on a primary mission to educate children to prepare them to become responsible and productive members of society and school also supports students in academic as well in non-academic arenas like health and skill (Hoffman and Miller, 2020). The term school library is a school's physical and digital learning space where reading, inquiry, research, thinking, imagination and creativity are central to students' information-to-knowledge journey and to their personal, social and cultural growth. It may be digital or physical space (IFLA, 2015). Resources, references, and space are the three essential services that the library offers. IFLA (2015) explained that a school library with strong networked information technology infrastructure provides access to collections, community resources, and curated digital collections. It also provides tools for undertaking research-based inquiry and the construction, presentation and sharing of knowledge. Suraweera, et al., (2020) stated that libraries performed under constantly changing environment due to COVID-19 pandemic where they need to keep their focus on the children's need and provided current services and developed new services to fulfil those needs. These new services may include virtual reference services, e-document delivery services, organising virtual literacy events, etc. "To deal with the rapidly changing outbreak or epidemic disaster libraries, librarian responds to rapidly evolving information and guidelines, for acquiring, processing, interpreting, repackaging and disseminating relevant, up-to-date users and should always be ready and enhance its capabilities and move away from traditional way and to adopt virtual ways" (Ishtiaq, Sehar and Shahid, 2020).

To understand the usefulness of these new services or any other services adopted by the school libraries, evaluation is an important element. IFLA (2015) described that evaluation of school library services is an essential aspect of school library development. This serves accountability purposes and helps to determine if the school library services and programs are meeting the needs of the school community. IFLA (2015) also stated that evaluation influence the stakeholders and contribute to the ongoing transformation of school library services. Selecting an evaluation method or approach will depend on the needs of the school community and the developmental stage of the library. Though it is an unprecedented situation, it is important to analyse challenges related to emergency remote teaching and role of libraries and librarians and their impact on the students (Ferri, Grifoni and Guzzo, 2020).

Graphical analysis is a powerful method to analyse data in a quick matter and present in an appealing visualize manner. It includes various techniques and can be done through different tools such as Excel, SPSS, R, Python and MATLAB.

There is no better way to express data in a pictorial form as it is worth a thousand words, numbers, there is no better way of getting a 'feel' for the data (Public Health Action Support Team (PHAST), 2020). Lewi (2006) defined Graphics as translations of numbers in the form of a drawing, design, or plan to explain or illustrate something. Moses (2020) illustrated that the graphical presentation of statistical data is a relatively recent development, and it depends upon two aspects such as: (a) the data and representing them graphically, (b) the intended reader's ease of correctly understanding the resulting graph.

"COVID-19 provides a unique opportunity for academic librarians to rethink their key roles and core values in supporting teaching and learning of their institutions during this very challenging time" (Leo, 2020). Looking into the above observations by various experts and professionals, an effort is made to undertake the present study.

Statement of Problem

It is a fact that all the schools do not have well-established libraries equipped with latest technologies and tools. And when it comes to the rural area, the chances of these services are rare. In the same way the school children may or may not have the skills to adopt the modern technology and tools like smart phones and laptops. Surfing through internet to find information is not an easy task for all. In this context, school libraries play an important role. As we know the COVID-19 pandemic has forced everyone to stay at home, so the home schooling is continuing. In this crisis majority t of school libraries provided many services. But the question here arises as to what kind of services t were provided during this pandemic? whether these services reached to all the students? Whether all the students got benefited from the library? Whether the services provided by the library are enough to fulfil the information requirement for their curricular and co-curricular activities? Last but not the least, Whether the students were satisfied with the services?

Keeping all these question in mind, the objectives and methodology were Framed:

Objectives

The main objective of the study is to apply techniques of graphical analysis to evaluate the usefulness of the school library services delivered during the pandemic period. Besides these other objectives of the study are:

- To compare the services provided by the school libraries before the pandemic and during the pandemic
- To evaluate the usefulness of these services to the students
- To understand the different graphical methods which are useful in LIS field
- To understand the application of these techniques

Scope and Limitation

The study be will be helpful to find out the services provided by the libraries selected. The study will focus on benefits that the students get due to these services.

Due to COVID-19 restriction the study was conducted in a limited area with a small sample size. The study will be covered only four schools of two localities that is urban area and rural area namely Bhubaneswar and Anandapur two localities of Odisha State.

Methodology

The study was conducted using the following methodology to achieve the mentioned objectives. Firstly, an elaborative literature Review was conducted, samples with geographical scope in consideration were selected for data collection. Four school of different categories namely Private Urban CBSE School, Private rural CBSE School, Government Urban Odia (Odisha State Board) School, Government Rural Odia (Odisha State Board) School were taken up for the study.

Secondly, survey methodology with questionnaire tool was adopted to collect data. Questionnaire contained twenty questions among which eight were general and twelve questions were specific questions related to library services provided during pandemic period. Questionnaire was made using google form and was mailed to the respondents. Interview was also conducted for the same set of questions to collect data from some students who did not have smart gadgets. Snowball technique was applied to select samples, and Initially the questionnaires were sent to only 4 recipients of each school and these recipients shared it with other respondents.

Finally, the collected data was presented in various graphs according to the nature of data.

Graphical Method

Graphs provide quick, visual summaries of essential data characteristics and a powerful evaluation tool. It helps to represent complex statistical equations in a few simple plots. Generally graphical method deals with quantitative data. It is a key component of Exploratory Data Analysis (EDA). These graphs provide information about concentration ranges, shapes of distributions, extreme values (outliers), relationships between different data sets, trends (Interstate Technical and Regulatory Council (ITRC), 2013).

"William Playfair is usually credited with inventing the area charts as well as the line, bar and pie charts" (Wikipedia, 2021). Wainer (2003) stated that in 1786 Play fair's Political Atlas with spatial dimensions published and brought a major conceptual breakthrough in graphical presentation.

Graphical methods are defined by model schemes, to analyse and improve existing solutions. These include process mapping methods, Ishikawa diagrams and Gantt schedules and graphs. Process mapping is one of the most used graphical methods (Romanowski and Nadolny, 2018).

Wainer (2003) gave a divisional structure of graphical techniques. They are as follows:

- One-Way Displays of One- Way Data
- Two-Way Displays of One-Way Data
- Two-Way Displays of (Mostly) Two-Way Data
- Two-Way Displays of Multivariate Data
- Three-and-More-Way Displays of Multivariate Data

Wikipedia (2020) gave a list of different graphical techniques and divided those according to their use. Some of these techniques will be applied in this study to evaluate.

Simple Displays

- Area chart

- Histogram
- Bar chart
- Line chart
- Pie chart
- Scatterplot
- Tree Map
- Box and Whisker chart
- Waterfall chart
- Stacked bar

Data Analysis

The collected data represented in various graphs is analysed in this section:

Area Chart: Area chart helps to describe quantitative data related to an area or a location.

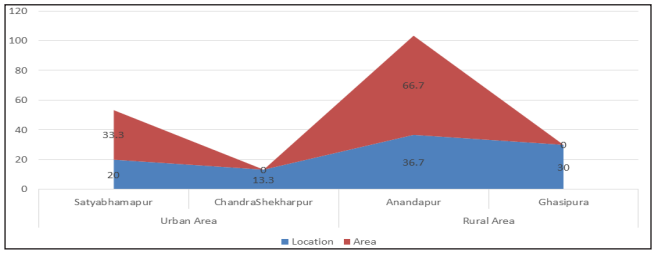

Figure 1.Area Chart

Figure 1, displays that 33.3% of sample received was from urban areas whereas 66.7% of sample received was from the rural areas. The ratio between the samples received from urban area and Rural area is 1:2. The Figure also depicts that from Anandapur highest number of responses was received and that is 36.7% of the total population whereas from Chandrasekharpur, the lowest number of responses was received, it was 13.3% of the total population.

Pie Chart: A pie chart is a circular statistical graph. This is divided into several parts according to the data and demonstrate the quantitative value for each piece of data. Wikipedia (2020) stated that pie chart is not a preferable method for data illustration. There are several types of pie charts such as Doughnut chart, Exploded pie chart, Polar area diagram.

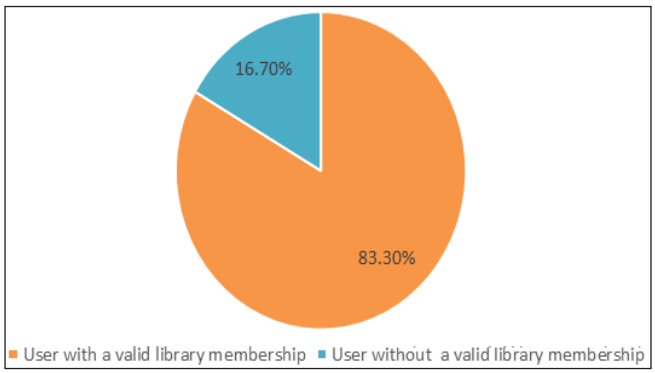

Figure 2.Pie Chart

Here the pie chart (Figure 2) is divided into two parts. Yellow coloured section represents the value of percentage of users with a valid membership id and blue coloured section represents the percentage of users who do not have valid membership id. This pie chart depicts that nearly 83.30% students have their valid library membership Id while 16.70% do not have their membership Id.

Histogram: Histogram represents the data in a several non-overlapping blocks with equal interval (PHAST, 2020).

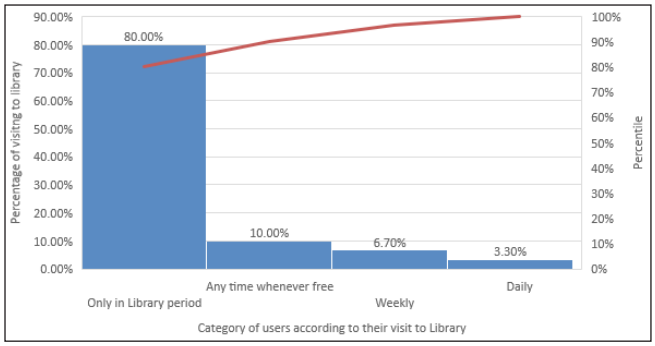

Figure 3.Histogram

There are four separate columns in Figure 3 that represents that 80% students use the library only during library period while 10% students said that they visit library whenever they are free. 6.70% of the students and 3.30% of the students visit the library weekly and daily respectively. The histogram also represents that it took 80% as 100 percentiles to make it easy for the calculation and according to that all the values were set.

Table 1

S. No.	Services	Percentage of student agreeing with the provision of the services
1.	Reading space	86.70%
2.	Issue/return of books	90%
3.	Provides makerspace	70%
4.	Literacy activities	56%
5.	Support your hobbies and subject interests	70%
6.	Assists you to find books or materials you need	53.30%
7.	Assists in curricular and co-curricular activities	40%
8	Supports in extracurricular	33.30%
9	Organises book fair	13.30%
10	Provides orientation	6.70%
11	Other	0%

Scatter Plot: Scatter plot is useful to show the relationship between continuous variables. Mostly it is used to show two variables which are constantly changing. It is useful because it retains the exact values of data.

The Table here shows different services provided by a school library. In a close ended questionnaire with checkboxes the respondents gave their view with above mentioned percentage. The same table is presented using scatter plot for better visualization.

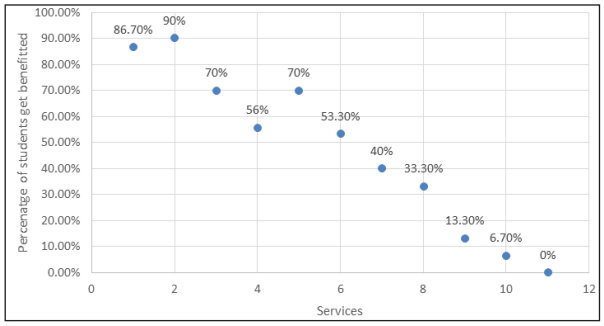

Figure 4.Scatter Plots

Responding to the question regarding services provided by their libraries before COVID-19 Pandemic, 86.70% of total respondents said that their libraries provide the reading space while 90% of the respondents agreed that their school libraries were allowing them to issue and return the books from the libraries. In the same way only 13.30% and 6.70% of respondents said that their libraries organise book fairs and provide orientation programs, respectively.

Bar Chart: Bar chart is one of the most used graphical method. It is used to compare the value of multiple variables in a single chart (Sonnad, 2002). It is used to represent categorical data in a single chart (PHAST, 2020).

Figure 5, shows that nearly 96.70% respondents used internet to find required information and coming to next 63.30% respondents said they took help of their teachers and read books to fulfil their information needs. While looking at the usefulness of the library in COVID-19 situation, only 10% of the total respondents said that they took help of library by visiting physically or by telephonic mode.

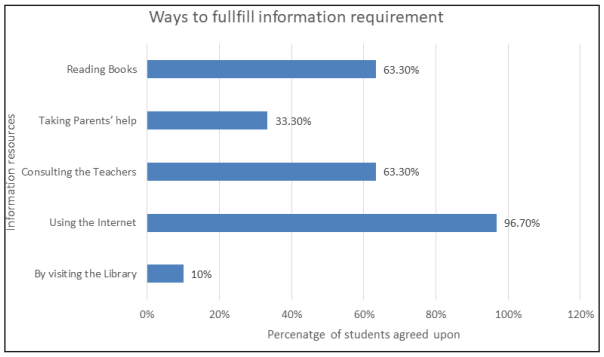

Figure 5.Bar Chart

Waterfall Chart: A waterfall chart helps in understanding the positive or negative values that occur sequentially. These values can be category based and time based. One can use waterfall chart for analysis of various quantitative data (Wikipedia, 2020). Giving services during times of crisis always adds positive value to the community. In this regard waterfall chart can be used to express value.

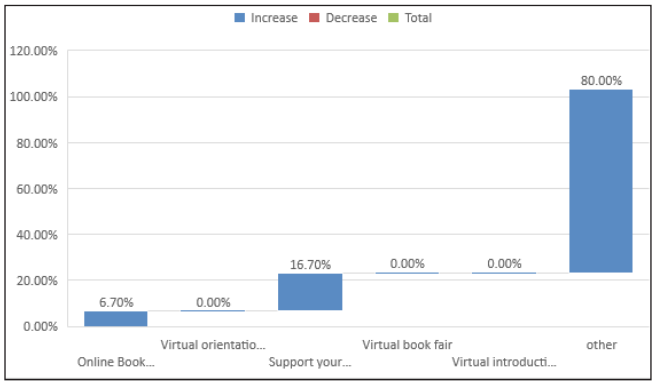

Figure 6.Waterfall Chart

Figure 6 represents that 6.70% students agreed that their library provides online book delivery services to them and 16.70% students said that their library supports them to fulfil their information requirement for assignments and projects. 80% respondents said that their library did not provide any services during COVID-19 pandemic. None of the selected libraries provided virtual orientation programme, virtual book fair or virtual introduction to OERs during the pandemic period.

Stacked Bar: Stacked bar is used when there is a necessity of relative decomposition of each primary bar based on the levels of a second categorical variable. Each bar consists of several sub bars and each stacked bar is the same as before (Chartio, 2020). Here the stacked bar has two sub bars one for yes and other for no which depicts the communication between library and student, vice versa as a whole.

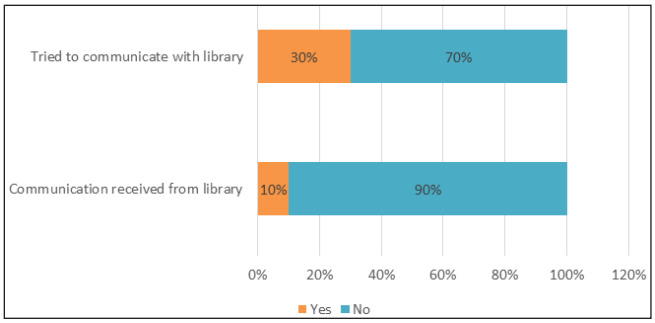

Figure 7.Stacked Bar

Figure 7, shows that 30% of respondents tried to communicate with library during the school closure because of pandemic to fulfil their information needs but on the other hand only 10% respondents received communication from the library.

Radar Chart: Radar chart is also called as spider chart. It represents multivariate data in the form of a two-dimensional chart of three or more quantitative variables represented on axes starting from the same point (Wikipedia, 2020, FusionCharts, 2021). The color codes help to identify each node that indicates the quantitative value.

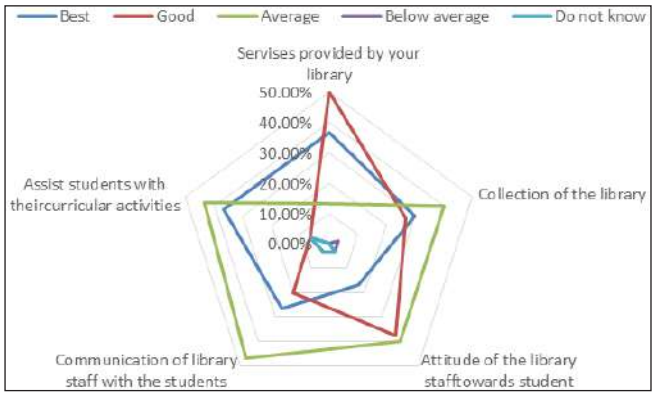

Figure 8.Radar Chart

Figure 8 depicts that 36.70 % respondents opined that the services provided by their library is the best while the same respondents said in assisting students with their curricular activities their library is best. Only 26.70% respondents responded with the best rating for the communication of library staff with them. Only 30.00% and 16.70% of respondents said that they were happy with their library collection and library staff's attitude, respectively. It also depicts that in four cases, students gave average rating to their library whereas only in one case that is services provided by their library were rated with Good option. Respondents who gave below average ratings was very minimum.

Findings

The study was conducted to find the usefulness of information services of the school libraries during COVID-19 pandemic. In this regarding several questions were asked through the questionnaire and data received was analysed.

First two questions were asked to students to know whether their school has a library or not and whether they had to carry a valid library card. In response to these questions 100% of respondents said yes, their schools had libraries. But only 50% respondents said that they have valid library card. It was noticed that these 50% respondents belong to CBSE Schools of both Urban and Rural areas.

Third question was asked as to how frequently they visited the library before COVID-19 pandemic, to know the potential of students. It was observed that most of the students nearly 80% visited library only in the allotted library period. These 80% students belong to all category of students. But it is important to note that 13.3% of respondents who visits library either daily or any time whenever free belonged to CBSE Schools of both rural and urban areas. On the other side, 6.7% respondents who visited library weekly belonged to CBSE schools of both the areas.

For the question of what kind of services were provided by their libraries before COVID-19, more than 50% of students of all category agreed that their library provided reading space, makerspace, issue/ return of books and assist them in finding books, conduct literacy activities and help them with their hobbies and interest. Only 6.7% respondents said that their library provides orientation.

In the next two questions, it was asked as to how they fulfilled their information needs during the lock down and whether their library put up a list of OERs in the school website. In response to these two questions, 96.7% of respondents answered that they used internet to find information while 90% of the respondent did not visit library physically or virtually to fulfil their information need. 63.7% respondents depend upon syllabus and books to fulfil the need. Surprisingly While 96.7% respondents used internet, most of them do not know about OERs. Neither their library put any list of OERs on the library website. It was important to point out that both the Odia (Odisha State Board) school libraries do not have their own school websites, while the CBSE schools only provide a static page giving brief information about their library.

On the questions regarding their preferred search mode on internet and how many books they had read for their assignments, nearly 70% respondents replied with the answer that they do not know while 30% respondents said they had used two to three books to complete their assignments and their preferred search mode is searching for pdf formats and watching video tutorial.

Next two questions were asked to know the interaction between library staff and students during the lock down. The responses received stated that only 30% respondents of all category tried to get in touch with library for their information needs but only 10% respondents belonged to CBSE board of both urban and rural areas who received communication from their libraries.

For the question regarding what the services were provided by their library during the COVID-19 Pandemic, 80% of respondents said that their library did not provide any service during the lockdown and only 16% said that their library helped them in fulfilling the information requirement for assignments and projects and only 6.7% of respondents said that their library provided online book delivery service during the lock down. It was also noticed that none of the libraries organise virtual book fairs or introduced OERs and or conducted Virtual orientation program. Though space was provided for students to respond under the others option (library services), none of the respondents filled it

with addition information which reflects that those libraries did not organise any engagement activity for their students.

Lastly when it was asked to give rating to their library services and staff, in four cases highest number of students rated them as average, while only in service provided by the library was rated as good. It is an important thing that more than 50% students are happy with the collection of their libraries.

Discussion

After the analysis of the data was done and findings were noted down it can be stated that all the services provided by the library do not reach out to all the students, as there was variation noticed in received data. A larger sample size may solve this issue. All families do not have similar financial status and environmental condition. So, all the students may not have similar resources and have same attitude. All these condition leads to learning inequalities. It was also noticed that many students prefer internet over the library and the range of differences were noticed (nearly 86%) which is huge. The status of interacting between library staff and students was not reflecting well. Library professionals should develop personal competencies and professional competencies to solve all these issues. Professional competencies relate to the knowledge of information resources (OERs), information access (information retrieving techniques), technology (Integrated library management system, Computer, E-resource etc.), management (Change management, Human resource management and resource management) and research (Use and User study). Personal competencies relate to the knowledge of skills (Communication, Interaction and interpretation), attitudes (Behaviour and response) and values (Lifelong reading, morals and positive vibes) (Kumbar and Pattanshetti, 2013).

By willing to accept trends and experimenting, a researcher can use many other graphical techniques for data analysis. For conceptual presentation in case of user study and use study, mind maps can be used. Conducting a project work like moving of library or data migration can be easy planned with the help of PERT, CPM and Gantt Chart. Researchers can use geo charts to represent any data that is related to the geographical area. Besides these box plots, box-whiskers, venn diagrams and flow charts can be used for data analysis in LIS field (Wikipedia, 2020). Researcher can also find many more graphical methods and can attempt to convert the collected data into graphs using different software. SPSS, R, MATLAB and Python are some popular software which helps researchers in analysing the data and presenting it in a graphical manner.

Conclusion

The study helps to conclude that the selected school libraries did not explore the opportunities to provide library services in an innovative way. Unavailability of required resources and lack of technical skills acted as obstacles to reach out to the students. One of the major factors adding to the helpless situation is lack of appropriate infrastructure. All most four of these school libraries followed traditional methods to disseminate information, so in the pandemic period they were helpless. It is time to rethink and recheck and reshape the library to meet future needs and tackle any unprecedented situation like COVID-19 in the future. School librarians should go for online options, at least in the field of communicating with users, dealing with their needs by providing them virtual reference service, e- document delivery service to fulfil the information needs (Ishtiaq, Sehar and Shahid, 2020).

In this paper several graphic methods were introduced and their implications in the field of LIS were also described. Graphical methods are useful, right from data analysis to data presentation. There are several methods and techniques available for converting of data into readable graphs. Graphs are mostly used for quantitative data. Sometime qualitative data can also be graphed using mind maps, word clouds, etc. Now a days there are many other methods for data representation are available but in contrast, graphical methods for categorical data are still in infancy (Friendly, 1992). All that is needed is genuine interest and innovative spirit among the school librarians to adopt new tools and technologies.

Acknowledgement

I acknowledge with a deep sense of gratitude to Dr. Rashmi Kumbar, Asst. Prof. CUG; Dr. Minaxi Parmar, Asst. Prof. CUG and Dr. Bhakti Gala, Asst. Prof. CUG for their kind support and guidance throughout the study. I would also like to thank Mr. Sagender Singh Parmar, Phd Scholar, SLIS, CUG for his advice.

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Article

Application of Information Visualization in Academic Libraries: An Overview

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How to cite this article:
Shashikumara AA, Kumbar R. Application of Information Visualization in Academic Libraries: An Overview. *Proceedings ICSTRDA* 2021; 36-39.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-02-18

A B S T R A C T

Academic Libraries have numerous sections and they generates huge amount of data and information while providing number of products and services to its users. The generated data or information will be helpful in taking decisions and improveing the existing services. Proper understand and represent the data visualization is essential. The rapid growth of technology has given lot of software tools and techniques for visualizing the information. The visualization is essential for presenting abstract data or information in innovative and creative way. To implement the visualization, its necessary to know what are the possible areas where libraries can easily implement visualizations. This paper presents an overview of the possible areas where libraries can easily and effectively implement visualisation.

Keywords: Information Visualization, Data Visualization, Academic Libraries

Introduction

With the growing amount and accessibility of data and information, visualization is becoming increasingly important. Libraries have been providing lot of services and day today work, library professionals have been handling lot of data and information. The information visualization is the method of consolidating data into one collective, illustrative graphic. Traditionally, data or information visualization has been used for quantitative work, but ways to represent qualitative work have been shown to be equally powerful (Wong, 2013). The main goal of the data visualization is to communicate information clearly and effectively through graphical methods (wikipedia).

Information visualization is a general term that describes any effort to help people understand the significance of data by placing it in a visual context. Patterns, trends and correlations that might go undetected in text-based data can be exposed and recognized easier with data visualization software (Rouse, 2018). The data visualization excels in capturing a viewer's attention and holding it through storytelling. It addresses a complex problem that could be easily looked over, and simplifies it using design. Naturally, a new market for business has emerged (Wong, 2013). The data visualization can help with the analysis of the information and present it in a way that allows viewers to discover patterns that might otherwise be hard to uncover. Large amounts of data are hard to wade through, but data visualization can make that data easily understandable (Visually, 2018).

Background

Information visualization is not a new concept, but the ever increasing amounts of information and advancements in technology are beginning to establish its use also in everyday practices. The possibility to present overviews of large data sets on the one hand and to interactively explore and discover on the other, offer interesting potential also

for the library community (Merčun, Žumer, 2014). The term information visualization is easily associated with thoughts of making graphics and images.

The views of information and visualization bring up two important aspects to consider: (1) information visualization is used to discover new insights and knowledge from abstract data through graphical means and (2) information visualization can be considered a representation of data that amplifies cognition. The information visualization plays a major role in enhancing communication, understanding and discovering the data.

Information visualization is applied in numerous areas covering every academics, corporates and industries, where understanding the data is very crucial. Some of the prominent areas are economical/ financial analysis, representation of large hierarchies, medical, engineering and physics. Interest in visualization for medical applications has a long tradition in the field of medical imaging. Medical imaging is more concentrated on its problems such as image acquisition and the processing needed to visualize the acquired images (Chittaro, 2001).

Information Visualization in Academic Libraries

Libraries have been generating a huge amount of raw data in the modern environment, such raw data have significate impact over the academic library to present the library data or information in a proper way. Every raw data can be valuable when it is understood and present in a proper way. Information visualization is essential techniques used for presentation of academic library data or information properly. Information visualization can use in day to day library functionalities to extend the library impact through the visualizing their library data. Library collection, expenditure, usage of library services and resources are the major areas for implementation of information visualization in the academic library.

Academic libraries have been facilitating lot of resources and providing various services thereby generating lot of data such as, the usage of electronic resources, volume of library transactions, usage of computers, visitor information, group study rooms, and web-based applications etc. These may be visualized in a variety of ways. The usage data can be analyzed for assessment purposes, to identify previously unrecognized patterns of use that can lead to new and improved library services. It can also used for budget optimization by resource allocation rationalization by creating various sets of visualized content across the data sources within the Library.

Areas of Information Visualization in Academic Libraries

Academic Libraries have various functional division namely, acquisitions, circulation, serial control, technical section, user assistance, digital library, inter-library loan and document delivery services etc. Each section have been generating enormous amount of data in day to day work. For such data or information, visualization can be applied for presenting individual library sections data in graphical way. The major data of an academic library involves the library collection, electronic resources, purchase and acquisition related data and significant usage of library resources as well user stratification about library services offered.

- **Library Administration and Budget:** Library expenditure on various library section, budget analysis, budget proposal
- **Acquisition Section:** New arrivals, books on approval, resources added to the collection in particular period, total number of collection including books and non-book materials
- **Circulation:** Issue, Return, Renewals, Most circulated books, Less circulated books, never issued books, Wilkins of the library and User Feedback, Reference Queries
- **Usage of E-resources and Databases:** Huge amount of data generated in the library usage of databases e-resources, the usage may generate in various frequency that supports the individual databases
- **Library Services:** Academic libraries offered the many library services to satisfy the users' needs some of them are Inter Library Loan, Document Delivery Service, Library Networks
- **Website and other online services:** Website visitor information, Institution, Faculty and Students Publications, Institutional Respository

Importance of Information Visualization in Academic Libraries

Data visualization often said that data is the new world currency, the web is the exchange bureau through which it's traded (Suda, Brian, Hampton-Smith, 2017). With the growing amount and accessibility of data and information, information visualization is becoming increasingly important.

- Flexibility in handling the library data
- Clarity: It is so easy to understand the graph compare to numbers. People can easily understand at a first sight
- Saves time: Since a "picture is worth a million words", using data visualisation helps the audience quickly absorb and interpret the presented data. As a result, data visualisation enables to present a considerably larger amount of data in comparison to the textual format, which often requires repetition in order to help the audience understand the information (Kharb, 2017)
- Less confusion: It is not difficult to get confused when dealing with lots of numbers as people actually need to memorize them to be able to understand the communicated information. The visualizations

dramatically reduces the confusion as people does not need to process the numbers to be able to see where you are going (Kharb, 2017)

- Aesthetic appeal: Visualizations look better and attract more attention than the textual format. They are also more likely to keep the audience interested in the presentation
- Reduce the cost: From the usage statistics of subscribed electronic resources, librarians can find out which are the resources heavily used and less used, so that they can stop renewing less used resources, it will save the subscription cost

Elements of Successful Data/ Information Visualizations

Successful data/ information visualization has three major elements, these are briefly explained below:

- **It understands the audience:** Before creating visualizations, start with the goal, which is to convey great quantities of information in a format that is easily assimilated by the user or decision makers (Stikeleather, 2013)
- **It sets up a clear framework:** The designer needs to ensure that everyone viewing the visualization is on common ground about what it is representing. In order to do so, the designer needs to set up a clear framework, which involves the semantics and syntax under which the data information is designed to be interpreted (Stikeleather, 2013)

Lines and bars are simple, schematic geometric figures that are an integral component of many kinds of visualizations: lines connect, suggesting a relationship. Bars, on the other hand, contain and separate. In studies, when people have been asked to interpret an unlabeled line or bar graph, people overwhelmingly interpreted lines as trends and bars as discrete relations even when conflicting with the nature of the underlying data (Stikeleather, 2013).

- **It tells a story:** Visualization in its educational or conformational role is really a dynamic form of persuasion. Few forms of communication are as persuasive as a compelling narrative (Stikeleather, 2013)

Storytelling helps the viewer gain insight from the data. Information visualization is a process that transforms data and knowledge into a form that relies on the human visual system to perceive its embedded information. The goal is to enable the viewer to observe, understand and make sense of the information (Stikeleather, 2013).

Visualization designers need to dig into the data in order to gain an understanding of it, also to connect with the visualization's audience. Good designers know not just how to pick the right graph and data range, but how to be a compelling storyteller through the visualization (Stikeleather, 2013).

Tools and Techniques of Data Visualization

As technology continues to grow, it has given many software tools to visualize the data and information to the society. Similarly it also offered many tools and techniques to academic libraries. Some of them are mentioned below:

Tools: Creating charts and infographics can be time-consuming. But the visualization tools can make it easier. One of the best ways to get message across is to use a visualization to quickly draw attention to the key messages, by presenting data visually it's also possible to uncover surprising patterns and observations that wouldn't be apparent from looking at stats alone (Suda, Brian, Hampton-Smith, 2017). Some of the well-known and free tools are: Augl, Bonsai JS, Candela, Canva, Carto, Chart Blocks, Charted, Chartist.js, ColorBrewer, Cube, 3.JS, Data Wrangler, Datawrapper, Dipity, Dygraphs, Envision.js, FusionCharts, Ganttpro, Gliffy, Google Charts, Google Data Studio, Highcharts, Infogram, JavaScript InfoVis Toolkit, jpGraph, jQuery Visualize Plugin, Leaflet, Modest Maps, MyHeatMap, Openheatmap, Plotly, Polymaps, PowerBI, Raw, Silk, Tableau Public, Timeline, Visualize Free, Weave, Zoho Reports.

Techniques: A picture is worth a thousand words, especially when trying to find relationships and understand the data, which could include thousands or even millions of variables. To create meaningful visuals of the data, there are some basic techniques should be considered (SAS Institute Inc., 2017). Some of them are:

- Gather data (intelligently)
- Delegate additional research
- Use great design
- Consider interactivity for widgets
- Quirky is at least as important as correct
- Know who your targets are
- Provide the embed code (with a link)

Conclusion

Technology continues to be helpful for academic libraries and information visualization tools provides a chance for academic libraries to innovate, boost quality, measure success, and align services with the priorities. With visualization, libraries can reintroduce themselves as visible, valuable and essential partners in achieving institutional goals (Johnson, 2015). Use of Information visualization will helps academic libraries in taking decision related to growth, development and uplifting the existing services. The acquisition section data will create impact in building and promoting the library collection and identify the gap between various subject areas. The circulation section data will helps to analysis the collection by most used books,

prolific authors, most borrowed users. And also this data will help to identify the collection which is not used in the library, so that one can promote the unused collection. Visualizing the usage of various subscribed electronic resources, digital library and other web services statistics will create impact by knowing the usage, so that the academic libraries can take this data in renewing the subscribed resources and helps in delivering the web based services. The usage statistics will be helpful in managing the budget of subscribed electronic resources in academic libraries.

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Article

Archival Research Method Analysis

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How to cite this article:
Kikon P. Archival Research Method Analysis. *Proceedings ICSTRDA* 2021; 40-42.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-02-15

A B S T R A C T

An archive is an institution of historical records, documents and known as a memory institute. An archive preserves and makes accessibility of original primary sources of materials including journals, letters, unpublished documents, published documents, newspaper clippings, speeches and radio or television broadcasts, etc. It is helpful for all kinds of disciplines researchers to be able to analyse an archive by using different research methods. The study is about archival methods what archival materials are and how to analyse them. The paper discusses archival research method analysis and how it serves as a memory institute to the scholars and readers.

Keywords: Archive, Archive Research, Research Method Analysis

Introduction

Research plays a significant role in the development and growth of general well-being in any field. Research helps in building theories and models as well as explain and describes the context through which it can be practice and operates. Research encourages critical inquiry, analysis, and evaluation of the kinds of literature, theories and practices of the field and its development over time. The paper characterizes the contemporary archival research and explores the emerging methods and techniques being employed.[1] The archive is an institution where all types of information are preserved. Archives collect sources such as manuscripts, records, electronic records, documents including published and unpublished, audio and video materials, objects, artifacts preserved by a library, historical society, institutions and other materials as well. Different types of researchers use archives primary resources to find and interpret primary resources of the different information fields. Archival research includes primary sources available in archives, special collections library, another repository as well.[2] The archival research method is a method of collecting data or records that are already available in the archives. Archival methods involve the study of historical sources, the sources which are created at a particular time in the past and providing access to the readers of the available resources which might have available to the private individual, organizations, and at the events. Archival methods are employed by scholars even in non-historical investigations of archival materials and use to enhance other research approaches through survey methods and field methods. The archival method can also be used on analysis of web pages, emails and electronic databases.[3]

Methodology

In the paper, studies were made by reviewing the related kinds of literature on archive research method analysis. Through the review of literature, the different archive research methods used by different organisational research were recognized. Recent articles were reviewed to highlights the basic principles that were significant and included practical discussion and research strategies that involved in conducting archival research analysis in an organisation.

Objectives

The objective of the study is:

- To know the sources of archives
- To find out the different archives research method
- To identify the use of archives materials in different organizational research

The Contributions of Archival Methods

In the discussion, Gilliland, McKemmish[1] examines the key factor which has led to the development of the existing

research infrastructure. Archival research methods promote the meticulous application of research design and methods and provide sources for teaching research methods for professional and research careers. Weber emphasizes that the management of modern office is dependent on the source or draft and scribes of all sorts preserved in a written document.[4] Giddens[5] features written documents are associated with the administrative power. Written documents are invented to make as proof of the time and space which can be approved, count, and survey for original invention. Covaleski and Dirsmith[6] explain archival materials are the undeniable original documents to examine the historical information, available to learn the past incidents and measure the study of contemporary organization. There is a need to investigate the sources of the archival materials to maintain their authenticity. Zald[7] archival work gives an original record in defining the key questions, defining base evidence, support debates on familiar forms and methods. Piore and Sable[8] demonstrate the ideas, methods, or social arrangements that can be easily understood by exploring the roots of origins. Archives acts as the key historical branching points and path of dependencies. Braudal[9] highlights that historical studies make an easy analysis of organizational change over time that captures important institutional processes. Baron[10] examines the archival records are also not always transparent and accurate as it offers contradictory or partial evidence of and explanations of the events. Therefore, recognition of the essential and residual features of archival materials is the central methodological concern, the basis for the major decisions about the design and analysis. The skilful of the scholar's abilities to master the ambiguity is a distinctive feature of excellent research in this tradition.

Method of Archival Research

A different method of approaches can be recognized in an archival study in organizational research. The kind of approach recognized is historiographic approach. Historiography is defined as the study of the history of historical writings. The study of traditional historical work made its way in organizational research through the mid of 1970s and early 1980s. Until then the study of archival materials to study organization was comparatively rare.[11]

Historiographic research can be classified into two types:

- Institutional school historian
- Business historian

In the institutional school, the scholars used historical materials and study the emergence of distinct different institutional strategies. Selznick[12] evaluated the history of the TVA and Clark[13] examine the histories of the individual colleges to understand the origin of the different distinct institutional policies.

In the second type, it includes the work of business historians. Chandler[14] used archival materials to evaluate the origins of modern business practices. There are more historians and organization theorists who have archival materials to discover the origins and character of class conflicts and control in the workplace.[15]

The distinguishing character of historiographic research was its rich details records of organizational life, depicting what were essentially ethnographic studies of organizations structured through the medium of archival materials.

In the mid-1970 new tradition of archival research based on ecological analysis established a base. Ecological research led to a new methodological shift in archival methodological research. New ecological research piloted in the place of the traditional archival historical materials in which small amounts of information assembled from the history of many organisations were organised to create a story of changing organisational environment and population. Stinchcombe[16] suggests there is a shift from the study of the organization towards an analysis of historically embedded classes of organization. The shift opened a new novel approach to archival research. As compared to the historiographic approach, the ecological approach is far more formal in its orientation. When the ecological research streams got professional momentum, it led to the overall acceptance of the use of archival materials in organization science and increased the reliance on the archival method. The ecological theoretical tradition begins to grow with the increasing publications of research scholars. At Times, researchers while finding an answer for the ecological traditions returns to traditional historiographic methods. Langton[17] gave an example of using the in-depth historical case to answer the question about the ecological change. GR.C and Hannan[18] provide a thorough review of archival materials commonly used in ecological research. It includes encyclopaedic compilation, industry directories, proprietary databases, lists of prominent firms, government registries, census government and survey data.

DiMaggio[19] explored the struggles among organization form in the field of art museums by using traditional historiographic methods.

A new archival approach has emerged in organization science over the last decade. Like the ecological approach, this new archivist is immersed in the character and methods of formal social science. The new archivists tend to share key sensibilities with the historiographic approach. New archival research is heterogenous research as compared to the other archival research. The research comes from different theoretical traditions and pursues different empirical agendas. It partakes common vocabulary research techniques and goals that together consist of a new set of principles for archival method.[20]

The simple level of analysis among the three research approaches. Historiographic research usually analysis the archival materials of a few organizations. In Ecological research, it uses information from many organizations and the new archival research used both types of historiographic and ecological research design.[20]

Kinds of Archival Materials

When designing a study using archival materials, some methodological questions arise.

- How to select archival materials for analysis
- How to analyse the selected archives materials

It is difficult to give a clear answer to the given terms as already noted there are a great diversity of methodological approaches that are associated with the archival research. Various types of archival material might be employed in the different organizational research. There are many kinds of archival documents and records as there are many types of organizational talks. Some common classifications of organizational talk: who is it, what happened, what they want, what they do, what is ahead, what are the other organizations, what they do and on. This type of talk is generated through the routine of organizational data production.[21]

The best archival materials contain classification statements with distinctions between categories of things. The classification is usually powerful because they usually link understanding together with actions.[22]

Conclusion

An archive is an institution or organization that collects and preserves the records of artifacts, individual information, government departmental documents and organizations. In the paper different archival materials are identified and the different types of archive research are discussed. The key questions were answered what archival materials are and how they are analysed. Three different archival traditions were identified the historiographic research, ecological research and the emerging new archival research, discussed how to vary the terms. It is also discussed that all kind of disciplines research can be able to analyse archival materials by using different research methods.

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Article

Data Curation Activities in Research Data Repositories: Best Practices

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How to cite this article:
Manu TR, Gala B. Data Curation Activities in Research Data Repositories: Best Practices. *Proceedings ICSTRDA* 2021; 43-51.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-03-01

A B S T R A C T

Although, the massive amount of research data is being generated through modern-day research activities, lack of awareness regarding the documentation, metadata rendering, versioning, file format selection, data cleaning, secure storage options, data deposit templates and making research data easily accessible through research data repositories has resulted in invaluable research data becoming lost or rejected. Proper management and sharing of research data increase the access, impact and efficiency of research activities. Therefore, as a requirement of the government funding agencies' guidelines academic and research institutions have started to establish research data repository platforms. However, to build effective research data repositories with appropriate data curation activities are needed before uploading and publishing data. The current study has been undertaken with the primary objective of presenting the best data curation activities in research data repositories. The study further gives an overview of the software tools and applications available for various data curation activities viz. data cleaning, metadata creation, editing images/ videos, storing data, identifying and validating data files, applications for data curation, and data indexing for searches among other core activities. The author further identifies the roles of interdisciplinary librarians and data generators and data providers to perform the best data curation activities in research data repositories. The methodology of the study was guided by content analysis of literature on data curation activities and the role of interdisciplinary librarians in data repositories. Additionally, data about the software and application tools available for data curation was collected through web surveys. The outcome of this study will greatly benefit the key stakeholders in adopting the best practices for data curation practices in research data repositories for enabling research data sharing and reuse. It will help in the development of required skills and competencies to full-fil the role of interdisciplinary librarians in data curation activities.

Keywords: Data Curation, Data Cleaning, Research Data Repositories, Data Librarian, Data Generator

Introduction

Research Data Curation is a process to consider data needs for current and prospective use, focusing on consultation and solutions for improved access, data protection, citation and documentation. Data curation is the "active and on-going management of data through its lifecycle of interest and usefulness to scholarship, science and education" through activities that "enable data discovery and retrieval, maintain quality, add value and provide for re-use over time (Library, 2021)". The best data curation activities are required for enabling research data sharing and reuse through research data repositories. The University of California, library states the process of research data curation includes metadata and documentation, file and folder organization, storage and preservation, version control, the carpentries, data dictionaries, etc (University of California, 2021). The frequently used terms in research data curation are archive, preservation, back-up, file formats, file sharing, creative commons, agreement, license, metadata, data repositories, non-proprietary file format, persistent identifiers, standards etc. Majorly eight data curation steps are receiving, appraising and selecting, processing, ingesting and storing, describing (with appropriate metadata), facilitating access, preserving and reusing research data.

Librarians are increasingly expected to play a role in data curation, where they can assist researchers with data curation by maintaining and adding value to research data for current and future use. A librarian can take measures to ensure the data is documented, maintained and access through the proper channel. Now a day's librarians are also called as data curators, digital curators, data analysts, data manager, metadata creator etc. according to the role and responsibilities of librarians within data curation practices. Since data curation is an area of inter-disciplinary research and practice, librarians need to develop the knowledge on research lifecycle, data policy, data curation, subject knowledge on managing data etc poses new challenges for librarians. And the process of future data curation is crucial, ICT in organizations and libraries with their preservation skills and repository experience need to work together. Thus, globally library professional associations have developed the education and training frameworks of skills and competencies required for librarians to extend their services in data curation. Librarians can play vital role in the current data curation system with creating policy, data deposit templates, preserving data, administrating infrastructure, the establishment of collaboration network among the data generator to understanding data curation needs and the importance of data management and sharing.

Data Curation

Data curation is the technical function that ensures research datasets are stored and managed in ways that promote ongoing integrity and accessibility. The data curation activity of managing data throughout its lifecycle, appropriately maintaining integrity and authenticity, ensuring that it is properly appraised, selected, securely stored and made accessible, while remaining usable in subsequent technology environments. Understanding of data, as well as research results, data acquisition and manipulation processes must also curated. The research data curation can be performed by the individuals, departments or groups, institutions, communities, disciplines, publishers, national services and third party services (Rusbridge, 2007). Data curation is the significant role that data librarians, data curators, research communities play in appraising the value of data for long-term preservation. The term appraisal refers to the method of identifying digital content's permanent value for long-term preservation. Therefore appraisal in data curation has been closely linked to data repository or data archival policies on research data management (Ogier, Nicholls and Spee, 2017).

Research Data Repository

Data repository (also referred to as a research data repository) is a searchable interfacing entity that can store, manage, maintain and curate Data/ Digital Objects. It manages the location where research data is registered, permanently stored, made accessible and retrievable, and curated (Johnston, 2017). Research data repositories are an opportunity for librarians to leverage their expertise in curation, outreach and preservation while strengthening their long-standing relationships with academic departments in order to implement robust repositories that satisfy the needs of their communities (Gerwig, 2017). Treloar and Wilkinson, (2008) argue that research data repositories should be support for easy access to data and other information reliable and consistent forms. Gradually data repositories are increasingly replacing institutional repositories of universities (Gowen, Meier, 2020), because institutional repositories platforms (Eprints, Dspace, Digital Commons, OJS,) also supports data discovery, provenance, access controls, access, identity management, auditing of use, accountability and impact (Alsaad, O'Hara, Carr, 2019; Macgregor, 2020).

The re3data.org-Registry of Research Data Repositories which indexes the research data repositories and offer the services to the researchers, funding organizations, libraries and publishers etc launched 28th May, 2013. It indexes over 2300 + research data repositories from around world and presents data in typologies categories like institutional, disciplinary, multidisciplinary project-specific repositories (Pampel, H., et al., 2013). These repositories are being sponsored by the Governments, funding agencies, academic institutions, professional societies and scholarly publishers (Goben & Sandusky, 2020). FAIRsharing registry is also

a collection of public research data repositories which provides the standards, databases, policies collection/ recommendations (Suhr, et al., 2020).

The key factors of research data repositories to encourage research data deposit and sharing, make the repository more visually appealing, carry out tailored and continuous advocacy, demonstrate statistics, international interest, get good visibility in Google's search engine results, strong community support for the repository, use of terminology and the language of 'repository-speak', make the deposit process as easy and streamlined as possible, saving time with data entry and avoiding duplication of effort. Support and good practice in managing research data and own IPR and clearing third-party copyright (Gramstadt, 2012). JISC has been encouraged in the creation of several repositories like EThOS (http://www.ethos.ac.uk/), JorumOpen (http://www.jorum.ac.uk/), Depot (http://depot.edina.ac.uk/) etc. in the UK provides the usage services, preservation services andshared infrastructure services (Jacobs, Thomas, & McGregor, 2008).

Literature Review

Data Curation is not a new term, being well used established in art and museum practices (Rusbridge, 2007). However, it is relatively new in relation to research data and was first used in Russian literature (Kosinov, et al., 2019). Research data curation goes beyond data management, as it comprises additional services to preserve and add value within the research lifecycle of the research project and beyond, i.e. by enabling reuse (Partlo, Symons and Carlson, 2015). It adds value and increases the quality of data (Ali, 2019) and as it is active and on-going data management activity throughout the research lifecycle, it enables the data "authentication, archiving, management, preservation, retrieval and representation" (GEO, 2015). The Data Curation Centre (DCC) guide on how to develop RDM services describes the role and responsibilities of individual stakeholders who can deliver RDM service (Jones, Pryor, Whyte, 2013). DCC takes to broad view on data curation and is concerned mainly with sustainability and exit strategy, data resources, access, re-use, preserving and archiving and time scales (Rusbridge, 2007). Curating research data is a part of scholarly record and is recognized by research funders, government agencies and research institutes (Bryant, Lavoie, Malpas, 2017). Digital curation is defined as "maintaining and adding value to a trusted body of digital information for future and current use, specifically, the active management and appraisal of data over the entire lifecycle" (Ogier, Nicholls, Spee, 2017).

A research report by Rusbridge (2007) has identified the top data curation activities as documentation, secure storage, metadata, data visualization, versioning, file format transforms, quality assurance, software registry, contextualize, code review, persistent identifier and file audit for research data. Bielefeld University library has formulated minimal data quality framework "Data Irreproducibility Analyzer (DIRA)" for checking data quality (Schirrwagen, et al., 2019). UiT University library provides the data curation services including data collection, description and organizing, analysis, archiving, haring, re-collection (Ali, 2019).

Nowadays' data processing in the data curation may range from the simple calculations made in a spreadsheet editor, to distributed processes that data using dedicated software and hardware tools (Miksa, Rauber, 2015). The data processing process would be comprehensive guidance, few process are build workflow of curation/ re-usability, keep data which has ability to process, make ownership and allowable uses and make it citable (Rusbridge, 2007). The level of staffing and skills for curating data are the key to research data curation and it made easier for fellow researcher and future collaborators to understanding and more likely to be trusted (Johnston et al., 2017).

A librarian should be required the more skills on subject knowledge, IT knowledge, legal knowledge, ethics, research life cycle awareness including data curation skills, data description and documentation skills (Schmidt, Shearer, 2016). The board skills that a librarian required for RDM implementation are: providing access to data, advocacy and support for managing data and managing data collections additionally librarians role also related to the open access and institutional repositories, collection development, advisory services (copyright, policies, etc.), information literacy, digital curation, digital preservation, digital collections.

Objectives

The objectives of this research study are governed in presenting the best data curation activities in research data repositories for enabling effective research data sharing and reuse. The broad objectives study as follows:

- To identify the best practices of the data curation process in research data repositories
- To examine the interdisciplinary role of librarians, skills and competencies required for providing data curation services
- To highlight the responsibilities of data generators and data providers
- To give an overview of the software and applications tools available for various data curation activities

Methodology

The researchers adopted the qualitative research methodology for the study. It was guided by content analysis of literature published. Scopus citation and bibliographical database and Google Scholar scholarly search engine were

used to find the literature on data curations activities in research data repositories, interdisciplinary librarians' role, skills and competencies required to perform the research data curation activities. Literature we also analyzed on the primary role and responsibilities of data generator/ provider in data curation process to ensure the data access made available through proper channel. A web-survey was undertaken to identify and collect software and application tools available for data curation activities including data repository, data cleaning, metadata schemas, data identifier schemas, controlled vocabularies, creating and editing metadata, editing images or videos, storing data, identifying and validating, data files, transferring data, indexing data for searches, tracking and measuring data, internet web applications etc.

Findings and Discussion

Data Curation Process

The effective implication of data curation process, fundamentally required the professional skills, educations, domain knowledge and IT skills for the data librarian, researcher and other stakeholder (Goben, Raszewski, 2015; Wiljes, Cimiano, 2019). The information professionals, data stewards, data libraries, data curator, IT departments, metadata experts and IR manager are aspiring the skills on data storing, managing, archiving and research data sharing, metadata creation and metadata analysis. The general aspects of the data set when received from researcher are how many files? Total size of the data set, file formats and software need to open the files stage of data (e.g., raw, processed, etc.), is there documentation available, who owns the copyrights for this data? What related metadata standards are commonly used in the data or the field? Data sharing concerns, who are the coauthors of the data? Who funded this research, are there agency requirements for sharing? What are the institutional obligations for data release? Is there potentially patentable information, what licenses, if any would the data be released under? Are there sharing concerns, such as protecting the identity of human subjects? What are the goals for dissemination (e.g., world wide access, researcher only access)? Are there existing repositories in the field that you find and download data from? Long-term value, are there existing publications that make use of or cite the data? Will the data change or be added to over time? How often? Are there alternative file formats recommended for deposit? (e.g., the data curator may recommend a format for preservation purposes.), is the data easy or difficult to reproduce and why? What is the reuse potential of this data? When, if ever, should the data be withdrawn or destroyed? etc. To answering these questions, the potential set of data curation activities are needed. The Figure 1 and Table 1, presents the major data curation process, major activities, interdisciplinary librarians and their required skill set responsibilities of data generator around the data curation.

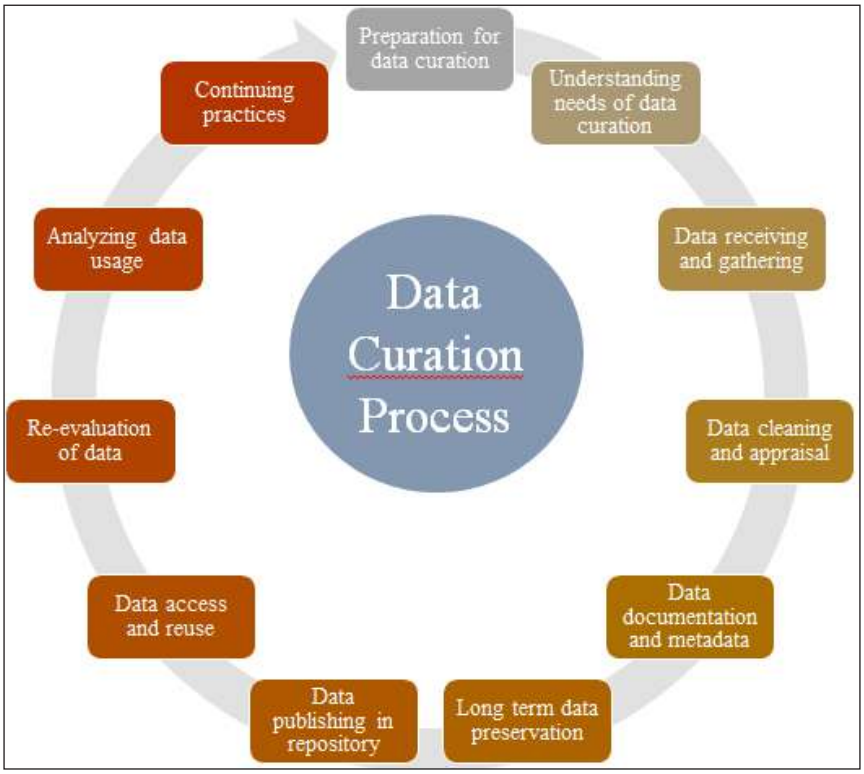

Figure 1.Data Curation Process

Table 1.Data Curation Process Best Practices, Interdisciplinary Librarian's Role, Skill Set and Responsibilities of Data Generator and Researcher

Data curation process	Major activities	Interdis-ciplinary librarians	Skill Set	Possible responsibilities of data generator
Preparation for data curation	Creating local policies and rules Data curation workflow wizard Building infrastructure and facilities Skills and knowledge for data curations, Assign curation responsibilities to appropriate data curator, Build plan data curation structure in data repository	Head - Data Librarian	Understanding data curation lifecycle, Strategic understanding and influencing skills, Understanding the best practices of data curation, Knowledge of data curation activities, Soft skills, time management	Collaboration with data curator, librarian, metadata specialist, data repository manager and other stakeholder, Part of creating internal data curation policies and rules, workflow, Volunteering for data curation activities
Understanding needs of data curation	Understanding researcher needs, Interviewing data generator, Consulting researcher and data provider, Conceptualize data with data provider, Provide outreach for data repository and data curation		Knowledge on researcher's needs and available datasets, Negotiation and communication skills, Coordination skills across institutions, Ability to communicate and collaborate, Ability to work with data curation team	Conceptualize data with data curators Selection of data to be curated and published, Identification of data generate sources
Data receiving and gathering	Data receiving policy for researcher, Deport rights and license agreement, Facilities for data deposit, Data deposit template, Data gathering with minimum available metadata and documentation, Acknowledgement of data recieving	Data Curator	Knowledge on data deposit template creation, Negotiation skills, Coordination skills across institutions, Familiar with research data, Academic research methods, Ability to handle data complexity and diversity, Skills in computer science	Adhere data deposit policy Deposit data files in required template with data sources, Provide the minimum metadata of data Provide data access rights, Providing Creative Commons license
Data cleaning and appraisal	Understanding of data-stage of data (e.g. raw and processed etc.), size, types, format etc. Data validation and verification Data cleaning from statistical perspective Data classification, Identifying qualitative & quantitative errors, Error repairing, migration, Consider key risk factors	Data Scientist / Data Analysist	Data quality literacy skills, Ability of data cleaning and error detection, Familiarity with research data cleaning tools and application, Familiarity with data analysis and statistical tools, Ability to understand and measure data quality Knowledge on Geospatial data and software, Knowledge about data manipulation technologies	Convert the file formats to non-propriety formats, Data classification by stage of data, size format, types, Minimize the errors, Extend operational support for error repairing, Extend support in data analysis

Data documentation and metadata	Data preparation for preservation formatting, file organization, packaging, Metadata creation, description Structure and descriptive metadata, Disciplinary metadata standards / schema Metadata tools and resources, Identifier schemas, controlled vocabularies, Use of application tools available for data curation	Metadata Specialist / Subject specialist	Familiarity with metadata elements, standards, schemas and tools Skills metadata creations Knowledge of data preparation methods, organization, Knowledge on disciplinary metadata standards particularly research data, Knowledge on subject area Skills on creation of metadata standards according data sets, Familiarity with identifier schemas, controlled vocabularies	Familiar with metadata structure, standards and schema Metadata creation for data, Unique and proper file naming system, File arrangement in hierarchy system, Work with metadata specialists to create appropriate metadata
Long term data preservation	Needs of long-term preservation Selecting dataset for long-term preservation, Rights and permissions, Data storage and security Long-term preservation value, Plan and standardization	Data Manager	Skills on license agreement and copyright Data long-term management skills, Knowledge on policies for preserving data	Valid datasets for long-term preservation, Provide rights and permission for archive Secured authentication for confidential data preservation
Data publishing in repository	Find trusted data repositories, Building open data repository Assists of required data security features, Transfer the processed data files to the repository, Data sharing policies Key components of data publishing	Repository Manager	Technical skills, Software required for the repository, Development and managing data repositories, Knowledge on Server and digital library architecture, Managing data repository daily basis, Team work sills, Maintain and update repository software	Suggest and find discipline data repositories, Allow data sharing and publishing, Ensuring deposited data published in repository, Work with data curator and repository manager to upload dataset into repository
Data access and reuse	Searchable and discoverable facilities, Annotating data for relevant entities, Optimizing data to search engine, Keeping data up to date into mirror repository, Data embargo, authenticate access Monitor data reuse, data citations, Consider post-ingest review techniques, Provide customer support User access guide and		Data promotion skills, Data attention platforms, Search engine optimization, Data repository index in scholarly search engines, Enabling automatic process for indexing, Optimizing data repository content	Make sure published data accessible to users, Embargoed access, Provide request base confidential data access, Monitoring data citation received, Promotion of data access, Searching/ browsing / downloading, Share recommended citations and contribute citations data

Re-evaluation of data	Evaluate or view research data, Withdrawal of data from repository, Ensuring future usability, Enabling data citations, Regular data up-to-date	Data Curator	Evaluating value of dataSkills to identify out dated data	Evaluate the data published in data repository Ensure long-term data quality
Analyzing data usage	Monitor the usage, downloads, view, citations, Managing descriptive statistics of data usage, Data usage tracking, Data external users, researcher, funder, agencies	Data Manager	Usage analysis and review skills, Enabling data usage tools skills, Enabling Almetrics Improve access experience, Skills in metrics	Disseminate of data sets, Social networking /sharing/tagging, Data citing
Continuing practices	Educating researchers, Providing workshops for data analysis tools, Outreach program for data curators and institute community Adopting best practices of data curations Learning future technologies	Head - Data Librarian	Data literacy skills, Event organizational skills, Tutorial and training module development skill, Networking skills, Subject-experts	Taking place of workshops and training program, Identify the best practices in data curation

Research Data Librarians: Interdisciplinary Roles and Competencies

Research data curation process is typically defined as a set of activities that required to involved multi skilled information professionals, therefore it described the data curation planning, data acquisitions, data cleaning, analysis, data publishing and long-term preservation etc. Therefore, interdisciplinary skilled information professional required to impalement best practices in the data curation activities. As mentioned in Table 1, the major information professional are like data librarian, curation librarian, digital collections curator, digital content strategist, data management consultant, data curation librarian, digital projects designer, repository specialist, technical analyst, repository coordinator, data curation specialist, repository coordinator, metadata specialist, system administrator, software developer.

The worthy skillset and competencies are required for such interdisciplinary librarians to develop the best practices in data curation activities in the research data repository. The major skills including Understanding of data curation lifecycle, Familiarity with research data (e.g., Ability to handle data complexity and diversity), Collection management skill, Metadata knowledge particularly for research data Technical details of repository software, server and its architecture Understanding disciplinary metadata, workflow and knowledge on academic research helps them to build or plan data curation structure in their data repository, consult with data providers and connect them to metadata specialists or repository managers, facilitate communication across different entities, outreach and educate campus community, work with data providers to help add metadata and upload data into data repository, helps data provider to create appropriate metadata for their dataset and provide the support researcher and help in management of data repositories.

Responsibilities of Data Generator

Data generators and also called data providers are primary stakeholders of the research data curation practices in institutes. The major data generator of the institute includes faculty members, postdoc researchers, researchers, graduate students, undergraduate students and other afflicted researchers who have been involved in creating research data from a sampled data sources in both qualitative and quantitative studies. Therefore data generator has huge role to play in the research establishment of best practices in the research data curation. Data generator have to collaboratively work with data librarian, data curator, data scientist, metadata specialist, data manager and repository manger to make sure research data published through research data repositories and enabling data sharing reuse.

Gradually, researchers have been managing and organizing the data created to easily retrieving when it is required. But, for publishing research in a repository the researcher has to work with the data curation team to properly preserve

research data. Being a data owner, the researcher has to help metadata specialist to define the metadata elements of the data generated by them. The various types of the data created like data (e.g., raw data), text documents (e.g., word, pdf, latex, txt), spreadsheets (e.g., excel), slides (e.g., PowerPoint), audios, audio-visuals, images, laboratory notes, statistical data, databases (e.g., access, MySQL) would require different metadata elements to be used to define the data. As mentioned above in Table 1, along with the metadata creations, the data generator has a key role to play with Head-Data Librarian for creating internal data curation policies and rules, workflow, conducting outreach activities and identifying the best practices in data curation. The data generator has to further deposit the research data in a template made by the data curator, transfer data access rights, convert file formats to nonproprietary formats, data classification, error minimizing, data analysis support, browsing/ downloading, etc. The data generator also helps in promoting the research data published through a research data repository while they share research data through social networking sites, scholarly search engines, data repository directories, to increase the data citations and widely disseminate the research data across the world. The data generator can also evaluate the data published in data repository to ensure the long-term data quality and up-to-date data available for user access. The data generator hold the rights to share the confidential data to users, therefore users have to make formal request to the data generator through a data repository to avail the confidential data. Table 1 gives and overview of the key roles of the data generator in each stage of the data curation.

Software and Application Tools for Data Curation

Data curation process is set of technical and non-technical activities, it requires various software application tools to implement data curation process in the research data repository. There are many open source and property software application tools available in the each stage of data curation process. Table 2, presents the major list of application software available for data curation in a research data repository. A data librarian can use the best practice template to prepare draft of the data curation process, and online survey/ interview tools can be used to understanding needs of data curation. A data deposit template helps in gathering research data from the data generators with required additional details. However, members of a data curation team should have skills to use the below software application tools for data curation activities.

Table 2.Software and Application Tools for Data Curation in Research Data Repository

Types	Software and Application Tools
Data Repository Software	Bepress Digital Commons, DSpace, Hydra, Dataverse, HUBzero, Aubrey, SobekCM, EPrints, CKAN,
Metadata Schemas	Dublin Core (DC), Qualified DC, DataCite Metadata, MODS, METS, PREMIS, MIX, EAD, Darwin Core, Ecological Metadata Language (EML), Visual Resources Association (VRA Core), DDI, CIF (Crystallographic Information Framework), ABCD (Access to Biological Collection Data), AgMES (Agricultural Metadata Element Set), AVM (Astronomy Visualization Metadata), PREMIS
Metadata Schemas used in Supplementary Space	Darwin Core, EML, DDI, TEI, FGDC, ISO 19115 Geographical Metadata (ISO 19115),
Identifier Schemas	DataCite, DOI, Handle, ARK, HTTP URI, Permanent local URL,
Controlled Vocabularies	DC Contolled Vocabularies, Library of Congress Subject Headings (LCSH), Medical Subject Headings (MeSH), Faceted Application of Subject Terminology (FAST),Only with Hydra: DC RDF Ontology, FOAF, RDF Schema, Astronomy Thesaurus, NASA Thesaurus, Art & Architecture Thesaurus
Creating and Editing Metadata	Microsoft Word, Microsoft Excel, Text Editor (WordPad, Notepad++), Oxygen XML Editor, Morpho (Ecology Metadata Editor), Nesstar
Editing Images or Videos	SnagIt Photoshop for images, Handbreak for audiovisual, image
Cleaning Data	Open Refine, Data Cleaner.
Storing Data	Dropbox, Google Drive
Identifying and Validating Data Files	DROID, PRONOM, Git for version control, FITS for ®le characterization

Transferring Data	BagIt
Indexing Data for Searches	Apache Solar
Tracking and Measuring Data	Altmetric,
Internet web applications	EZID service, Google refine,

Conclusion

Data curation activity of managing and promoting the use of research data from its point of creation ensures its usage for contemporary purpose, helps in for the discovery and re-use of data. The best practices of data curation process is like a cycle begins from preparation, understanding the needs and arrangement of infrastructure prerequisite, data receiving, cleaning, documentation, metadata creation, preservation, data publishing, data access, evaluate the usage and data citations. Disciplinary metadata creation is a major activity of the data librarians along with data repository development which helps in publishing data for future reuse. Librarian's has to develop the interdisciplinary and IT oriented skills and competencies along with academic research knowledge to perform best data curation practices. The interdisciplinary skills help them to curate data, metadata creations, description and documentations. IT oriented competencies serve to develop the user friendly data repositories and data cleaning. Academic research knowledge helps librarians to understand the research activities and need of the data curation assistance by data generators. Appropriate use of software and application tools facilitate in the development and practice of data curation. The training and continuing education of data curation skills in is not limited only to library and information professionals, its scope has been expanded to professionals form the computer science domain too. This study benefits the key data curation stakeholders in understanding the best practices for data curation by identifying the key stages of data curation, core data curation activities, software and application tools available, the role and responsibilities of each stakeholder including data librarians and researchers

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Article

Data Visualization as a Digital Driving force for Disseminating Information in the COVID-19 Pandemic

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How to cite this article:
Gujral G, Shivrama J. Data Visualization as a Digital Driving force for Disseminating Information in the COVID-19 Pandemic. *Proceedings ICSTRDA* 2021; 52-56.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-02-12

A B S T R A C T

The spread of COVID-19 has set off an interest in data visualizations. Data visualization has gained wide popularity during the COVID-19 pandemic. As we scroll through the social media feeds we see its full of charts and visualizations depicting the transmission patterns across the world. Models depicting the spread of the novel coronavirus have been widely shared across the mainstream as well as social media platforms. Data visualization plays a crucial role in educating the population and sharing the information during the COVID-19 pandemic. Individuals and researchers are interested in understanding the trends and the impact the virus might have on themselves and their community. People rely greatly on data visualizations to gain a better understanding of the pandemic and the role they can play in reducing the spread. This paper explores several forms of data visualizations that have been popularly used to disseminate information about the novel coronavirus crisis. Some of the common visualizations that may send the wrong message have also been highlighted. The data hubs, data visualizations across various platforms have been explored and reliable sources of information on the coronavirus have been highlighted. Creating effective data visualizations will help disseminate the most accurate information as evidence based and advanced decision making is highly crucial in these unprecedented times transformed by the coronavirus pandemic. Effective data visualizations also have the potential to create a shared sense of understanding around the risk and precautions centered around contracting the virus and our role in stopping the same.

Keywords: Data Visualization, COVID-19, Pandemic, Coronavirus, Information Visualization, Data Analysis

Introduction

The rapidly evolving pandemic requires urgent attention, up to date data is incredibly important. Visualizing data on the virus, its impact, the number of confirmed cases, morbidity rates etc needs to strike a perfect balance between clarity and the impact. In order to identify the magnitude of the problem data is incredibly important. Data visualization is gaining popularity during the COVID-19 pandemic. Social media feeds and various other forms mass media and information channels are flooded with data visualizations depicting transmission patterns. For an average person they may not know the difference between the types

of charts that have a huge impact on the clarity of the data. Misleading data visualizations can be deceptive and confusing. The graphical visualization should strike a complete balance between the presentations and the numerical values.

Several nuances need to be kept in mind while preparing visualizations in order to maintain accuracy and clarity. Using the wrong color scheme could make it difficult for the audience to easily differentiate the scale of various subjects and the data points. Another common misstep is cluttering the screen with too many data points and visualizations. Keeping a single component to draw in the viewer's attention is also an important element. Overloading the charts with too much information can also be confusing for the audience.

Every visualization should comprise a take home message to communicate in the first place. The design decisions should hold an underlying message. Without which it only features data points that are relatively meaningless.

Data Visualization and the Pandemic

The COVID-19 pandemic has persisted for almost an entire year. Huge volumes of data have been collected and disseminated and yet it's never enough. Data exists in several silos. Underneath key epidemiological metrics like cases, test positivity rate and deaths are social and political factors, like mask-wearing and access to healthcare, that influence how the pandemic spreads.

While sharing relevant data with people, researchers must make sure that they are providing value back to the users by making it more accessible and understandable. The visualizations should have the capacity to clearly identify patterns and correlations in the data and see important patterns as they are emerging. The primary focus on data coming to life and making it actionable for a wide range of stakeholders should be kept in mind. The public may be more interested in studying the trends in their areas and how several interventions can be designed and developed.

COVID-19 Pandemic Leading to 'Infodemic'

COVID-19 has been the dominant issue in 2020 and it has been a challenging year for all of us. The pandemic, and especially the infodemic, have highlighted the vital importance of a world where every person will have access to the healthcare information they need and will be protected from misinformation. This will take a lot of work in increasing awareness and providing the correct information to the public. Knowledge is power but it has to be appropriate knowledge. Large volumes of data are generated and sometimes the workflow process might affect the authenticity and credibility which may cause the spread of misinformation leading to an 'Infodemic'. Information science professionals play a critical role in acquiring, managing, organizing and disseminating information to the stakeholders. Organizing and managing huge volumes of data and live tracking of information can be a tiresome task and requires strategic approaches to do the same.The strategies should be designed keeping in mind the needs and requirements of the audience and demography.

Global COVID-19 Data Resources

Some of the most popularly used COVID-19 data hubs have been enlisted in the Table 1.

Table 1.Global COVID-19 Data Resources

S. No.	Data Hubs	Source Titles
1.	Centre for Disease Control and Prevention (CDC)	US CDC COVID-19 Situation Summary Risk Assessment and CDC Response Plans US CDC background on how CDC collects data reports Prevention and Treatment Specimen Testing in the US by CDC and Public Health
2.	World Health Organization	Information and guidance regarding the current outbreak of coronavirus disease (COVID-19) Global database of scientific findings on COVID-19 Coronavirus disease (COVID-19) advice for the public: Myth busters
3.	Next Strain	`Genomic epidemiology of novel coronavirus visualizations Build for novel coronavirus on Github
4.	The COVID Tracking Project	State-by-State daily testing totals Daily testing totals over time
5.	Kaiser Family Foundation	State Actions to Mitigate the Spread of COVID-19 Health policy actions to reduce barriers to COVID-19 testing and treatment Adults at Higher Risk of Serious Illness if Infected with Coronavirus Health Care Provider Capacity

Successful Data Visualization and Sharing Strategies

Effectively communicating data requires data analysts to play an active role. The potential benefits of sharing effective visualizations have been explored and explained as follows.

6.	Organization for Economic Cooperation, Development	Healthcare Utilization Health Spending by Country Historical vaccination rates Specimen Testing in the U.S. by CDC and Public Health Laboratories
7.	Allen Institute for AI	COVID-19 Open Research Data Set COVID-19 Open Research Dataset Challenge
8.	UN OCHA	COVID-19 Global Travel Restrictions and Airline Information ACAPS COVID-19: Government Measures Dataset
9.	US Department for Health and Human Services	Explore medical countermeasures to enhance health security
10.	Candid.org	Global Funding for Coronavirus (COVID-19)
11.	JAMA Network	Coronavirus Disease 2019 Resource Center COVID-19 Epidemiology Research COVID-19 Preparedness Research
12.	New England Journal of Medicine	Coronavirus (Covid-19) Resource Center Clinical conversation with Dr. Anthony Fauci (audio)

Good Governance

Data partnerships are popularly used around crisis response. Stakeholders should be held accountable while sharing data and for using it for mutually agreed upon goals.

Sharing Valuable Insights

Sharing data is the beginning of collaboration. It provides stakeholders to form data partnerships. When people converge on a shared topic and work on shared goals leading to analytical insights and explanations that are valuable to everyone in the partnership.

Reduce Friction for Faster Result

Effective visualizations have the potential of reducing time as data makes all the difference. Enabling access to data in a clean, normalized and ready to use order, minimizing redundancy.

Solution Thinking

Data has the potential to solve challenges and implement relevant solutions. Data partnership helps in restoring the collaborations and designing effective strategies. It helps in addressing humanitarian and logistical challenges. Visualization Representing Popular Keywords for Coronavirus News Media Coverage. Figure 1, designed by Turbine Labs in collaboration with Tableau is proud to present an easily digestible interactive visualization that provides the ability to see the COVID-19 outbreak as a visual data story in order to make more informed decisions. It serves as a resource to view the volume of daily COVID-19 article keywords with the option to drill down to specific subject areas.

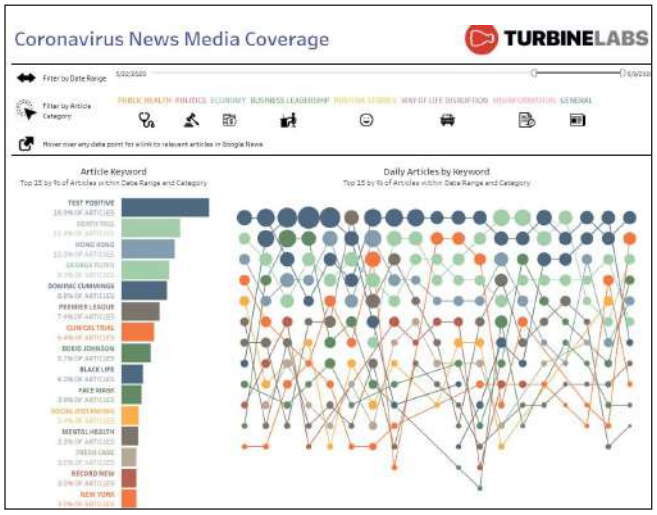

Figure 1.Keywords for Coronavirus News Media Coverage

Source: https:// www.tableau.com/ covid-19 coronavirus-data-resources # hands-on-resources

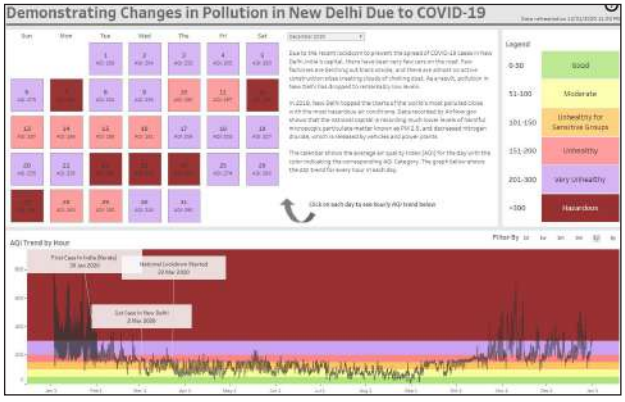

Figure 2.Visualization Demonstrating Changes in Pollution in New Delhi Due to COVID-19

Figure 2, represents a combination of line chart and box plot, it is colour coded to represent the levels of pollution and changes as an impact of lockdown due COVID-19. The calendar shows the average Air Quality Index (AQI) for the day and the line chart below represents the AQI trends for every hour in a day.

Coronavirus Change Over Time in the USA

Figure 3, represents the changes over time in the USA

statewise. It gives an in-depth view of how coronavirus is spreading in the USA starting from March. The data for deaths, positive cases, testing and the total percentages have been represented using line charts. The three charts are differentiated using colour and are laid across to compare the three aspects: death rate, percentage of positive cases and the rate of testing followed by the total percentage.

Figure 3.Coronavirus Change Over Time in the USA

Data Driven Solution

Data is at the center of the new normal as each one of us has adapted towards the new normal during these unprecedented times. New norms have replaced the existing ones and data is at the backbone for everything. Researchers claim that a major shift towards the virtual work protocols will take place. Sharing work would shift to online platforms and other forms of interactions will also shift to virtual platforms. These disruptive changes have brought an opportunity to improve upon the new normal. Several signs and studies reflect we are already on the right path. Data analytics have been more responsive and resilient in the rapidly changing world.

Conclusion

Data driven solutions are the next generation breakthrough, while data analysts and researchers work on generating and analysing data. It becomes equally important to visualize data in an effective manner. Effective visualization has the potential to communicate strong insights and take home messages for the audience. It bridges the gap between research scholars, academicians and the general masses. This period has witnessed a critical need to communicate about the trends of the ongoing pandemic in order to understand the trends and also helps in finding evidence based solutions and strategies to handle the situation. Several different kinds of data visualizations across multidisciplinary areas such as the impact on pollution, death rate, testing, positive cases, state wise distribution of cases across the USA. The popular keywords used by the media to report news items on coronavirus pandemic. While we see rapid evolution of the kind of charts and visualizations that are designed, there is still a long way to unleash the potential of data visualization especially during a global healthcare crisis like this and in drafting data driven strategies.

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Article

Determination of Batting Position Specific Weight for Twenty 20 Cricket

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How to cite this article:
Bhattacharjee B, Bhattacharjee D. Determination of Batting Position Specific Weight for Twenty 20 Cricket. *Proceedings ICSTRDA* 2021; 57-60.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-02-14

A B S T R A C T

Cricket is a bat and ball game played between two teams. In cricket, the batting side tries to score runs by striking the ball whereas the bowling team try to take wicket and prevent the scoring of runs. In cricket, traditionally bowling performance is measured using bowling strike rate, bowling average and economy rate. Out of the three, two of them viz. strike rate and bowling average are dependent on the number of batsmen dismissed by the bowler. Thus, the number of wickets dismissed is the factor that is considered, for measuring bowling performance and not the quality of the batsmen who are dismissed. Thus, each batsmen dismissed by the bowler gets equal importance in performance measurement of bowlers. Keeping, this flaw in mind a Combined Bowling Rate (CBR) was developed by Lemmer, which is a comprehensive index that combined the bowling strike rate, economy rate and the bowling average and also considered the quality of the dismissed batsmen based on his batting position. However, his work provided batting weights for the test and ODI format of cricket and not on the basis of Twenty 20 format. This restricts the use of CBR in Twenty20 cricket. The paper attempts to improvise on the methodology of Lemmer and develop batsmen specific weights for Twenty20 cricket. For determination of weight all the matches played between 1st January 2016 to 11th March 2020 are considered. The exercise shall enable one to compute the CBR for bowlers in Twenty 20 cricket, accordingly rank the bowlers based on their performances.

Keywords: Cricket, Twenty 20 Cricket, CBR, Batting Position Specific Weight

Introduction

Cricket is a bat-ball game played between two teams of eleven players. The batting side scores runs by striking the ball bowled at the wicket with the bat, while the other side tries to prevent this and dismiss each batter. When ten batters have been dismissed, the innings ends and the teams swap roles. The game is adjudicated by two umpires, aided by a third umpire and match referee in international matches. They communicate with two off field scorers who record the match›s statistical information.[1]

There are three formats of cricket played at the international level viz. Test, One-Day and Twenty 20. Test cricket is the traditional form of the game, which has been played since 1877 and now settled in a five-day format which comprises two innings each. One Day Internationals, also known as ODIs, started in 1971 but gained in popularity from the 1980s. These are one-innings matches of 50 overs per side. The ICC's pinnacle event, the ICC Cricket World Cup, is contested every four years in this format. Twenty 20 Internationals are the newest, shortest and fastest form

of the game. This format consists of 20 overs each side. These are general rules, which are used in T20 cricket. There are twenty overs only per side, each bowlers is restricted to a maximum of four overs, fielding restrictions in the first six overs two fielders outside circle with a minimum of two stationary fielders, fielding restrictions for overs 7-20 maximum five fielders allowed outside of circle, a 'no-ball' is worth 1 run, the batsman gets a free hit after a no-ball, each side has just 80 minutes to get through their 20 overs. There is 15 minutes between innings, there are run penalties for each over which hasn't been bowled in the allocated time, the next batsman has 90 second after the fall of a wicket to get to the crease.[2]

Review of the Literature and Research Gap

Lemmer (2002), developed a single measure that can be used to assess the performance of bowlers in cricket. This study shows how it can be used to rank bowlers. The performance of bowlers is generally measured by using three different criteria, i.e. the average number of runs conceded per wicket taken (A), the Economy rate (E), which is the average number of runs conceded per over bowled, and the Strike rate (S), which is the average number of balls bowled per wicket taken. Each of these is important in its own right. He introduced a single measure that takes the full performance of a bowler into account.[3]

The Combined Bowling Rate (CBR) has been developed (Lemmer, 2002) as a single measure to assess the bowling performance of a bowler. Its calculation makes use of O, the number of overs bowled, R, the number of runs conceded and W, the number of wickets taken. It was, however, mentioned that it might be desirable to weight the wickets of top order batsmen higher than those of lower order batsmen. This is especially important if one wants to compare the bowling performances of the bowlers in a single match because it is far more difficult to get a top quality batsman out than a tail-ender. Normally a bowler claiming the top three batsmen's wickets ought to get much more credit than one who gets the three tail-enders' wickets. This can be accomplished by giving weights to the wickets and replacing W, the number of wickets taken, in the CBR formula by W, the sum of the weights of the wickets taken by the bowler. This paper develops suitable weights and uses these to rate the bowlers. From the results the need is observed for a measure that is more sensitive to a bowler's ability to take wickets and this is resolved by means of a modification of CBR. The Dynamic Bowling Rate (DBR) is defined and is used to give the final ratings.[4]

The bowling average, economy rate and strike rate is normally used to rate bowlers. Two bowlers might have the same average, economy rate and strike rate. Therefore these measures are not very useful to compare the performance of bowlers. Countering this difficulty, the Combine Bowling Rate (CBR) has been developed by (Lemmer, 2002) as a single measure to assess the bowling performance of a bowler.[3]

In (Lemmer, 2002) combined all the measure bowling average, economy rate and bowling strike rate using harmonic meanand an bowling index CBR is given by

CBR=3/ (1/(Bowling Average)+1/ (Economy Rate)+1/ (Bowling Strike Rate)[1]

$=(3R_i)/(W_i+B_i+W_i\ R_i/B_i)$[2]

Where,

R_i = Total number of runs conceded by the bowler.
W_i = Total number of wickets taken by the bowler.
B_i = Total number of balls bowled by the bowler.

Later (Lemmer, 2005) improved the CBR to an adjusted measure CBR, where in place of W, is considered. The sum of the weights of the wickets taken by a bowler, whereas in W only sum of the wickets taken by a bowler is considered, which is not a good measure because here he weighted all the wickets equally.

CBR* CBR*=(3R_i^*)/(W_i^*+(B_i/6)+W_i^* (R_i^*/B_i) (3)

Where,

R_i = Sum of the adjusted runs conceded by the i^{th} bowler

W_i = The sum of weights of wickets taken by the i^{th} bowler.

B_i = Total number of balls bowled by the i^{th}bowler.

Thus for evaluating the bowler performance using CBR*,first we need to calculate the sum of the adjusted runs i.e. .Here,

$$RA_{ij} = R_{ij}\sqrt{\frac{RPB_{ij}}{RPBM_j}};$$

Where,

$$= RPB_{ij} = \frac{Runs\ conceded\ by\ the\ ith\ bowler\ in\ the\ jth\ match}{Balls\ bowled\ by\ ith\ bowler\ in\ the\ jth\ match}$$

$$= RPBM_j = \frac{Total\ runs\ conceded\ in\ the\ jth\ match}{Total\ number\ of\ balls\ bowled\ in\ the\ jth\ match}$$

Here, the batting position wise weight for batsman is only available for ODI and Test Cricket. Since, there is no further research thataddressed the problem of determining batting position wise weight for batsman for T-20 cricket thus here in this paper we shall try to solve this problem and calculate batting position wise weight for batsman inT-20 cricket.

Methodology

Data Collection Procedure

The study on this chapter is based on secondary data. Data is collected from espncricinfo.com with the help of online software, Web Harvy. It is a priced online web scraper used for extracting data from a website. Here all the T-20 matches played between 1st January 2016 to 11th March 2020 is considered for data collection. The data is considered for only top ten teams in ICC T-20 ranking. Also, The batsman

who satisfy the following criteria are considered in the sample for the calculation of position wise weight.

- The batsman who played at least 10 innings
- The batsman who dismissed at least once
- The batsman who played at least 45 balls
- The batsman who scored at least 50 runs

Weight Determination Procedure

Now for determining the position wise weight for batsman in T-20 cricket we collected the data for each batsman about their runs scored, balls faced in a match from 1st January 2016 to 11th March 2020. Now we will calculate the Strike of the Batsman by the following formula:

$$\frac{\text{Runs Scored by the ith batsman in the jth position in tht tth match}}{\text{Number of Balls Faced}} \times 100$$

Now we will calculate the Adjusted_Runs(AR) Scored by the batsman for the following formula given by Lemmer (2005),

$$AR_{ijt}=R_{ijt}\sqrt{\frac{SR_{ijt}}{SR_t}}$$

Rijk=Runs Scored for the i^th batsman in the j^th position in the t^th match.
SRitj=Strike Rate for the i^th batsman in the j^th position in the t^th match.
SRt=Match Strike Rate of the t^{th} match.

Now for each batsman the Average_Adjusted_Runs (AAR) for the i^{th} batsman for the j^{th}position is given by the following formula,

$$AAR_{ij}=\frac{\sum_t Adjusted\_Runs_{itj}}{\text{Number of Innings batted in the } j^{th} \text{ position by th } i^{th} \text{ batsman}}$$

Now Average adjusted runs for each batsman with respective to their position is calculated. Then we plot these points in the graph with respect to batting position using curve expert and fit a best possible curve using the same.

Result and Discussion

All the players are considered takingall the criteria discussed above for selecting a batsman. For each batsman Average Adjusted Runs specific to the position is calculated and then using curve expert software a best suitable. The batting position wise performance are measured so the same batsman may appear more than once for performance measurement as it is based on different positions. The curve fitted the data best is Gaussian Model Curve. The equation for Gaussian Model is given by,

y_ij=ae^((-(x_j-b))/(2c^2))

Where,

Estimated Average Adjusted Runs for the i^{th} batsman in the j^{th} position:

x_j= Corresponding Batting Position
a = 27.9321
b = 0.9578
c = 4.6544

Figure 1, depicts the relationship between batting position and average adjusted runs. The relationship is best explained by the Gaussian Model which best fits the data. The fitted curve is highlighted by the red line in Figure 1. In mathematics, a Gaussian function, often simply referred to as a Gaussian. It is named after the mathematician Carl Friedrich Gauss. The graph of a Gaussian is a characteristic symmetric «bell curve" shape. The parameter a is the height of the curve›s peak, b is the position of the centre of the peak and c (the standard deviation, sometimes called the Gaussian RMS width) controls the width of the «bell».[5]

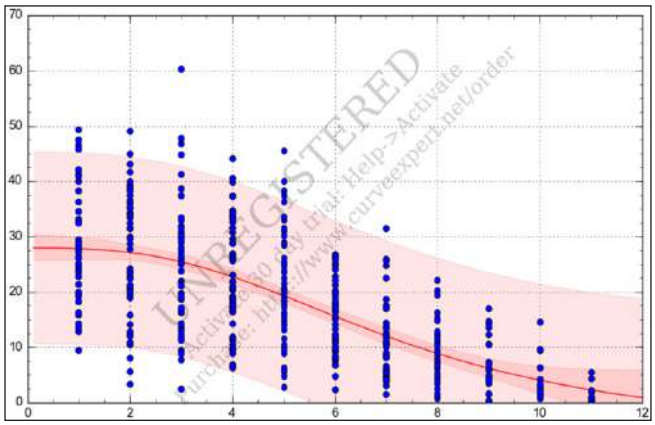

Figure 1.Relationship Between Batting Position and Average Adjusted Runs in Case of T-20 Cricket

Now, using the fitted equation Estimated Average Adjusted Runs were calculated and weights were found by scaling down the estimated Average Adjusted Runs values obtained from the curve such that the weights add up to eleven. Table 1, explains position wise weight specific to T-20 Cricket.

Table 1.Batting Position Wise Weight for T-20 Cricket

Batting Position	Estimated Adjusted Score	Weight
1	27.93	1.78
2	27.24	1.74
3	25.37	1.62
4	22.56	1.44
5	19.16	1.22
6	15.53	0.99
7	12.03	0.76
8	8.89	0.56
9	6.27	0.40
10	4.23	0.27
11	2.72	0.17
Total	171.215	11.00

From Table 1, it is clear that the importance of getting wickets of top order batsman is more than the lower order batsman. Since for top five batsman it is more than 1 and

it gradually diminished less than 1. Among lower order batsman the importance of getting wicket number seven and eight are more since they have more weights than other lower order batsman.

We combine all the weights for ODI, Test given by Lemmer (2005) and T-20 weight obtained in the study in Table 2. Since, we have derived the batting position wise weight for T-20 cricket, so these weights can be used for computing Combine Bowling Rate(CBR*). These weights would be very helpful for researchers in deriving various bowling performance using CBR*. Off late researchers are using , ODI weights for computing the performance of bowlers in T-20 cricket. Thus this weights can be utilised for measuring bowler performance and will lead to more accurate index for measuring bowling performance.

Table 2.Weights of Wickets According to the Batting Position

Batting Position	ODI*	Test*	T-20I**
1	1.30	1.20	1.78
2	1.35	1.31	1.74
3	1.40	1.42	1.62
4	1.45	1.53	1.44
5	1.38	1.47	1.22
6	1.18	1.25	0.99
7	0.98	1.02	0.76
8	0.79	0.79	0.56
9	0.59	0.56	0.40
10	0.39	0.34	0.27
11	0.19	0.11	0.17

Conclusion

While the weights for ODI and Test indicates that it is higher for batting positions 3, 4 and 5 indicating that they are more vital wickets of a team, but the weights in case of T20I shows that it is highest for opening batsman's as they take more responsibility in run scoring and hence becomes vital wicket to be taken and weights gradually decreases as batting positions increases. Also for ODI and Test Matches the weight is more than one up to 6^{th} and 7^{th} position respectively, but for T-20I the weight is more than one up to 5^{th} position meaning that Top order batsman's performances are more vital in T20Is.These weights would be very helpful for researchers in deriving various bowling performance using CBR. Off late researchers are using the ODI weights for computing the performance of bowlers in T-20 cricket. Thus this weights can be utilised for measuring bowler performance. The batting position wise weight can also be obtained for different T-20 leagues over the globe and simultaneously performance of bowlers can also be obtained for various T-20 leagues.

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Article

Exploring the Research Trends and Scientific Productivity in the Field of Anthropology: A Scientometrics Analysis

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How to cite this article:
Vishakha, Sarangapani R. Exploring the Research Trends and Scientific Productivity in the Field of Anthropology: A Scientometrics Analysis. *Proceedings ICSTRDA* 2021; 61-66.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-02-27

A B S T R A C T

The paper examines global and Indian publications of Anthropology research literature on a series of Scientometrics indicator in 10 years during 2010-2019. Data is extracted from Web of Science core collection database maintain by Clarivate Analytics consisting of 13,756 publications in Anthropology research. The paper profiles global and Indian publication output and share of 10 most productive countries, Authors, journals, Areas and Institutions on a series of indicators including publication output, number of citations, h-index, citation per paper and share international collaboration.

India's global share is 1.49% in Anthropology research. USA obtains 1st position for maximum number of the research followed by England, Germany and India own 15th position. Among the all forms of the documents 'article' is mostly used form. In the count of active authors, Cattaneo C. produced 79 publications ranked first and in India Kanchan T contributed 39 publications in Anthropology research during 2010-2019. In top 10 most preferred journals 'Forensic Science International' contributed highest publications with 457 and Indian journal 'Medicine Science and the Law' contributed 9 publications. The global Anthropology research witnessed the participation of 128 countries, top 10 countries together alone accounted for 70.92% of global publication. USA contributed highest publication with 4446 (32.33%) publications and in secured 15th position by 206 publications.

In present study, it is evident from the results Indian research output ranks so low. It is suggested that, the Indian government should promote more scientists to participate in global international collaborative projects between India and other developed and developing countries in Anthropology research.

Keywords: Anthropology, Web of Science, Scientometrics, India, USA, Total Citations

Introduction

The term anthropology is a combination of two terms 'anthropos' and 'logus', the former meaning human and the later meaning discourse or science. Thus anthropology is the science or discourse of man. It is the science or discourse of human beings. Aristotle first used the term 'Anthropologist'. In simple words, Anthropology is the study of various elements of humans, including biology and culture, in order to understand human origin and the evolution of various beliefs and social customs. It is the scientific study of the origin, the behaviour and the physical, social, cultural development of humans. "Anthropology is the science of groups of men and their behaviour and production." Anthropology is the scientific study of the physical, social and cultural development and behaviour of human beings since their appearance on this earth. Jocobs and Stern.

Anthropology as a Discipline

The emergence of anthropology as a distinct discipline occurred only recently in nineteenth century. Sydney Slotkin in his book 'Readings in early Anthropology' traced the history of many anthropological sub-disciplines form seventeenth and eighteenth century. But he also agreed that the real professional interest of the subject did not appear until nineteenth century. For the genesis of systematic thinking we usually refer back to the classical Greek Civilization especially to the writings of Herodotus in fifth century B.C. Not only Herodotus, many other Greek and Roman historians namely Socrates, Aristotle, Hippocrates, Plato, etc. are considered as pioneer social thinkers.

Anthropology is a young discipline in India. By the term 'Indian Anthropology', Andre Beteille (1996), wanted to mean the study of Society and Culture in India, by the anthropologists, irrespective of their nationality. There were many anthropologists inside or outside of India who took interest in the study of Indian society and culture. However, anthropology owes its origins in the later half of the 19th century with the ethnographic compilation of tradition, custom and belief of different tribes and caste in various provinces of India. Professor DN Majumdar, found the beginning of Indian Anthropology in the establishment of Asiatic Society of Bengal that was inaugurated by Sir William Jones in 1774. Scientometrics investigates quantitative aspects of science; it is the quantitative of science of science, of scientific communication studies and of science policy studies. (Mareeswari et al., 2014). Scientometrics is one of the purport metric tools by which the state of science and technology can be observed by means of overall scientific publications at a given level of specialization (J Arumugam, R Bala Subramani, 2019). The scientific communications of constant research in the field of Anthropology is found rising all over the world as well as India. The present study is an effort to examine the anthropology research in global as well as India setting as focused in its publications output in web of science database during 2010-2019.

Review of Literature

However, a few Scientometrics studies were reported in the past on Anthropology literature from other countries. Z Bencetic Klaic and B Klaic (1997), analyzed the research output in the republic of Croatia for the period of 1980-1996. This study exposed some remarkable finding like the major part of the literature 218 (85.83%) were published by Croatian authors. The most used journal was Collegium Anthropologium in which 237 scientific papers were published or 93.3% of the total number of anthropological paper. Erlend Kirkeng Jorgensen (2016) examined the research output on archaeological publishing across the science/ humanities spectrum during 2009-2013. The major findings showed that 926 papers published in six high ranking archaeological journal. Mohammed Ali Mohsen and et al., (2015) analyzed research publication on Linguistics during 2005-2014. They found that USA is most productive country and University of Illinois, USA ranked first in Linguistics research literature. The reviewed literature search showed that there is no comprehensive scientometric study has been carried out on Indian and global Anthropology research so far.

Objectives of the Study

- To study the Global and Indian research output, its growth, rank and impact
- The scientometric profile of 10 most productive countries, productive Indian and foreign Authors and Institutions
- To identify the preferred sources for publication, core journals and broad subject areas
- To find out total citations, citation per paper and h-index
- To examine authorship pattern in anthropology research

Methodology

The present study based on Global publication data in Anthropology retrieved from Clarivate analytics Web of science core collection, science and social science citation database for the 10 years (2010-2019). The search string used for data retrieval is SU=(Anthropology) or WC, "Anthropology" refined by Time span=2010-2019. Databases=Sci-Expanded and SSCI, this search criteria yielded 13,756 records. The data download into Excel sheet for further analysis. The data was analyzed to identify core journals, active Authors in the field of Anthropology and also compare India's performance with the world's performance.

Data Analysis

Annual Publications Output of Anthropology

The total publications output in the world and India of

Anthropology research for 10 years were total 13,756 and 206 records respectively during 2010-2019.The highest global and Indian publications were accounted 1589 in 2018 and 25 in 2011 respectively and lowest is global and Indian publication is 1111 in 2010 and 17 in 2013 India's global share in Anthropology research is 1.49% during 2010-2019 and highest share 2.03% in 2011.

In below Table 1, the Anthropology research increased 2010 to 2019 with 1111 to 1514. The Annual growth is increased every year. But in India, the annual growth of Anthropology publication is low. The trend is negative it decreasing 25 in 2011 to 19 in 2019 in India.

Table 1.Annual Publications Output by World and India on Anthropology Research

Publication Years	Publications		India's Global share
	World	India	
2019	1514	19	1.25%
2018	1589	23	1.44%
2017	1573	22	1.39%
2016	1526	23	1.50%
2015	1456	18	1.23%
2014	1255	20	1.59%
2013	1252	17	1.35%
2012	1254	18	1.43%
2011	1226	25	2.03%
2010	1111	21	1.89%
Total	13756	206	1.49%

Source Wise Distribution

In types of sources 'Article' mostly used forms of the document. Out of 1376 publications by world Anthropology research 75.116% (10334) appeared in Articles, 13.83% (1903) in Book review, 5.73% (788) in Editorial material. In Table 2, in top 10 source of document Article is mostly used form of document and least is correction in Anthropology.

Table 2.Distribution of Types of Sources Related to Anthropology Research Literature

Types of Sources	Publications	% of 13756
Article	10334	75.116
Book review	1903	13.838
Editorial material	788	5.73
Review	443	3.221
Book chapter	196	1.425
Meeting abstract	183	1.331
Proceedings paper	161	1.171
Early access	139	1.011
Letter	38	0.276
Correction	25	0.182

Scientometrics Profile of Most Productive Indian Authors in Anthropology Research

World research output in Anthropology 19373 are total authors and 479 are Indian authors contributed. In Top 10 most productive Authors of world and India is showing in Table 3 below, Cattaneo C produced 79 publications ranked first and in India Kanchan T contributed 39 publications in Anthropology research during 2010-2019. In below Table 3, the active author of world and India are Cattaneo C and Kanchan T respectively.

Table 3.Top 10 Most Productive Author in World and India

Authors	Records	% of 1376	TC	CPP	Authors	Records	% of 206	TC	CPP
Cattaneo C	79	0.574	127	11.55	Kanchan T	39	18.932	60	12
Cunha E	40	0.291	70	7.78	Krishan K	32	15.534	41	3.73
Gibelli D	39	0.284	60	12	Menezes R G	8	3.883	40	4
Kanchan T	39	0.284	55	6.88	Acharya A B	7	3.398	39	3.55
Krishan K	32	0.233	46	6.57	Dimaggio J A	5	2.427	34	3.4
Telmon N	32	0.233	45	5	Nagesh K R	5	2.427	33	3.67
Franklin D	31	0.225	42	4.67	Saini V	5	2.427	32	3.2
Charlier P	24	0.175	40	4	Hallikerimath S	4	1.942	29	3.22
Anonymous	22	0.16	39	3.55	Kumar G P	4	1.942	28	2.55
Bruzek J	22	0.16	36	4.5	Naikmasur V G	4	1.942	25	2.27

Table 4.Top 10 World and Indian Most Productive Journals

Journals (World)	Records	% of 13756	Journals (India)	Records	% of 206
Forensic Science International	457	3.323	Medicine Science and the Law	9	8.491
Journal of Forensic Sciences	449	3.265	Journal of the Anatomical Society of India	6	5.66
American Anthropologist	341	2.48	Journal of Forensic Sciences	9	8.491
Journal of the Royal Anthropological Institute	312	2.269	Journal of Forensic and Legal Medicine	29	27.358
American Journal of Physical Anthropology	307	2.232	Indian Journal of Gender Studies	3	2.83
Current Anthropology	225	1.636	Forensic Science International	24	22.642
American Ethnologist	179	1.302	Contributions to Indian Sociology	14	13.208
Annual Review of Anthropology	161	1.171	Australian Journal of Forensic Sciences	4	3.774
Anthropos	147	1.069	Anthropology Medicine	4	3.774
International Journal of Legal Medicine	130	0.945	Anthropologist	4	3.774

Most Productive Journals

In top 10 most preferred journals 'Forensic Science International' contributed highest publications with 457 and Indian journal 'Medicine Science and the Law' contributed 9 publications. Out of 13756 records, 449 publications in Journal of Forensic sciences obtain second position and 341 publications in American Anthropologist journal and so on. In Table 4, Forensic Science International is prolific journal in world Anthropology research and Medicine Science and the Law is India's prolific journal.

Global Research Output and Publication Share of Top 10 Countries and India Citation Profile

The global Anthropology research witnessed the participation of 128 countries during 2010-2019, top 10 countries contributed 10849 publications during 2010-2019. However, the top 10 countries together alone accounted for 70.92% global publication. USA contributed highest publication with 4446 (32.33%) publications, 1662 (12.086%) contributed by England and 790 (5.737%) by Germany and India own 15th position by 206 publications in anthropology research. The total 36100 citations obtained by USA taken first position, 15243 citations by England, third position Germany by 4905 and India got 1564 citations. The Average citation per paper 8.12 of USA, 9.17 of England and 7.56 of India.The highest h-index is USA (72), England (53), Germany (32)and India (21).

Table 5.Country wise Distributions with Total Citation, Average Citation Per Paper and h-index

Countries	Records	% of 13756	TC	Average CPP	h-index
USA	4446	32.33	36100	8.12	72
England	1662	12.086	15243	9.17	53
Germany	790	5.737	4905	6.21	32
Australia	760	5.526	5969	7.85	34
France	712	5.177	4936	6.93	31
Canada	632	4.596	5337	8.44	33
Spain	503	3.65	3139	6.24	24
Italy	445	3.236	3382	7.6	27
Brazil	380	2.763	2366	6.23	20
Netherlands	313	2.276	2955	9.44	28
India	206	1.49	1564	7.56	21

Table 6.Top 10 Most Productive World and Indian Institutions in Anthropology research

Organizations/ Institutions (World)	Records	% of 13756	Organizations/ Institutions (India)	Records	% of 206
University of London	466	3.389	Manipal Academy of Higher Education (MAHE)	41	19.903
University of California system	401	2.916	Panjab University	39	18.932
Centre national de la Recherché scientifique CNRS	282	2.051	Kasturba Medical College Mangalore	36	17.476
University of Oxford	188	1.367	University of Delhi	11	5.34
University college London	171	1.243	Indian Institute of Technology System (IIT)	8	3.883
University of Cambridge	167	1.214	SDM College Dental Science Hospital	8	3.883
State university system of Florida	160	1.163	All India Institute of Medical Sciences AIIMS Jodhpur	6	2.913
University of Toronto	126	0.916	Banaras Hindu University	6	2.913
Max Planck Society	124	0.902	Jawaharlal Nehru University	6	2.913
University of Copenhagen	120	0.873	Father Muller Medical College	6	2.913

Table 7.Top 10 Funding Agency in Anthropology Research in World and India

Funding Agencies World	Records	% of 13756	Funding Agencies India	Records	% of 206
National Science Foundation (NSF)	239	1.738	Department of Anthropology Punjab University Chandigarh	8	3.883
United States Department of Health Human Services	159	1.156	University Grants Commission India	7	3.398
National Institutes of Health (NIH) USA	152	1.105	United States Department of Health Human Services	5	2.427
Economic Social Research Council (ESRC)	142	1.033	National Institutes of Health NIH USA	4	1.942
WENNER GREN FOUNDATION	105	0.764	National Science Foundation NSF	4	1.942
European Research Council (ERC)	77	0.56	Economic Social Research Council ESRC	3	1.456
Australian Research Council	74	0.538	NIH Eunice Kennedy Shriver National Institute of Child Health Human Development NICHD	3	1.456
European Union (EU)	64	0.465	Australian Research Council	2	0.971
National Natural Science Foundation of China	56	0.407	Department of Science Technology India	2	0.971
WELLCOME TRUST	46	0.334	DST Purse Grant Panjab University Chandigarh India	2	0.971

Language Wise Distribution

The language wise distribution of Anthropology research depicted the English mostly used language. Out of total publications 85.275% publications are published in English language. 11729 publications are in English language showed the importance of language.

Most Productive Organization and Funding Agency of World and India Level

The scientometrics profile of the top 10 world and Indian organizations is presented in Table 6. Out of all University of London ranks first with 466 publications, followed by University of California with 401 publications and in India Manipal Academy of Higher Education ranks first with 41 publications followed by Punjab University 39 publications.

In Table 6, above showed the top 10 global and Indian institutions who contributed research in field of Anthropology during 2010-2019.

In above Table 7, showing the top 10 global and Indian funding agencies who contributed in Anthropology research during 2010-2019. Out of all National Science Foundation (NSF) produced 239 papers followed by United States Department of Health Human Services produced 159 papers globally and in India, Department of Anthropology Punjab University, Chandigarh contributed 8 papers followed by University Grants Commission India contributed 7 papers.

Conclusion

In the field of Anthropology research, the results showing that related literature growing year after year. The highest publications in 2018 with 1589 papers, Article is mostly used form of document and the maximum number of records covered by journal articles is Forensic Science International in the field of Anthropology research. United States has published highest number of papers followed by England.

It is evident from the analysis of the study that although the quantity of Indian research output is very low. India obtained 15th position in world Anthropology research. Hence, it is the need of the hour to give more emphasis and encourage on research in Anthropology. It is suggested that the authorities should encourage the researcher as well as institutions; funding agencies take concrete steps and provide more funds for better research.

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Article

Gauging the Social Media Attention of COVID-19 Articles

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How to cite this article:
Saranya R, Parmar M. Gauging the Social Media Attention of COVID-19 Articles. *Proceedings ICSTRDA* 2021; 67-72.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-03-06

A B S T R A C T

Introduction: Altmetrics or alternative metrics has become a novel technique for measuring the impact of the research. It considers social web as a major source of data and measures how a piece of literature has discussed in various social platforms in terms of shares, mentions, bookmarks, tweets, saves, etc. Rather than measuring the scientific impact, it gauges the social impact of the research which can not be done by the conventional way which primarily consisted of counting the citations bagged by an article.

Importance: The deadly pandemic COVID-19 has travelled in social media very fast and subsequently fake information has become a headache. The main impetus for conducting the present study is to know how well articles on COVID-19 have propagated and discussed in social platforms since the disease is unknown to many and social media has become a major carrier of fake information which tempted many to make wrong decisions. We decided to conduct the present study to know how well COVID-19 articles are diffused in social platforms and to find out the hot platform for the discussion. The result of the study can be used for taking proper decisions regarding the management of various social platforms amid this kind of epizootic pandemic.

Objectives: The main objective of the study is to measure the social media attention/ altmetrics of COVID-19 articles.

Methodology: The data for the study would be collected from Dimension database which is a dedicated database for altmetric studies. A search by using the keyword "COVID-19" would be carried out in the database to retrieve articles on the pandemic as on 01 Dec 2020. The articles would be sorted according to the number of social media attention received from highest to lowest. A total of 25 articles with the highest social media attention would be selected and their major metrics from Facebook, Twitter, Mendeley, Blogs, News outlets would be measured and tabled using Excel for the subsequent analysis. The data would be subjected to correlation to know the associations between citations and altmetric attention score in the case of COVID-19 articles.

Keywords: Altmetrics, Tweets, Citations, Social Media, COVID-19, Corona

Introduction

Coronavirus or COVID-19 is an ongoing pandemic, which was first reported in Wuhan, China, in December 2019. Eventually, the news has influenced media headlines around the world. Numerous cases and deaths by country have been reported. As of 30 February 2021, there have been 102083344 confirmed cases of COVID-19, including 2209195 deaths, reported to WHO (WHO, 2020). The researchers are working around the world on the fight against COVID-19 and discovering vaccines to protect from the virus that causes COVID-19 without having any risk. Meanwhile, scholarly publication related to COVID-19 has also increased rapidly. Consequently, there may be fabrication in research. WHO provides a platform for gathering the latest international scientific findings on Covid-19 which is updated daily (WHO, 2020). It's important to examine the research publication useful for the social impact. Social media is recently used as an integral tool for the evaluation of research activities. Whereas the traditional Citation metrics trace the number of times a publication is cited by the others, they do not consider the dissemination to the social media platforms. Altmetrics is one of the tracking tools to track and analyze the online activities around scholarly literature, it is complementary to the traditional citation metrics (Fabiano et al)., 2020). Altmetrics understands all the potential impacts of research. It is the data source from discussion happening online around research because all peoples are communicating with each other through online in their everyday lives (Altmetric.com). This tool provides access to the attention of data received by the scientific products in different social media such as Twitter, Facebook, YouTube, Policy document, Blog, News and so on. Also, the main indicator of Dimension is the Altmetric Attention Score (AAS). The AAS is calculated by summing each indicator multiplied by its weight with necessary adjustments, and the AAS are updated in real-time (Huang et al., 2018).

In this study, we attempted to measure the social media attention of COVID-19 literature using the Dimensions dataset. The major objectives of the study are underpinned below.

Objectives of the study

- To measure the social media attention/altmetrics of COVID-19 articles
- To know the Twitter metrics of COVID-19 articles
- To know the Mendeley readership of COVID-19 articles.

Previous Studies

Batooli, Sayyah (2020), examined to evaluate the rate of attention to the scientific productions on COVID-19 in social media over four months. The result of this research showed a significant positive relationship between the citations and altmetric indicators. Bonyadi and Moghiseh (2020) investigate the level of attention paid to the scientific outputs of researchers focusing on the Coronavirus and family viruses on social media. The study was conducted using altmetrics and scientometric indicators. The result shows that 38% of scientific outputs, 3322 times in social media, 206 times in news and blogs, 39 times in policy and patents, 12 times in other sources and three times in scientific sources have been considered. Fabiano et al., (2020) conducted a study to assess the dissemination of COVID-19 articles as measured by Twitter dissemination, compared to traditional citation-based metrics, determine article characteristics associated with tweet rates. The result of the study concluded that COVID-19 articles had significantly higher tweets rates compared to citation rates. This study further identified article characteristics that are correlated with the dissemination of articles on Twitter, such as 2018 journal impact factor, continent of the corresponding author, topic and open access status. This highlights the importance of altmetrics in periods of rapidly expanding research, such as the COVID-19 pandemic to localize highly disseminated articles. Patel et al., (2020) determined how the social media impact of the radiological literature has changed during the COVID-19 pandemic. It is found that sustained outliers and statistically significant increases in the aggregate fAA score across all five journals, We did not find significantly decreased rates of publication of non-Covid articles in the journals experiencing elevated fAA scores. Torres & Robinson (2020), analyzed the uptake of open access on COVID-19 related literature as well as the social media attention they gather when compared with non-OA papers. The findings showed that most of the publications on COVID-19 are OA and receive higher social media attention than non-OA papers. Vysakh & Babu (2020) conducted a study to measure how well COVID-19 articles attracted in the social web during the deadly pandemic period. The results showed that social media attention to the articles was fluctuating in each month recording an upward and downward trend. Twitter was the major carrier of COVID-19 articles with a total 143452 mentions.

Data and Method

The study is to measure the altmetric score of COVID-19 articles published in the Dimension database which is a dedicated database for altmetric studies. A search by using the keyword "COVID-19" was carried out in the database to retrieve articles on the pandemic as of December 2020. The articles sorted according to the number of social media attention received from highest to lowest altmetric scores. A total of 25 articles with the highest social media attention were selected and their major metrics from Facebook, Twitter, Mendeley, Blogs, News outlets and other major metrics were measured. The analysis was done by using Excel and the references were done according to the APA 6th edition.

Result and Discussion

Article Distribution and Metrics

The study made an effort to measure the social media attention of COVID-19 articles published in dimension databases. The article publication from January to December 2020 is considered and major metrics from social platforms are gauged. Figure 1, demonstrates the number of articles published in each month, their corresponding citations from Dimensions and altmetric score calculated by Altmetric.com. A total of 25 articles were seen and the highest number of publications recorded in April, May and June with 5 articles respectively. Articles published in April got the highest number of citations and social media attentions accounted for 4718 and 111110 respectively. Both citations and social media attractions to the articles were fluctuating in each month and in the last month i.e. November recorded 234 citations and 60145 social media citations for 3 articles.

Social Media Attention in Details

Altmetric uses a lot of social media data to calculate scholarly impacts; Altmetric helps to find out the scores of articles discussed on social media platforms such as in Facebook, blogs, Twitter, Wikipedia, news, LinkedIn, etc. In this study, it is found that Twitter proved to be the major platform for discussing COVID-19 articles with a total score of 779583. Mendeley is the second major platform on which articles got outstanding buzz with a total mention of 35051 followed by News outlet with 10321 posts.

Facebook also became a major platform on which remarkable activities have happened about COVID-19 articles and received a total score of 1143. It can also be found from the table that in many platforms, articles are yet to penetrate like Wiki, Q & A threads and policy sources. The metric Highlights recorded the least mention of COVID-19 articles (See Table 1).

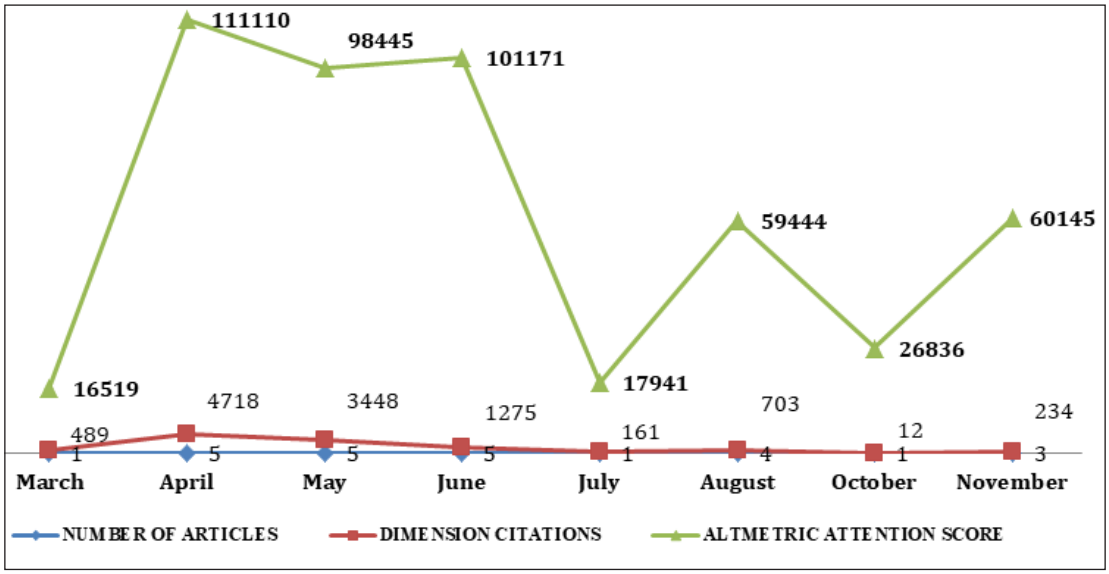

Figure 1.Article Distribution and Metrics

Table 1.Major Social Media Attention in Details

Months	News	Blogs	Policy documents	Twitter	Face-book	WIKI	Reddit	F1000	QnA	Videos	Men-deley	Total
March	327	29	1	18381	60	2	26	0	0	8	1828	20662
April	1206	294	20	224156	285	21	75	1	7	47	13831	239943
May	2586	312	23	128529	213	15	103	4	4	37	9226	141052
June	1797	179	10	156750	246	15	100	1	2	22	5163	164285
July	630	33	5	24668	15	1	14	0	0	0	536	25902
August	1498	133	3	85213	173	3	51	1	0	20	3093	90188
October	298	34	0	38033	57	4	29	0	0	0	172	38627
November	805	98	2	103853	94	2	72	1	0	20	1202	106149
Total	9147	1112	64	779583	1143	63	470	8	13	154	35051	826808

Geographical and Demographic Breakdown of Tweets

The altmetric automatically gathers the tweet and re-tweet which contains a direct link to the scholarly publication. The most tweeters who share the research output were collected from their profiles.

The types of users are gathered from their profiles provided by the description of Twitter users (Altmetric.com).

From Table 1 and Figure 2, the topmost active tweeters are from the US with a total mention of 607652. They are followed by the UK with a total of 52243.

A large majority of user categories are the members of the public with a count of 577312.

Geographical and Demographic Distribution of Readers in Mendeley

The Mendeley reader count is tracked by the altmetric by retrieving a total number of Mendeley readership. The Mendeley reader counts throwback the scholarly impact and also the education and professional impact (Thelwall, M, & Nevill, T. (2018). The data shown below were compiled from readership statistics from Mendeley readers. The demographic factors show that a total of 4253 of researchers are the foremost of the Mendeley reader by profession followed by the students/ bachelor with a total mention of 1356. Most of the reader discipline is from medicine and dentistry with 7890 mentions, followed by biochemistry, genetics & molecular biology with 1026 mentions.

Table 2.Geographical and Demographic Distribution of Tweets

S. No.	Twitter	Geographical Breakdown			Demographic Breakdown		
		Country	Count	AS%	Type	Count	AS%
1	72640	SPAIN	6123	8	Members of public	24109	91
2	61689	US	16806	27		22439	96
3	38033	US	16039	42		25254	82
4	26900	US	3124	12		16676	87
5	29612	FRANCE	3545	12		16909	91
6	49509	US	11126	22		55945	92
7	27595	US	3577	13		16020	84
8	32489	US	6142	19		22196	89
9	33398	US	5382	16		14790	85
10	26620	US	3362	13		21201	88
11	26698	US	8646	32		33850	90
12	24667	US	4761	19		18068	91
13	29717	US	5570	19		14506	85
14	20327	US	3173	16		16269	82
15	18381	US	6585	36		23541	92
16	60503	US	27148	45		24109	92
17	18576	US	2918	16		22439	86
18	26415	UK	3603	14		25254	84
19	16424	US	1193	7		16676	90
20	22149	US	5541	25		16909	96
21	37417	US	5247	14		55945	90
22	20224	US	1911	9		16020	89
23	16336	US	2299	14		22196	89

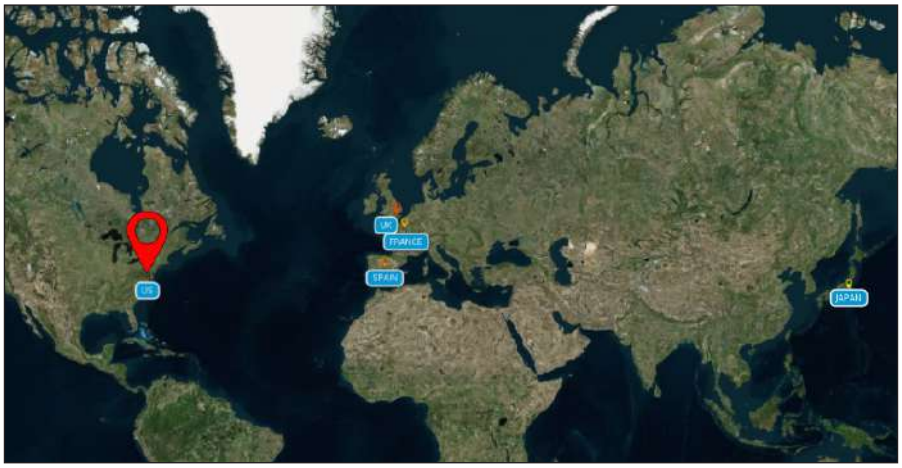

Figure 2.Tweets by Countries

Table 3.Geographical and Demographic Distribution of Readers in Mendeley

S. No.	Mendeley	Geographical breakdown			Demographic breakdown					
		Country	Count	AS %	Reader by profession	count	AS %	Readers by discipline	count	AS%
1	5058	Unknown	5058	100	Student> Bachelor	817	16	Biochemistry, genetics & molecular biology	1026	20
2	0	Unknown	0	0	-	0	0	-	0	0
3	172	Unknown	172	100	Other	37	22	Medicine and Dentistry	65	38
4	5987	Unknown	5987	100	Researchers	837	14	Medicine and Dentistry	1608	27
5	1448	Unknown	1448	100	Researchers	194	13	Medicine and Dentistry	506	35
6	217	Unknown	217	100	Researchers	32	15	Medicine and Dentistry	72	33
7	2323	Unknown	2323	100	Student> Bachelor	315	14	Medicine and Dentistry	750	32
8	752	Unknown	752	100	Researchers	130	17	Medicine and Dentistry	145	19
9	1604	Unknown	1604	100	Researchers	275	17	Medicine and Dentistry	388	24
10	1536	Unknown	1536	100	Researchers	300	20	Medicine and Dentistry	311	20
11	616	Unknown	616	100	Researchers	133	22	Medicine and Dentistry	160	26
12	536	Unknown	536	100	Researchers	86	16	Medicine and Dentistry	129	24
13	41	Unknown	41	100	Student/ bachelor	7	17	Engineering	4	10
14	2498	Unknown	2498	100	Researchers	482	19	Medicine and Dentistry	529	21
15	1828	Unknown	1828	100	Researchers	230	13	Medicine and Dentistry	429	23
16	105	Unknown	105	100	Researchers	23	22	Medicine and Dentistry	45	43
17	2140	Unknown	2140	100	Researchers	410	19	Medicine and Dentistry	627	29
18	265	Unknown	265	100	Researchers	44	17	Medicine and Dentistry	94	35
19	1244	Unknown	1244	100	Student/ bachelor	217	17	Medicine and Dentistry	238	19

20	211	Unknown	211	100	Researchers	32	15	Medicine and Dentistry	64	30
21	2065	Unknown	2065	100	Researchers	327	16	Medicine and Dentistry	681	33
22	1373	Unknown	1373	100	Researchers	261	19	Medicine and Dentistry	357	26
23	1202	Unknown	1202	100	Researchers	208	17	Medicine and Dentistry	286	24
24	1830	Unknown	1830	100	Researchers	249	14	Medicine and Dentistry	409	22
25	0	Unknown	0	0		0	0		0	0
Total	35051		29993			5646			8923	

Conclusion

The present study presides to gauging the social media attention of COVID-19 articles published in Dimension database. The altmetrics can potentially be gathered from any online forum where researchers are being discussed, that include social media, research blog, public policy documents, news article and more, the possibilities are endless. A total of 25 articles with the highest social media attention were selected and their major metrics from Facebook, Twitter, Mendeley, Blogs, News outlets and other major metrics were measured. The articles were collected by sorting the publication by highest altmetric score. In this study, it is found that Twitter proved to be the major platform for discussing COVID-19 articles. The most Tweeters were from the US and demographically they were identified as members of the public. Reports show that the majority of the Twitter users are situated in the US and the majority of the discussion is in English. So the result of the current study goes in line with the study findings of Babu R, & Vysakh C. (2019). They also confirmed in their study that the majority of the tweeters were from US and UK. Further, the study noted that Mendeley was the second major platform on which articles got outstanding buzz followed by News outlet. Researchers in Medicine and Dentistry were the major readers of articles on COVID-19 in Mendeley. Facebook also became a major platform on which remarkable activities have happened about COVID-19 articles. It can also be found that in many platforms, articles are yet to penetrate like Wiki Q, A threads and policy sources. The metric Highlights recorded the least mention of COVID-19 articles. The result of the study gives proper insights for taking prudent decisions regarding the management of various social platforms amid this kind of pandemic since the platforms have fructified fake information at large.

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Article

Impact of Climate Change on Multi-Temporal NDVI Profile and Phenology of Winter Crops in Bhuj Taluka, Gujarat, India

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How to cite this article:
Vaghela BN, Solanki HA, Kalubarme MH. Impact of Climate Change on Multi-Temporal NDVI Profile and Phenology of Winter Crops in Bhuj Taluka, Gujarat, India. *Proceedings ICSTRDA* 2021; 73-82.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-02-14

A B S T R A C T

The present study on winter crop growth monitoring in Bhuj Taluka of Kachchh district was carried out using multi-temporal Sentinel-2 multi-spectral data (spatial resolution 10-m) from October-2018 to March-2019. The major objective of this study was to generate growth profiles of different crops and identify the relationships between crop phenology and crop growth stages by generating Normalized Difference Vegetation Index (NDVI) profiles of major crops. The results of spectral behaviour of wheat (normal & late sown), mustard and castor during active growth stages indicated that these three winter crops have distinct spectral signatures in Sentinel-2 spectral bands. The NDVI growth profiles of three winter crops indicate the temporal variations during different growth stages of these crops and the maximum temporal variations can be seen during early growth stages to flowering and grain filling stages. During the germination and early growth stages NDVI values of both wheat and mustard were in the range of 0.1 to 0.3 when the maximum temperatures were in the range of 35°C to 40° C. Under cooler temperatures, NDVI values were higher in range of 0.5 to 0.6 whereas, the higher temperatures NDVI values are low as compared to normal conditions. The Growing Degree Days (GDD) values are low during the early growth stages whereas it starts increasing during the grain filling and maturity stages of the winter crops.

The final multiple regression equation was used to predict the wheat acreage in Bhuj Taluka and the comparison between the wheat crop statistics showed that the predicted acreages were very close to estimates provided by the Directorate of Agriculture

Keywords: Sentinel-2 Multi-spectral Data, Normalized Difference Vegetation Index (NDVI), Spatio-Temporal NDVI Profile, Crop Growth Monitoring, Growing Degree Days (GDD), Multiple Regression

Introduction

Semi-arid regions of tropics are the most vulnerable regions of the world with loss of crop productivity due to impact of climate change. Considering rise in population, substantial increase in crop production needs to be achieved for obtaining food security. Indian agriculture plays very important role in the economy of the country which is influenced by year-to-year variability in monsoon affecting the crop production. The spatio-temporal information about crop growth and its condition is important for monitoring crop progression during the growing season which provides information necessary for efficient crop management. Crop growth varies every year depending on climatic conditions, local weather, soil properties, environmental changes and anthropogenic activities. Remote sensing data can be effectively used for providing spatial and temporal information on crop growth and its condition and also for generating crop phenology during growing season.

Timely and accurate information on periodic crop progress and development is very important for crop management. In India, Crop Acreage and Production Estimation (CAPE) project demonstrated the potential of remotely sensed data for crop inventory (Navalgund et al., 1991). Dadhwal et al. (2002) have reviewed Indian experience of crop inventory using RS data. A multiple crops acreage estimationand production forecasting program based on multiple inputs was developed under FASAL (Forecasting Agricultural output using Space, Agro-meteorological and Land based observations) in India. Parihar and Oza (2006) have described the concept and program details. While Xiangming et al. (2006) have used multi-date MODIS (MODerate resolution Imaging Spectroradiometer) data for mapping paddy rice in South and South-East Asia. Wardlow et al. (2007) have used MODIS NDVI time series data for crop classification in US. Central Great Plains. The spatio-temporal information about crop growth and its condition throughout the growing season is very important for crop management and yield estimation (Walthall et al., 2012; Sakamoto et al., 2013). Crop growth and its condition vary every year and its physical location which is also affected by climate conditions, weather, environmental changes and soil properties. Vegetation Indices (VI) computed from satellite images gives an indication of the presence of vegetation and its health. Several studies on remote sensing applications have proved that VI can be used effectively in crop monitoring as well as in characterizing the vegetation with crop phenology. Time series profiles of VI derived from satellite data are potential tools to interpret the dynamics and phenological development of vegetation in different areas.

Spectral Indices and Crop Phenology

Remote sensing data can be an effective supplement to ground based observation, providing spatial and temporal information for vegetation monitoring over large areas. In recent years, time-series of coarse resolution data, such as from the Advanced Very High Resolution Radiometer (AVHRR) and the Moderate-resolution Imaging Spectroradiometer (MODIS), have been used to extract vegetation phenology (Reed et al., 1994; Zhang et al., 2003; Jonsson and Eklundh, 2004; Zhao et al., 2009). Various methods have been developed to derive vegetation phenology. A common method is to assign an NDVI threshold to mark the onset of vegetative growth (Lloyd, 1990). This threshold, however, varies with vegetation types, soils and climate conditions (Reed et al. 1994). Phenological models and curve-fitting methods were used to identify the occurrence of significant phonological events (Zhang et al., 2003). The phenological characteristics of croplands, however, can be complicated. Zhang et al., (2006) found that crops might have multiple growth and senescence cycles under different agricultural practices, making it more challenging to extract phenological metrics. Specific methods are developed to detect phenological stages of main crops in China (Lu, Guo 2009). A study was carried out to develop a curve fitting approach to enhance phenological extraction for winter wheat from a time series of SPOT-VEGETATION products. A simulation is developed to extract wheat phenology in the North China Plain, an important wheat production region in China. The satellite-derived vegetation phenology is then analysed and compared with observation records at local agro-meteorological stations (Linlin Lu et al., 2014). Methodology of early estimation of crop sown area at large scale was attempted by using high temporal coarse spatial resolution data and low temporal fine spatial resolution data covering Gujarat State. The previous years' data was also analysed for extracting a-priori knowledge of crop sowing area. Early crop area estimate was made for Gujarat state (India) for 2011-12 Rabi season. Multi-date MODIS (MODerate resolution Imaging Spectroradiometer) data and two-date Resourcesat-2 AWiFS (Advance Wide Field Sensor) data up to mid-December were used for crop sown area early estimates. Multi-date MODIS data for previous five years provided a-priori information on crop presence/ absence over the previous five crop seasons (Rajak et al., 2016). The methodology was to extract key elements of crop growth cycle (i.e. number of crops per year and their planting peak harvesting dates) by analysing MODIS-NDVI data series of one agricultural year (from June 2012 to May 2013) over Gujarat. Such an analysis is very useful for analyzing dynamics of kharif and rabi crops (Patel and Oza, 2014). Several studies discussed the use of multi-temporal vegetation indices, such as Normalized Difference Vegetation Index (NDVI), for the identification of crop types from other types of land cover (Hao, et al., 2016; Marais Sicre et al., 2016).

Vegetation indices computed from satellite images gives an indication of the presence of vegetation and its health. Studies on remote sensing applications have proved that vegetation indices can be used effectively in crop monitoring as well as in characterizing the vegetation with phenology. Time series profiles of vegetation indices derived from satellite data are potential tools to interpret the dynamics and phenological development of vegetation in different areas (Patel and Oza, 2014). NDVI has been recognized for its ability to monitor crops and as estimator of crop yields since early 1980s (Tucker et al., 1980; Groten, 1993; Quarmby et al., 1993; Doraiswamy and Cook, 1995; Lewis et al., 1998; Boken and Shaykewich, 2002).Maximum leaf area is achieved 10-15 days before anthesis (flowering stage) (Abbate et al., 2007). Labus et al., (2002) have found good relationship between wheat yield and NDVI during the later part of the growing season, prior to harvest, at the regional scale. Grain filling in wheat crop is highly sensitive to temperature. The duration of grain filling is influenced by temperature: a rise of 15°C, from 10-15°C to 25-30°C, reduced the duration of grain growth by about two-thirds (Mariano et al., 2015).

Objectives

The crop growth monitoring and development throughout its growing season and early estimation of area under the crop can be successfully achieved using the multi-date Remote Sensing satellite data. The major objective of this study on Rabi crop growth monitoring using multi-temporal, multi-spectral Remote Sensing data and discrimination of different competing crops grown during the Rabi season in Bhuj Taluka, Kachchh district. The detailed objectives of this study are as follows:

- Rabi crop separability using multi-temporal NDVI profiles for Bhuj Taluka
- To analyse the impacts of climatic parameters on Rabi crop of Bhuj Taluka
- To develop procedure for early crop sown area estimation using historical crop statistics and agro-meteorological data

Study Area

Kachchh district is situated around 22° 44' 11"N to 24° 41' 25" N and 68° 9' 46"E to 71° 54' 47" E in the State of Gujarat. The district is divided into 10 taluka and Bhuj is the capital of Kachchh. The average annual rainfall during 1989 to 2018 is 357 mm (GSDMA, 2018) and the average annual temperature in Bhuj is 26.3°C (Climate-data.org). Bhuj taluka falls under the North-West Arid agro-climatic zone. The northern part of the Bhuj taluka has very little agricultural area where as it has large grasslands named as Banni grasslands. These grasslands are spread across an area of 3,847 square kilometers, are currently legally protected under the status as a Protected or Reserve Forest in India. The location map of the study area in Kachchh district is given in Figure 1.

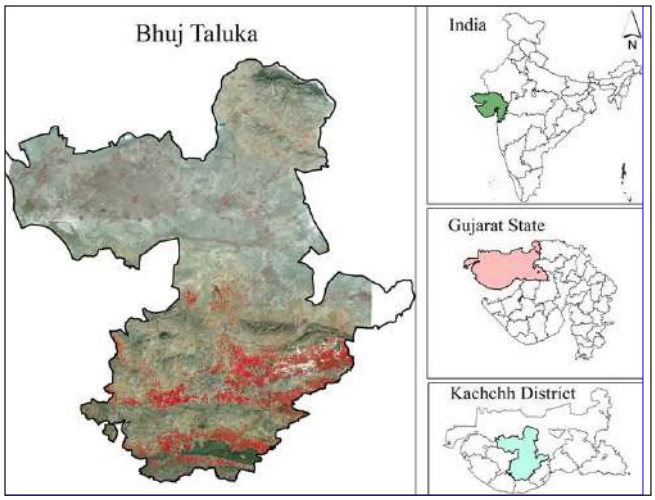

Figure 1.Location Map of the Bhuj Taluka in Kachchh District

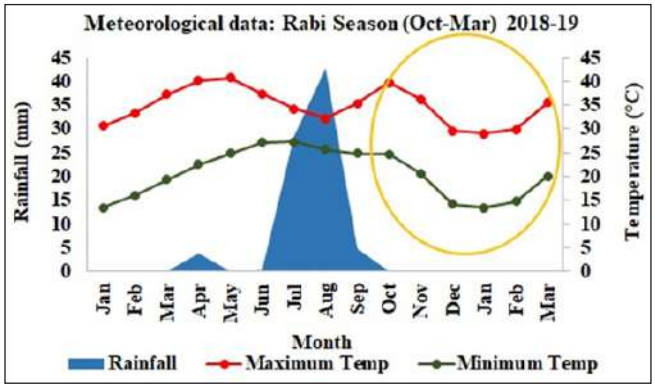

Figure 2.Meteorological Data from Jan-2018 to Mar-2019 in the Bhuj taluka

Rainfall and Cropping Pattern

The area under agriculture is around 17% and the cultivation is almost fully dependent on rains. The district receives an average annual rainfall of 384 mm, which ranges from 342.4 mm at Bhuj to 451.9 mm at Naliya. The low and erratic rainfall has resulted in drought of varying magnitudes. The monthly average meteorological data like minimum temperature, maximum temperature and rainfall from Jan-2018 to Mar-2019 is given in above Figure 2. The normal wheat crop-growing period in the Bhuj taluka is during Rabi Season (winter season) from November to March and the major crops grown during Rabi season are Wheat, Gram, Pea and Mustard. In the State of Gujarat, Rabi season wheat sown area and production was 1059 thousand hectares and 3068 thousand tons respectively for the year 2017-18. Wheat sown area in Kachchh district has increased from 137 hundred hectares during 1978-79 to 213.3 hundred hectares during 2017-18. The area and production of wheat

and mustard crops in Kachchh district from 1978-79 to 2016-17 are given in below Figure 3.

Methodology

Remote Sensing Satellite Data Used

In this study, multi-temporal Sentinel-2 multi-spectral digital data (spatial resolution 10m) of Rabi season (winter season) from Ocober-2018 to March-2019 covering Bhuj taluka in Kachchh district was downloaded from https://earthexplorer.usgs.gov/. The details of Sentinel-2 multi-spectral digital data acquired are given in Table 1. The Sentinel-2 multi-spectral image of 16-Jan-2019 with Bhuj Taluka boundary is given in Figure 4.

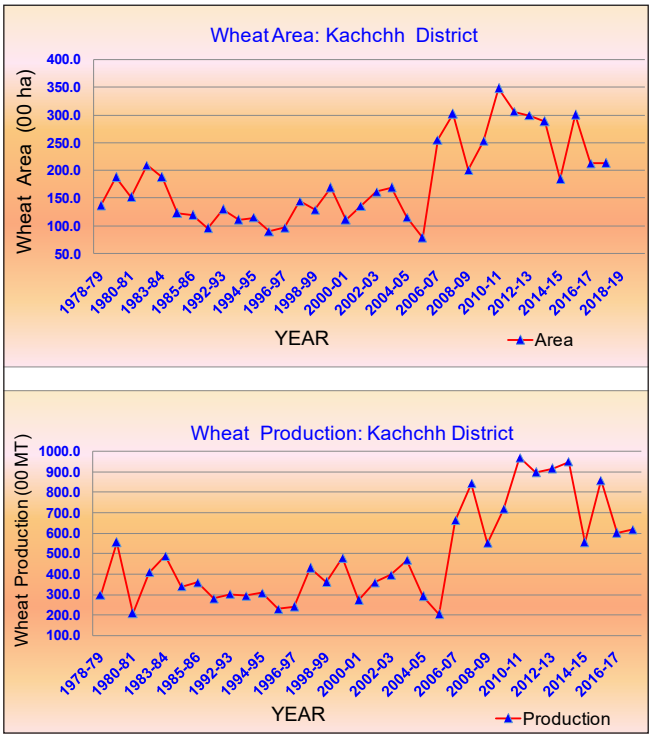

Figure 3.Area and Production of Wheat in Kachchh district

Table 1.Details of Sentinel-2 Msi Data Acquired for Rabi Season (2018-19)

S. No.	Month	Date	S. No.	Month	Date
1.	September	28-09-2018	9.	January	01-01-2019
2.	October	13-10-2018	10.	January	01-01-2019
3.	October	23-10-2018	11.	January	06-01-2019
4.	November	12-11-2018	12.	January	16-01-2019
5.	November	17-11-2018	13.	February	05-02-2019
6.	November	22-11-2018	14.	February	15-02-2019
7.	December	12-12-2018	15.	February	25-02-2019
8.	December	27-12-2018	16.	March	07-03-2019

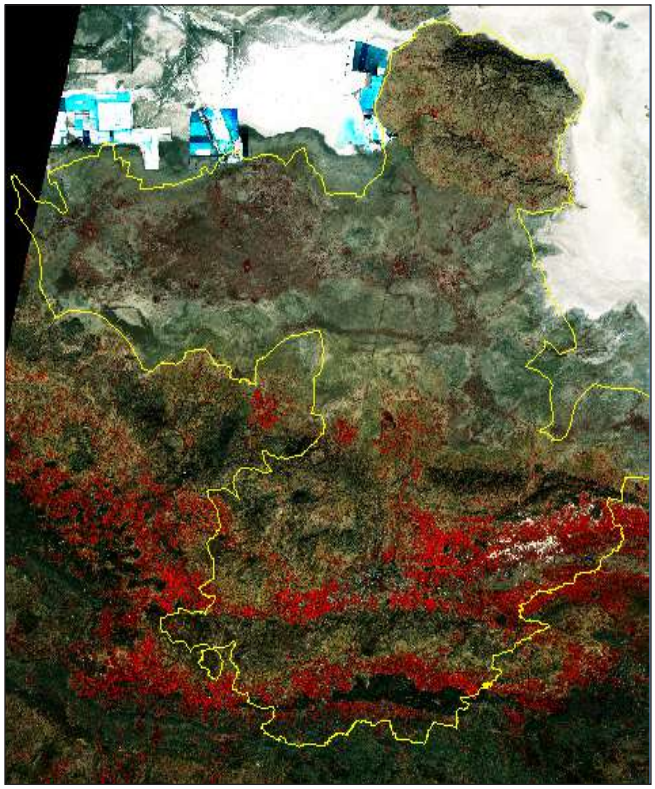

Figure 4.Sentinel-2 FCC image with Bhuj Taluka Boundary

Meteorological Data Used

The monthly maximum and minimum temperatures and monthly total rainfall data from IMD were collected for past 20 years from 1999 to 2019 for Kachchh region. Temperature is one of the important factors influencing crop growth through different physiological processes and the rate of phenological development. The monthly meteorological data was compiled for the period of September to March for developing agro-meteorological wheat and mustard yield models. In case of rainfall data, total rainfall during the monsoon period from June to October was considered in the analysis. The annual meteorological data like total rainfall and average maximum temperature of Bhuj taluka were also collected from 2006 to 2019 (Figure 5). The annual total rainfall in Bhuj is very erratic and ranges from 55 mm to 1125 mm. The maximum average annual temperature ranges from 31^0 C to 34^0 C.

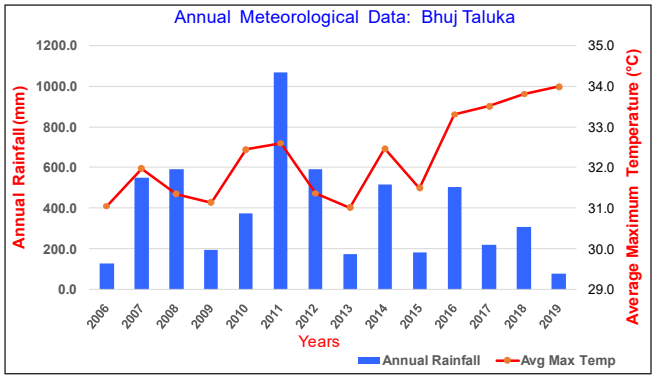

Figure 5.Annual Meteorological data of Bhuj Taluka

Field Data Collection

Ground Truth (GT) data on wheat and mustard crops in Bhuj taluka was collected at multiple locations during first fortnight of Jan-2019, which coincided with flowering stage of wheat and grain filling stage of mustard. Large homogeneous sites of wheat and mustard crops with different density classes were identified using the Sentinel-2 False Colour Composite (FCC). The field observations like growth stage and vigour, crop density, size of the field, etc. were recorded for selected sites. The GPS measurements of selected sites along with field photographs were recorded. Some of the field photographs of wheat and mustard crops indicating their growth stage and crop vigour are given in Figure 6.

Figure 6.Field Photographs of Wheat and Mustard crops at Different Growth Stage

Remote Sensing Satellite Data Analysis

The Sentinel-2 multi-spectral and multi-temporal data of Wheat growing season covering study area was analyzed using following major steps:

i)Multi-date data preparation and geo-referencing, ii) Administrative boundary superimposing, iii) Extraction of area of interest, iv) Superimposing GPS locations of wheat and mustard crop sites collected during GT data collection on the registered satellite digital data, v) Identification of wheat and mustard crops on the satellite data and generation of histograms vi) Generation of Normalized Difference Vegetation Index (NDVI) images and NDVI profiles of wheat and Mustard crops. Some of the Sentinel-2 multi-spectral images used in this study are given in Figure 7.

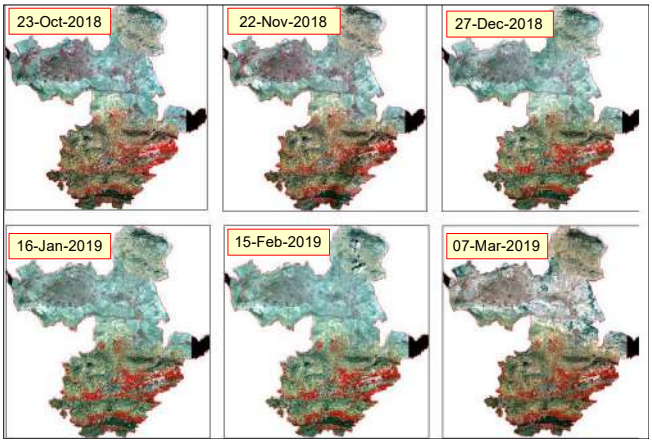

Figure 7.Sentinel-2 Multi-Spectral Images Covering Bhuj Taluka used in this Study

Agro-meteorological Data Analysis

Temperature is a major determinant of its growth and productivity. Late sown wheat in rice-wheat system exposes pre-anthesis phenological events to high temperature that influence grain development and ultimately the yield (Nagarajan et al., 2008). Air temperature based agromet indices, viz., Growing Degree Days (GDD). Temperature Difference (TD), Heliothermal Units (HTU), Phenothermal Index (PTI) have been used to describe changes in phenological behaviour and growth parameters (Kumar et al., 2010). The heat unit concept assumes that a direct and linear relationship between growth and temperature is advantageous for the assessment of yield potential of a crop in different weather conditions. The duration of each phenophase determines the accumulation and partitioning of dry matter in different parts as well as crop responses to environmental and external factors. Winter crops are vulnerable to high temperature during reproductive stages and differential response of temperature change (rise) to various crops has been noticed under different production environments (Kalra et al., 2008).

The specific amount of heat is required for the plants to develop from one growth stage in their lifecycle to another, such as from seeding to the flowering and grain filling. Growing Degree Days (GDD) is a weather-based indicator for assessing crop development. It is a measure of heat accumulation that is used to predict plant development rates such as the date that a crop reaches maturity (Wang, 1960). In the absence of extreme conditions such as drought or disease, plants grow in a cumulative stepwise manner which is strongly influenced by the ambient temperature.

Daily growing degree day values are added together from the beginning of the season, providing an indication of the energy available for plant growth. GDD totals are used for comparing the progress of a growing season to the long-term average and are useful for estimating crop development stages and maturity dates. GDD are calculated by taking the average of the monthly maximum and minimum temperatures compared to a base temperature.

Result and Discussion

Spectral Behaviour of Rabi Crops in Bhuj

The histograms of digital numbers of wheat, mustard and castor crop sites identified based field data at different locations in the Bhuj taluka were generated. The histograms of wheat pixels in different bands of Sentinel-2 data are given Figure 8. The mean values in each spectral band for different crops were plotted and given in Figure 9 to study the spectral behavior of wheat (normal, late sown), mustard and castor (Dense, sparse crop cover) during active growth stages (26-Jan-2019). The mustard and castor crops are sown during the second week of October whereas wheat crop is sown during the second fortnight of November. The difference in sowing dates of wheat, mustard and castor crops results in different phonological stages of these winter crops.

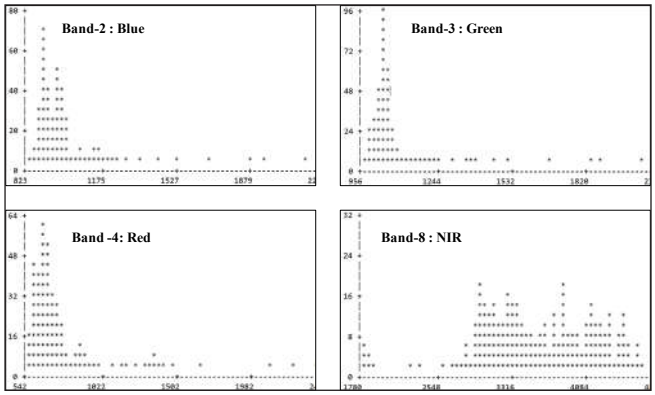

Figure 8.Histograms of Wheat Pixels in Different Bands of Sentnel-2 Data

Multi-temporal NDVI Patterns of Different Crops

Normalized Difference Vegetation Index (NDVI) is one of the most widely used vegetation indices whose values range from +1.0 to -1.0. NDVI profiles can be generated over time to study the crop growing conditions throughout the cropping season which can also indicate the crop vigour changes with different phenological stages. Various vegetation indices have been developed for qualitative and quantitative assessment of crop growth and vigour using multi-spectral data. The vegetation indices based on the Visible and Near Infra-Red (VNIR) region such as Normalized Difference Vegetation Index (NDVI) (Tucker, 1979) are highly related to biophysical variables such as leaf area index (LAI) and normalized photo synthetically active radiation (NPAR) (Baret, Guyot, 1991). Thus, they are an appropriate basis for assessing ecosystem functioning when vegetation is active. The wheat and mustard crops in the study area were identified based on the ground truth data and their crop separability was studied using the multi-temporal NDVI values. The NDVI is computed as follows (Rouse et al., 1973):

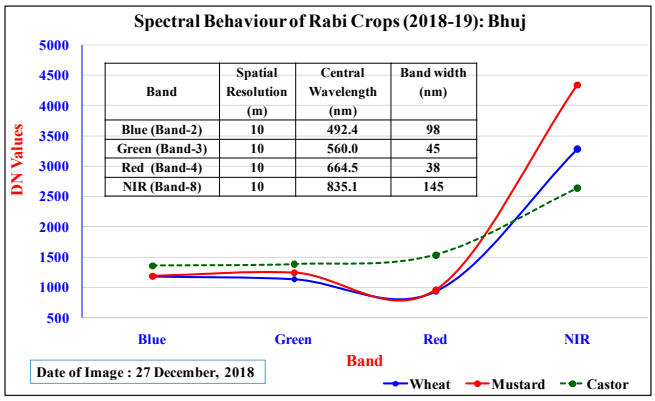

Figure 9.Spectral Response of Wheat, Mustard and Castor Crops During Active Growth Stages using Sentinel-2 Multi-Spectral Data

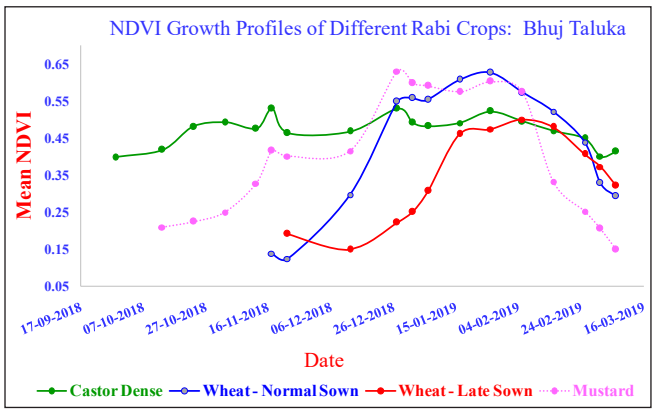

Figure10.Multi-temporal NDVI Profiles of Wheat, Mustard and Castor Crops using Sentinel-2 multi-spectral Data

Normalized Difference Vegetation Index = (NIR - R)/ (NIR + R)

Where,

NIR = reflectance in the near-infrared band

R = reflectance in the red band

Multi-date NDVI images were generated from the Sentinel-2 multi-spectral data from sowing to maturity stages of wheat, mustard and castor. The GPS measurements were taken in crop fields at different locations and crops were identified on the satellite images using these GPS measurements taken in different fields of wheat, mustard and castor. The histograms of digital numbers of wheat mustard and castor crop sites were generated using the Multi-temporal NDVI

images. The multi-temporal NDVI profiles of these major Rabi crops grown in Bhuj Taluka generated using from multi-date Sentinel-2 multispectral data are given in Figure 10.

The NDVI growth profiles of three winter crops indicate the temporal variations during different growth stages of these crops and the maximum temporal variations can seen during early growth stages to flowering and grain filling stages. These differences are mainly because of differences in sowing dates resulting in different phonological stages. In case of normal sown and late sown wheat the rise and peak NDVI values are different, however, at maturity which is occurring at almost same period have similar NDVI values.

Seasonal Variations in GDD and TD

The heat unit or Growing Degree Days (GDD) was proposed to explain the relationship between growth duration and temperature. This concept assumes a direct and linear relationship between growth and temperature (Nuttonson, 1955). The requirement of heat unit was higher for timely sown crop than late sown crop due to longer period for all the phenological stages in the timely sown crop. A progressive delay in sowing decreased the duration of phenophases which caused a decrease in accumulation of GDD during various phenophases and forced the crop to attain maturity. In this study, Growing Degree Days (GDD) and Temperature Difference (TD) were computed as follows:

Growing Degree Days (GDD) = $[(Tmax + T_{min}) /2] - T_{base}$

Temperature Difference (TD) = $(Tmax - T_{min})$

Where: Tmax = maximum daily temperature, T_{min} = minimum daily temperature

T_{base} = the temperature below which plant growth is zero. For wheat and mustard, it has been taken as 5°C

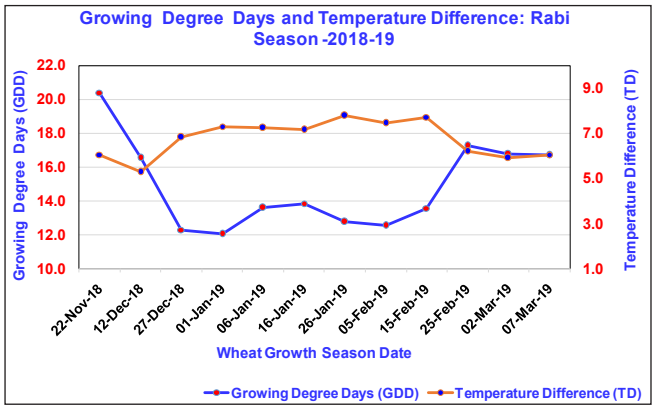

Figure 11.Seasonal Variations of GDD and TD in Bhuj Taluka

The Growing Degree Days (GDD) and Temperature Difference (TD) computed using the Maximum and minimum temperature data during Rabi season 2018-19 of specific dates coinciding with Sentinel-2 satellite data analysed in this study are given in Figure 11. It can be observed from this figure that the GDD values are low during the early growth stages whereas it starts increasing during the grain filling and maturity stages of the winter crops. The TD values do not show much variation during the grand growth stages (January, February months) whereas during early growth stages (November, December months) and maturity periods (last week of February and March month) of winter crops.

Impact of Temperature on Wheat and Mustard Growth

The physiological and morphological development of plant is influenced by various meteorological factors such as temperature. Wheat is a thermo-sensitive long-day crop. Temperature is a decisive factor in its development and productivity. Late sown wheat in rice-wheat system exposes pre-anthesis phonological events to high temperature that influence grain development and ultimately the yield (Nagarajan et al., 2008). Phenological development from sowing to maturity is related to accumulation of heat or temperature units above threshold or base temperature (below which no growth occurs). It is well known fact that there is a definite temperature requirement by plants to attain certain phonological stages. Several research findings noticed that temperature below (<10°C) or above (>25°C) the optimum (12-25°C) alter phenology, growth and development and finally reduce the yield of wheat varieties (Hakim et al., 2012).

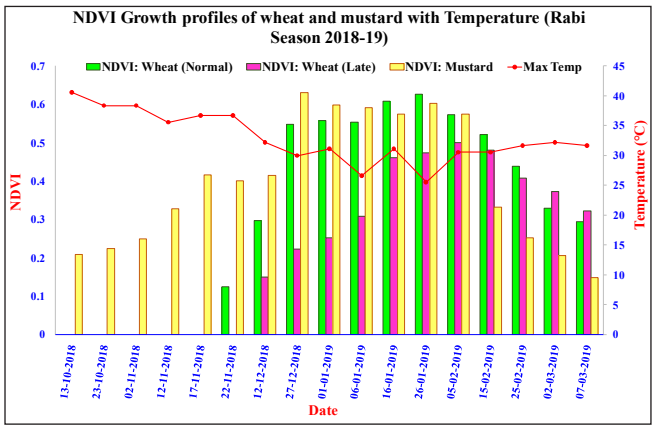

Figure 12.Relationship of Temperature on Wheat and Mustard Growth (NDVI)

In the present study, NDVI of Wheat and Mustard crops during the winter season of 2018-19 were generated using the Sentinel-2 Multi-spectral data. The impact of temperature on the wheat (Normal and late-Sown) and mustard crops was studied in terms of crop growth using NDVI profiles of these two crops (Figure 12). It was observed that during the germination and early growth stages NDVI values of both wheat and mustard were in the range of 0.1 to 0.3 when the maximum temperatures were in the range of 35^0 to 40^0 C. During the flowering and grain filling stages

NDVI values were higher in range of 0.5 to 0.6 with cooler temperatures. Cool weather during vegetative period and warm weather during maturity are ideal requirements for wheat (Mavi, 1986).

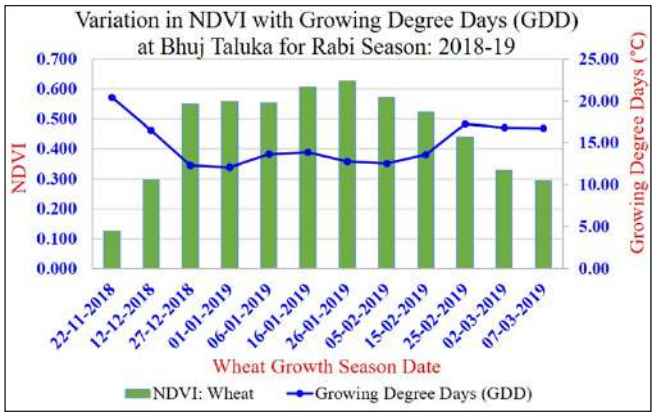

Figure13.Comparison of Wheat NDVI and GDD During Rabi Season of 2018-19

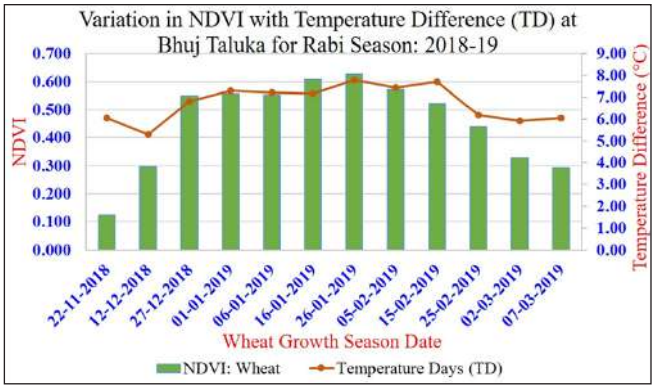

Figure14.Comparison of Wheat NDVI and TD During Rabi Season of 2018-19

Relationship of NDVI with GDD and TD

The heat unit or GDD was proposed to explain the relationship between crop growth and temperature. The concept assumes a direct and linear relationship between growth and temperature (Nuttonson, 1955). Ram et al., (2012) reported higher GDD requirement for wheat crop for normal sowing conditions than the later growing conditions. Late sowing decreased the duration of phenology as compared to normal sowing due to fluctuated unfavourable high temperature during growing period. A progressive delay in sowing decreased the duration of phenophases which caused a decrease in accumulation of GDD during various phenophases and forced the crop to attain maturity. In the present study, relationship of wheat growth in terms of NDVI values and GDD and TD computed from the temperature data of the satellite acquisition dates during Rabi season of 2018-19 in Bhuj Taluka was studied. It was observed that during early growth stages of wheat, the NDVI values were low and GDD and TD values were higher due to the higher maximum temperatures. However, during the flowering grain filling stages NDVI values were higher and GDD (Figure 13) and TD (Figure 14) values were lower due to the cooler temperatures.

Wheat Acreage Estimation

The multiple regression analysis was performed using wheat acreage statistics (DoA, 2018) and meteorological data like rainfall (GSDMA, 2018) and monthly average maximum temperature data from 2005-06 to 2017-18. Correlation matrix of monthly weather variables and the wheat acreage was generated and the response variables showing significant correlation, at 95 per cent confidence level, with the wheat acreage, were noted. Based on two tailed 't'-test (95% confidence) of the regression coefficient, the non-significant variables were eliminated and the final subset of significant variables were used for regression analysis. The final multiple regression equation generated is follows:

$$Y = 3.35 + 1.646 * (RFJul) - 1042.77 * (Tmax\ Nov) + 573.24 * Tmax\ Dec) + 723.45 * (Tmax\ Jan) - 1009.1 * (Tmax\ Feb)$$

$R^2 = 0.80$ F-Test = 5.76 RMS = 856.25

Where: RFJul = Rainfall of July, Tmax = Maximum temperature in the respective months

The developed regression equation was used to predict the wheat acreage of different years and the comparison between the wheat crop statistics obtained from Directorate of Agriculture and model predicted wheat acreage is given in Figure 15. Wheat sown area predicted using above mentioned model was 3534 Ha for Bhuj taluka for the year 2018-19. The same has been shown in the (Figure 15).

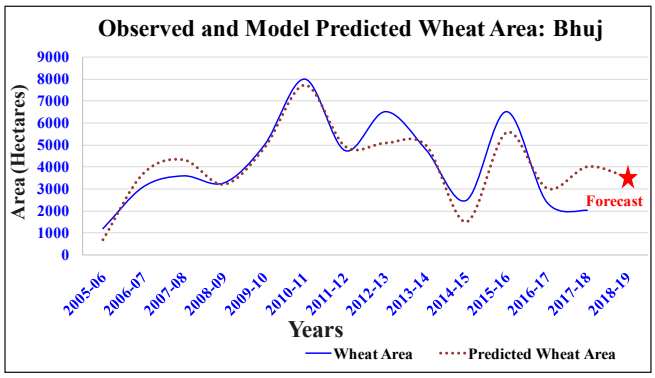

Figure 15.Comparison Observed and Model Predicted Wheat Acreage in Bhuj Taluka

Conclusion

This study was carried out to monitor the winter crop growth in Bhuj Taluka using multi-temporal Sentinel-2 multi-spectral data. Normalized Difference Vegetation Index (NDVI) growth profiles of major crops like wheat, mustard and castor were generated for different crop

phonological stages. The meteorogical data like monthly average minimum- maximum temperatures and monthly rainfall and historical crop statistics from 2005-06 to 2018-19 were collected to study the impacts of climatic variables on crop growth. Extensive field survey in Bhuj taluka was also carried out for identification of different crops, growth stages, crop condition, etc. The spectral behavior of wheat (normal, late sown), mustard and castor during active growth stages indicated that these three winter crops have distinct spectral signatures in Sentinel-2 spectral bands. The difference in sowing dates of wheat, mustard and castor crops results in different phenological stages which results in considerable difference in spectral signatures. The NDVI growth profiles of three winter crops indicate the temporal variations during different growth stages of these crops and the maximum temporal variations can seen during early growth stages to flowering, grain filling stages. These differences are mainly because of differences in sowing dates resulting in different phonological stages. In case of normal sown and late sown wheat the rise and peak NDVI values are different, however, at maturity which is occurring at almost same period have similar NDVI values.

Temperature influences growth of Rabi crops. The impact of temperature on the wheat and mustard crops was studied in terms of crop growth using NDVI profiles and it was observed that during the germination and early growth stages NDVI values of both wheat and mustard were in the range of 0.1 to 0.3 when the maximum temperatures were in the range of 35^0 to 40^0 C. During the flowering and grain filling stages NDVI values were higher in range of 0.5 to 0.6 with cooler temperatures. The Growing Degree Days (GDD) and Temperature Difference (TD) computed using the Maximum and minimum temperature data during Rabi season 2018-19 of specific dates coinciding with Sentinel-2 satellite data analysed indicated that the GDD values are low during the early growth stages whereas it starts increasing during the grain filling and maturity stages of the winter crops. The multiple regression analysis was performed using historical wheat acreage statistics and meteorological data like rainfall and monthly average maximum temperature data from 2005-6 to 2017-18. The final multiple regression equation was used to predict the wheat acreage in Bhuj Taluka and the comparison between the wheat crop statistics showed that the predicted acreages were very close to Department of Agriculture estimates.

Acknowledgement

The authors express their sincere thanks to Director General (DG), Bhaskaracharya National Institute for Space Applications and Geo-informatics (BISAG-N), Ministry Ministry of Electronics and Information Technology (MEITY), Government of India, Gandhinagar 382007, for his keen interest and encouragement in carrying out this study. The authors are also very much thankful to Dr. Archana Mankad, Head, Department of Botany, Bio-informatics and Climate Change Impacts Management, University School of Sciences, Gujarat University, Ahmedabad-380009.

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Article

Relative Growth Rate and Doubling of Time of Research Productivity of Different Divisions of FRI, Dehradun during 2005-2014

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How to cite this article:
Bohra R, Pandey SK. Relative Growth Rate and Doubling of Time of Research Productivity of Different Divisions of FRI, Dehradun during 2005-2014. *Proceedings ICSTRDA* 2021; 83-88.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-03-10

A B S T R A C T

Present bibliometric study revealed that total 1467 research publication published by different divisions of FRI Dehradun. Scopus database used for data collection. The study reveals that botany division published 132 articles and year 2011 is most productive year for botany division. The study clears that the doubling time of publications of botany from 2005 to 2014. Study shows that in 2005 the doubling time is only 1.23 and in 2014 the doubling time is 14.23. Increment in doubling time means that number of published research articles are increased from 2005 to 2014. Chemistry division Study shows that in 2005 the doubling time is only 1.74 and in 2014 the doubling time is 16.45. It is found from the study that total 26 articles published by non wood forest product division. Year 2011 is most productive for non wood forest product division. Total 113 articles published by silviculture division during the study period. Most productive year for the division is 2007 and 2012. Total 132 research publication published by entomology division. For the division year 2014 is highly productive, total 42 articles published in this year. Forest product division published 43 research publications during study period. Genetics and Tree propagation division published total 97 articles under study and year 2011 is most productive.

Keywords: Forest, Division, Institute, Propagation

Introduction

Gone are the days when libraries were considered as places to issue the books only. During modern times libraries are used as information hubs. So, considering libraries as information centers, it is mandatory to cope up with the research trends from time to time so that the information, services, products could be prepared, organized, managed which could cater to the needs of researchers without much loss of time and labor. The present bibliometric study concerns itself with relative growth rate and doubling time of different division research publication of Forest Research Institute, Dehradun during 2005-2014.

Uses of bibliometric techniques are increasing day by day and they are an essential tool to evaluate research publications today. In the current scenario bibliometric analysis has now become a well-established part of information research, a quantitative approach to the description of documents and examination of services is gaining ground both in research and practice. Bibliometrics is not a new subject or branch of information science and it has gained immense significance in the last 20 decades. the term coined by Alen Pitchard in 1969.

Literature Review

Christopher, (2013). The current world is full of massive

potential information resources, so it becomes imperative to go through available information resources for the purpose of academic research. Bohra, Devi (2015), this conference paper presents an overview of thesis on Kumaun Himalaya through bibliometric study. For this study all thesis had been selected which are on "Kumaun Himalaya" available at Central Library, Kumaun University, Nainital from 1978 to 2014. Hanumappa, Dora and Desai, (2015). This study attempts to undertake bibliometric analysis of the research publications of Gujarat University during the ten year period between 2004 and 2013. The data for this study was extracted from SCOPUS and included a total of 760 publications that were attributed to authors affiliated to Gujarat University. Suchetan kumar (2018) done a scientrometric studyon Zoology subject studied at KU Nainital and found about the most productive author, favorite topic to research, most cited journals etc.

Data Collection

Data was collected from Scopus, Research gate, print materials available in FRI library and e-mails.

Objective

- To find out the research output different divisions research output
- To find out the relative growth rate of the research publications FRI divisions
- To find out the Doubling time of the research publications of FRI divisions

Data was collected from Scopus database and print materials provided by forest research institute, Dehradun during. to analyzed data ms excel and SPSS software used.

Division Wise Distribution

There are sixteen major divisions in FRI. Some of Divisions research output analysis is shown in below Tables.

RGR and DT of Year Wise Published Research Article in Botany

Below Table 1, shows the relative growth rate of botany scientists between 2005 to 2014. Maximum 27 research articles are published in year 2011 and minimum 3 research articles are published in year 2005. Study shows that the relative growth rate has decreased from 0.56 to 0.05 in a period of ten years. Below Table 1, also shows the doubling time of publications of botany from 2005 to 2014. Study shows that in 2005 the doubling time is only 1.23 and in 2014 the doubling time is 14.23. Increment in doubling time means that number of published research articles are increased from 2005 to 2014.

RGR and DT of Published Research Article in Cellulose and Paper

Above Table 2, shows the relative growth rate of the scientists of Cellulose and Paper division between 2005 to 2014. Maximum 42 research articles are published in year 2014 and minimum 1 research articles are published in year 2005. Study shows that the relative growth rate has decreased from 0.30 to 0.03 in a period of ten years.Study shows that in 2005 the doubling time is only 2.30 and in 2014 the doubling time is 21.53. Increment in doubling time means that number of published research articles are increased from 2005 to 2014.

Table 1.Botany Division

Year	Published Article	Total	RGR	DT
2005	3	3	-	-
2006	8	11	0.56	1.23
2007	15	26	0.37	1.86
2008	13	39	0.18	3.94
2009	09	48	0.09	7.68
2010	08	56	0.07	10.35
2011	27	83	0.17	4.06
2012	20	103	0.09	7.39
2013	15	118	0.06	11.74
2014	14	132	0.05	14.23
Total	132			

Table 2.Cellulose and Paper Division

Year	Cellulose and Paper	Total	RGR	DT
2005	1	1	-	-
2006	1	2	0.30	2.30
2007	2	4	0.30	2.30
2008	3	7	0.24	2.85
2009	1	8	0.06	11.95
2010	2	10	0.10	7.15
2011	11	21	0.32	2.15
2012	8	29	0.14	4.94
2013	10	39	0.13	5.39
2014	3	42	0.03	21.53
Total	42			

Below Table 3, shows the relative growth rate of Chemistry scientists between 2005 to 2014. Maximum 119 research articles are published in year 2011 and 4 research articles are published in year 2006. Study shows that the relative growth rate has decreased from 0.40 to 0.04 in a period of ten years. Chemistry division Study shows that in 2005 the doubling time is only 1.74 and in 2014 the doubling time is 16.45. Increment in doubling time means that number of published research articles are increased from 2005 to 2014.

Table 3.Chemistry Division

Year	Chemistry	Total	RGR	DT
2005	0	0	-	-
2006	4	4	-	-
2007	6	10	0.40	1.74
2008	6	16	0.20	3.40
2009	13	29	0.26	2.68
2010	18	47	0.21	3.30
2011	13	60	0.11	6.53
2012	31	91	0.18	3.83
2013	17	108	0.07	9.32
2014	11	119	0.04	16.45
Total	119			

Table 4.Ecology Climate Change and Forest Influence Division

Year	Ecology Climate Change and Forest Influence	Total	RGR	DT
2005	5	5	-	-
2006	8	13	0.41	1.67
2007	8	21	0.21	3.33
2008	12	33	0.20	3.53
2009	5	38	0.06	11.31
2010	8	46	0.08	8.35
2011	15	61	0.12	5.65
2012	16	77	0.10	6.85
2013	19	96	0.10	7.24
2014	16	112	0.07	10.35
Total	112			

RGR and DT of Published Research Article in Ecology Climate Change and Forest Influence

Above Table 4, shows the relative growth rate of Ecology Climate Change and Forest Influence division between 2005 to 2014. Maximum 112 research articles are published in year 2011 and minimum 5 research articles are published in year 2005. Study shows that the relative growth rate has decreased from 0.41 to 0.07 in a period of ten years. Increment in doubling time means that number of published research articles are increased from 2005 to 2014.

RGR and DT of Published Research Article in Extension

Below Table 5, shows the relative growth rate of Extension division between 2005 to 2014. Maximum 34 research articles are published in year 2011 and minimum 3 research articles are published in year 2005. Study shows that the relative growth rate has decreased from 0.37 to 0.28 in a period of ten years. Study shows that in 2005 the doubling time is only 1.88 and in 2014 the doubling time is 2.51. Increment in doubling time means that number of published research articles are increased from 2005 to 2014.

Table 5.Extension Division

Year	Extension	Cumulative Total	RGR	DT
2005	3	3	-	-
2006	4	7	0.37	1.88
2007	0	7	0.00	-
2008	0	7	0.00	-
2009	1	8	0.06	11.95
2010	0	8	0.00	-
2011	1	9	0.05	13.55
2012	3	12	0.12	5.55
2013	6	18	0.18	3.94
2014	16	34	0.28	2.51
Total	34			

Table 6.Forest Pathology Division

Year	Forest Pathology	Total	RGR	DT
2005	0	0	-	-
2006	5	5	-	-
2007	4	9	0.26	2.71
2008	9	18	0.30	2.30
2009	7	25	0.14	4.86
2010	3	28	0.05	14.08
2011	8	36	0.11	6.35
2012	18	54	0.18	3.94
2013	13	67	0.09	7.40
2014	23	90	0.13	5.41
Total	90			

RGR and DT of Published Research Article in Forest Pathology

Table 6, shows the relative growth of the Forest Pathology division scientists between 2005 to 2014. Maximum 90 research articles are published in year 2011 and minimum 0 research articles are published in year 2005. Study shows that the relative growth rate has decreased from 0.26 to 0.13 in a period of ten years.Study shows that in 2007 the doubling time is only 2.71 and in 2014 the doubling time is 5.41. Increment in doubling time means that number of published research articles are increased from 2005 to 2014.

Below RGR Table 7, shows the relative growth rate of

Forest Soil and Land Reclamation division between 2005 to 2014. Maximum 54 research articles are published in year 2011 and minimum 0 research articles are published in year 2005. Study shows that the relative growth rate has decreased from 0.18 to 0.02 in a period of ten years.Study shows that in 2005 the doubling time is only 3.94 and in 2014 the doubling time is 27.92. Increment in doubling time means that number of published research articles are increased from 2005 to 2013.

Table 7.Forest Soil and Land Reclamation Division

Year	Forest Soil and Land Reclamation	Total	RGR	DT
2005	0	0	-	-
2006	6	6	-	-
2007	3	9	0.18	3.94
2008	3	12	0.12	5.55
2009	5	17	0.15	4.58
2010	5	22	0.11	6.19
2011	8	30	0.13	5.14
2012	9	39	0.11	6.08
2013	12	51	0.12	5.95
2014	3	54	0.02	27.92
Total	54			

Table 8.Non Wood Forest Product Division

Year	Non Wood Forest Product	Total	RGR	DT
2005	1	1	-	-
2006	1	2	0.30	2.30
2007	1	3	0.18	3.94
2008	2	5	0.22	3.12
2009	1	6	0.08	8.75
2010	0	6	0.00	-
2011	14	20	0.52	1.33
2012	3	23	0.06	11.42
2013	2	25	0.04	19.14
2014	1	26	0.02	40.68
Total	26			

RGR and DT of Published Research Article in Non Wood Forest Product

The Table 8, shows the relative growth rate of Non Wood Forest Product division between 2005 to 2014. Maximum 14 research articles are published in year 2011 and 0 research articles are published in year 2010. Study shows that the relative growth rate has decreased from 0.30 to 0.02 in a period of ten years.Study shows that in 2005 the doubling time is only 2.30 and in 2014 the doubling time is 40.68. Increment in doubling time means that number of published research articles are decreased from 2005 to 2014 excluding year 2011.

Table 9.Silviculture Division

Year	Silviculture	Total	RGR	DT
2005	4	4	-	-
2006	13	17	0.63	1.10
2007	17	34	0.30	2.30
2008	14	48	0.15	4.63
2009	7	55	0.06	11.72
2010	12	67	0.09	8.09
2011	13	80	0.08	9.00
2012	17	97	0.08	8.28
2013	11	108	0.05	14.85
2014	5	113	0.02	35.26
Total	113			

The above Table 9, shows that the relative growth rate of Silviculture division between 2005 to 2014. Maximum 17 research articles are published in year 2007 and 2012 and 4 research articles are published in year 2005. Study shows that the relative growth rate has decreased from 0.63 to 0.02 in a period of ten years. The DT clears the doubling time of publications of Silviculture from 2005 to 2014. Study shows that in 2005 the doubling time is only 1.10 and in 2014 the doubling time is 35.26. Increment in doubling time means that number of published research articles are increased from 2005 to 2014.

Table 10.Entomology Division

Year	Entomology	Total	RGR	DT
2005	0	0	-	-
2006	8	8	-	-
2007	2	10	0.10	7.15
2008	6	16	0.20	3.40
2009	4	20	0.10	7.15
2010	12	32	0.20	3.40
2011	17	49	0.19	3.75
2012	12	61	0.10	7.28
2013	29	90	0.17	4.10
2014	42	132	0.17	4.17
Total	132			

RGR and DT of Published Research Article in Entomology

The above analysis shows the relative growth rate of

Entomology scientists between 2005 to 2014. Maximum 42 research articles are published in year 2014 and minimum 0 research articles are published in year 2005. Study shows in Table 9 that the relative growth rate has increased from 0.10 to 0.17 in a period of ten years. The above Table 10, shows the doubling time of publications of Entomology from 2005 to 2014. Study shows that in 2005 the doubling time is only 7.15 and in 2014 the doubling time is 4.17. Increment in doubling time means that number of published research articles are increased from 2005 to 2014.

Table 11.Forest Product Division

Year	Forest Product	Total	RGR	DT
2005	0	0	-	-
2006	3	3	-	-
2007	4	7	0.37	1.88
2008	9	16	0.36	1.93
2009	7	23	0.16	4.40
2010	3	26	0.05	13.02
2011	8	34	0.12	5.95
2012	6	40	0.07	9.82
2013	2	42	0.02	32.71
2014	1	43	0.01	67.81
Total	43			

RGR and DT of Published Research Article in Forest Product

The Table 11, shows the relative growth rate of Forest Product scientists between 2005 to 2014. Maximum 9 research articles are published in year 2014 and minimum 0 research articles are published in year 2005. Study shows that the relative growth rate has increased from 0.37 to 0.01 in a period of ten years. The above Table 11, shows the doubling time of publications of Forest Product from 2005 to 2014. Study shows that in 2005 the doubling time is only 1.88 and in 2014 the doubling time is 67.81. Increment in doubling time means that number of published research articles are increased from 2005 to 2014.

RGR and DT of Published Research Article in Genetics and Tree Propagation

The below Table 12, shows the relative growth rate of Genetics and Tree Propagation scientists between 2005 to 2014. Maximum 21 research articles are published in year 2011 and minimum 3 research articles are published in year 2005. Study shows that the relative growth rate has increased from 0.48 to 0.04 in a period of ten years. Below Table 12, shows the doubling time of Genetics and Tree Propagation from 2005 to 2014. Study shows that in 2005 the doubling time is only 1.45 and in 2014 the doubling time is 18.54. Increment in doubling time means that number of published research articles are increased from 2005 to 2014.

Table 12.Genetics and Tree Propagation Division

Year	Genetics and Tree Propagation	Total	RGR	DT
2005	3	3	-	-
2006	6	9	0.48	1.45
2007	14	23	0.41	1.70
2008	10	33	0.16	4.42
2009	15	48	0.16	4.26
2010	6	54	0.05	13.55
2011	21	75	0.14	4.86
2012	11	86	0.06	11.66
2013	3	89	0.01	46.54
2014	8	97	0.04	18.54
Total	97			

Conclusion

It is reveals from the study that total 132 articles published by Botany division and year 2011 is most productive year for botany division. In forest pathology division total 90 articles published during study. Most productive year for forest pathology is year 2014 followed by year 2012 (18 articles), lowest year is 2005 in forest pathology this year no articles published. Total 54 articles published by the forest soil and land reclamation division. Highest articles published in the year 2013 (22.22%) and lowest in 2005. It is found from the study that total 26 articles published by non wood forest product division. Year 2011 is most productive for non wood forest product division. Total 113 articles published by silviculture division during the study period. Most productive year for the division is 2007 and 2012. Total 132 research publication published by entomology division. For the division year 2014 is highly productive, total 42 articles published in this year. Forest product division published 43 research publications during study period. Genetics and Tree propagation division published total 97 articles under study and year 2011 is most productive. In cellulose and paper division year 2011 is most productive with 11 articles out of 42 articles. Year 2013 is 2nd most productive year in for the division. In Ecology Climate change and Forest Influence out of 112 articles 16.96% (19) articles published in the year 2013, year 2012 and 2014 are in 2 rank with 14.29% articles. Year 2012 is highly productive year for chemistry, out of 119 articles 26.05% (31) articles published in this year followed by year 2010 with 15.13% and year 2013 with 14.29%.The present study revealed that some of FRI division research productivity is low and need improvement in future.

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Article

Researcher's Profile Management Systems: A Gateway to Promote Research

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How to cite this article:
Suman S, Kumar A. Researcher's Profile Management Systems: A Gateway to Promote Research. *Proceedings ICSTRDA* 2021; 89-93.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-03-11

A B S T R A C T

The advent of the internet has provided more opportunities for research scholars of this generation to communicate, share and discover information. Scholars around the world are using a profile management system. It is a web-based tool to organize research activities undertaken by the researcher such as expertise, skills, interest, experience, mentors, publication etc. Orcid, Scopus, Web of Science, Google Scholar and other profile management systems help institutions and scholars improve their academic and research activities for the global reach. The paper describes the various types of research profile management system and its benefits, features, discussed how to update and manage a research profile.

Keywords: Research Profile System, Scopus, Academic Social Network, Web of Science, Google Scholar

Introduction

Researcher profile management system is a web-based tool to manage research activity by researcher such as interest in a specific area, skill, experience, expertise, mentor, project, publisher etc. Researcher Profile management system works as a search tool for researchers, teachers, scientists etc. within institutions and knowledge management. The development of a profile management system with international standards is essential for any organization to perform research activity to peer groups or funding agencies. Nowadays, many commercial and open-source profile management systems are available at an international level with different features and many functionalities for users and institutions.

The Working Area of the Profile Management System

Your Publication Management

It works by collecting data of research publication. It helps to find external sources (such as Web of Science and Scopus) .

Identification of Award Opportunities and Award Management

It matches interests to potential funding sources, supports and communication.

Coordination and Publishing of Expertise Profile

Expertise profile collects researchers data from various systems and centralizing expertise profile maintenance. It may be for internal reporting or evaluation purpose, to support the individual researcher to provide data in various forms of necessary forms and published on the Web through an institutional research portal or another site.

Research Reporting and Analysis

Providing management information about the research between different departments, groups and individuals.

Advantage of Research Profile Management System

A Researcher ID is not a personal identifier but is unique and can be shared publicly. It remains the same, even if

you change your name, email address or place of work, and have a complete overview of your publications and activities, even if they registered in multiple name variants. A unique Researcher ID makes it possible to distinguish you from other researchers who publish under your same name. Some Researcher ID makes it possible to do bibliographic analysis, isometric analysis, citation analysis and H-index calculations by identifying your publications. (Gasparyan, 2017). There are many more advantages:

- To provides new research opportunities to the researcher
- The profile management system also provides a chance to be a co-author. The author may collaborate with other authors by using the researcher profile management technique and develop his co-author network to fast co-author communication
- This system also includes the co-investigator network. In which a subject can easily search the expert profile on other search engines
- Through these IDs, it possible to link the products of this research activity managed by different information sources: for example, an article submitted to a journal, then published and indexed in citation databases or an application for patent filing in a patent office
- It prevents the researcher from re-entering information about himself during the profiles created in the different databases, which can export and import the references from one database to another if they are interconnected
- It is a unique key that facilitates information gathering and improves the effectiveness of funding and scientific collaboration

Benefits for Organization/ Institute

- The user can search and find the details of the profile of experts by a different type
- To Collaborate with a colleague
- You can get the number of published papers of experts from one place (platform)
- In the profile management system, the profile data searched with different types of discipline
- To collaborate with other institutions and researchers
- A profile management system helps in collaborative research with other organizations and scholars

Benefits for Students/ Faculty

- Researchers can share their research related output
- Can make an online profile and keep it updated
- The researcher obtains a unique author identifier to distinguish himself and his work from other researchers
- All personal data stored at one place in which the other researcher is helpful
- All the information available at one place can be easily made available to the user.

Platforms of the Researcher's Profile Management System

ORCID (Open Researcher and Contributor ID)

It started on 14th October 2012, which gives the researcher, subject experts a consistent digital identity and separates the user from the other. It is strategically vital as it enables all databases to be automatically linked to the publication by your open-source research ID. The mission of ORCID is to allow transparent, reliable connections between researchers, their contributions and their engagements, so that they provide a unique, persistent identifier for individuals engaging in research, scholarship and innovation activities.

An ORCID Id is a free, unique, persistent identifier that you own and control forever. It distinguishes you from every other researcher across disciplines, borders and time. You can connect your ID with your professional information, affiliations, grants, publications, peer review and more. (Silva, 2020) You can use your ID to share your information with other systems, ensuring you get recognition for all your contributions, saving you time and hassle and reducing the risk of errors.

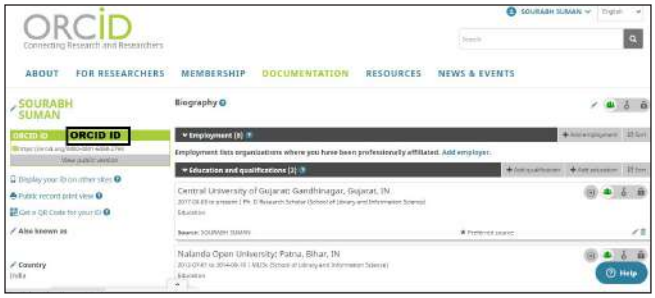

Figure 1.User Profile of ORCID

Benefits of ORCID Id

- Distinguished from every other researcher, even researchers who share your same name
- Research outputs and activities will be correctly attributed
- Contributions and affiliations will be reliably and quickly connected
- Save time when filling out forms, (leaving more time for research!)
- Enjoy improved discoverability and recognition
- Connect your record to a growing number of institutions, funders and publishers
- ORCID record is yours is free and forever (ORCID, n.d)

Researcher ID

Research ID is an identification system for the scholar started by Thomson Reuters in January 2008. Researcher ID does not automatically generate author identifiers like Scopus. Researcher ID is a multidisciplinary service of

Web of Science, an integrated web of science database. Now Researcher ID profiles moved to Publons on 15th April 2019. Researcher ID website is specifically designed for the author to create unique profiles web page and promote individual citation and publications from Web of Science. The researcher is a specific identifier that enables researchers to manage their publication lists, track citations and H-indexes, identify potential collaborators, and avoid missing the author identification. Using the Researcher ID feature in the Web of Science (Knowledge Web), researchers are assigned a personal ID number that stays with them, regardless of institutional affiliation, thus making their research more easily tracked. Once your Researcher ID created, your publications listed in your Web of Science database are added to your profile, thus ensuring accuracy in tracking your publication history and speeding up the detection of your citation of works. The Web of Science Group is investing in Researcher ID to make the experience of managing and evaluating researcher profiles more seamless, open and connected for researchers, administrators and evaluators. Researchers worldwide use Researcher ID track their publications and ensure their publications have correctly attributed to them across Web of Science collections. To make this even easier. (Reseacher ID, n.d).

a Google Scholar profile, your profile page will rise in the rankings if people are searching for your work.

The Google Scholar citation search engine launched in 2012 as a free online platform and some seen as an alternative to other global presence-tracking services. It currently works as a primary tool to promote any scholars subject with a published item, a sequential journal, bibliography, conference proceedings and non-review source. which can be tracked by Google Scholar. (Google Scholar, n.d) "Google Scholar Citations provide a simple way for authors to keep track of citations to their articles. You can check who is citing your publications, graph citations over time and compute several citation metrics. (Pal, 2020) You can also make your profile public, so that it may appear in Google Scholar results when people search for your name, e.g., Richard Feynman." "Google Scholar Metrics provides an easy way for authors to quickly gauge the visibility and influence of recent articles on scholarly publications. Scholar Metrics summarize recent citations to many publications, to help authors as they consider where to publish their new research."

Benefits of Google Scholar

- It is familiar and relatively simple to use, much like

Figure 2.User Profile Interface of Researcher ID

Google Scholar

A Google Scholar profile is an effortless and easy way of communicating your publications (and their citations). People worldwide can see and receive your work and get a kind of accessible copy so that other people can use your work. Once you create a Google Scholar profile, you can choose automatic updates, so you do not need to spend a lot of time updating your publication list. If you create

- Google Scholar allows easy search of many types of literature embedded in books, journals, conference proceedings etc. including many subjects. It also includes "grey literature"
- Google Scholar helps to see all related research paper of your interested area
- It provides cited data of particular article by whom and how many times

- It displays links of article and books
- It allows you to save both articles and citations to read later
- Research democratized: everyone should have access to it

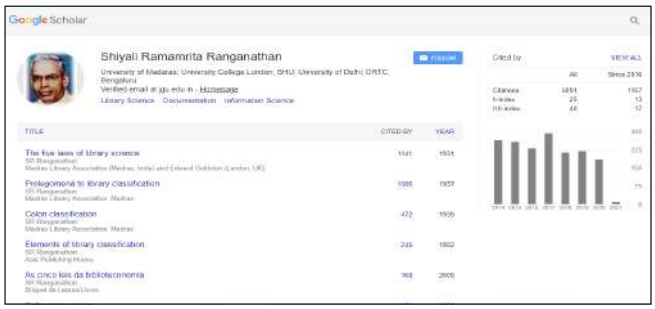

Figure 3.User Interface of Google Scholar

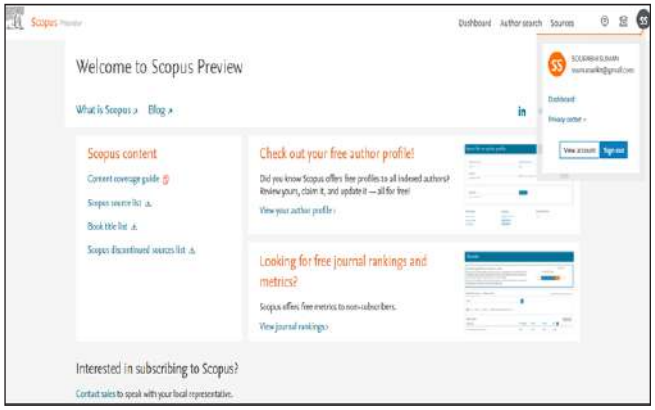

Figure 4.User Profile Interface of Scopus

Scopus Author Profile

The Scopus Author ID is an identifier used in the Elsevier Scopus database, was launched in 2004. It automatically assigned to each author, who publishes at least one article in Scopus's journal index. Additionally, each author publications are simultaneously classified into Scopus author profiles and allow citation metrics for each author. It includes 36,377 titles (13,583 inactive and 22,794 active titles) in about 11,678 publishers, 34,346 of which are peer-reviewed journals in top-level subject/ discipline areas: Physics, Social Sciences, Health Sciences and Life Sciences. Scopus includes three types of sources: book series, magazines, and trade magazines. All journals included in the Scopus database, regardless of where they were published, are reviewed every year to maintain high-quality journals. Scopus searches also include patent database searches. It gives four types of quality measurements for each title: SJR (SC Imago Journal Rank), H-Index, Cites Score and SNIP (Source Generalized Effects for Paper). These metrics used for tenure, funding and other research performance-based evaluation. Therefore, it is essential to ensure that your profile reflects your information correctly.

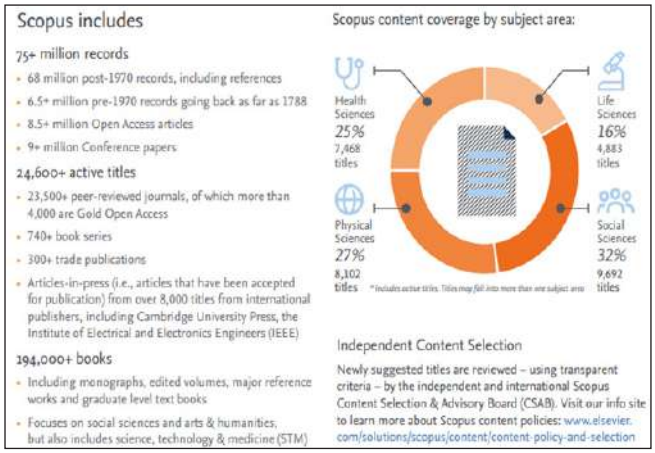

Figure 5.A Glance of Scopus

Discussion

Researcher Profile management system is a web-based tool, which can help organize research activities undertaken by researchers in the form of interests, skills, experience, expertise, mentors, projects, publications, etc. Many types of profile management systems are currently available, but only four profile management systems highlighted. It goes like this, ORCID, Reseacher ID, Google Scholar and Scopus. All these systems have the same function, but they all have their specialities. The study has discussed many parameters of profile research management characteristics such as system generated unique Id, year of introduced, used by other Profile research management system, why to use this individual Identifier, type of content included, privacy setting, transfer to another Institution, mange list of publications, citation metrics, find collaborations, the pivot for grant recommendations and h-index.

Conclusion

It is time to seek the help of technology to organize the increasing information. So that information can be collected, managed and stored with planning. In this regard, to keep the details related to the researcher's research in one place and the profile management platform can automatically update their profiles from time to time and be used in research related work if necessary. Apart from all these Researcher Profile Management, many Researcher Profile Management commercial and non-commercial are also providing services with different features like- Research Gate, Acamedia-edu, Microsoft Academic Id, Vivo, Publons, etc. You can benefit by creating your user ID in all these researcher profile management systems.

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Article

Response Based Data in Microfinance Impact Assessment Surveys in India: A Cost-Benefit Analysis

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How to cite this article:
Baria BP, Devi SS. Response Based Data in Microfinance Impact Assessment Surveys in India: A Cost-Benefit Analysis. *Proceedings ICSTRDA* 2021; 94-97.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-03-04

A B S T R A C T

This paper attempts to provide an overview of the major costs and benefits and hence the net benefits of the use of response-based survey data in assessing cause and effect relationships with special reference to the microfinance impact assessments in India. Impact assessment exercises are meant to establish the true impact of a given microfinance intervention but the lack of adjustments of the observed impacts to the costs and benefits of their major statistical inputs repose data, create a divergence between the observed impact and the true impact of a microfinance intervention. This has serious financial implications also as a large amount of funding is provided by the Government to microfinance industry based on their impact assessments. Our humble endeavour in this paper is to highlight these issues and provide a meaningful framework to assess the theoretically true impact of microfinance programmes and services by accounting for the net benefits of response data.

Keywords: Microfinance Impact Assessment, Survey Data, Response Data, Cost-Benefit Analysis, Economics of Microfinance

Introduction

Measuring the quantitative and qualitative effects that an intervention has on the intended beneficiaries is important for making rational assessment of the efficacy of such interventions. Major decisions related to the funding of Government welfare programmes, corporate social responsibility initiatives, microfinance services given to the poor, and others, rely upon the Impact Assessment (IA) of these programmes, policies and services. The "bottom of the pyramid" (Prahlad, 2004) posits many opportunities for the Government and private sectors to help the poor and enable them to build wealth, while also simultaneously allowing earning profits through welfare activity. The thrust on inclusive growth in India since the eleventh five year plan has allowed the rise of microfinance as a viable tool in the larger anti-poverty policy matrix. The Government has been actively funding various microfinance initiatives both in the public and private sectors to help those who have been largely left out by the mainstream financial system. While microfinance dates back to a much earlier period before the aforementioned five year plan, namely to the establishment of the Grameen Bank in 1983 by Mohammed Yunus, its popularity has increased considerably since the Government of India consciously began focusing upon inclusiveness in the growth process. Large amount of money is spent on microfinance institutions both by the Government and the private sectors, this occurs largely on the basis of the impact assessments of such programmes that are undertaken by various public and private agencies.

In general terms, "Impact Assessment or Impact Analysis encompasses the set of conceptual, empirical and other related aspects pertaining to the study of the extent to which microfinance access benefits the ultimate beneficiaries" (Prakash 2018). Hence, impact analysis serves as the barometer for measuring the success or the failure of individual and aggregate microfinance interventions. The major source of information for such assessment exercises is the primary survey-based data. While in theory, many kinds of survey data can be collected, the most popularly used data type are the responses of individual respondents who generally are also the intended beneficiaries. Response based data is the primary survey data that are most frequently used in assessments of anti-poverty interventions including in Microfinance programmes and services. While the literature on impact assessment has grown widely, the analysis of the costs and benefits of response data have not been exhaustively studied in the Indian context. Even though this issue is a methodological issue and its nature and analysis are independent of a particular country, its manifestation and the cost-benefits dynamics can differ across countries. This is mainly on account of the fact that the economic costs and economic benefits of any economic activity are location-specific and may differ from place to place due to varying socio-economic conditions.

Accordingly, this paper attempts to provide a broad framework to begin a conversation on the cost-benefit analysis of response-based data, on the basis of which large-scale and small-scale impact evaluations are undertaken and huge financial flows are generated in the microfinance industry.

Primary Motivations and Key Issues

It is a well established fact that microfinance impact assessment surveys are driven by use of response data. However, it has not received equal attention in the literature on impact evaluation methods. While not all impact evaluation methods rely on response data per se, a large body of IA methods have evolved that are the direct consequence of the use of response data. Response data through survey also inform many of the IAs undertaken at the level of policy making such as the assessments of Self Help Group (SHG) programmes by the Government. At the level of the microfinance industry also, IAs are an important pre-requisite to arrange for funding. While these facts are well known in the literature, a detailed look at the nature of response data and their implications for the costs and benefits of various Microfinance services and programmes remains limitedly investigated in India. The essence of this paper is to bring to the fore some major factors that create a divergence between the observed impact and the theoretically true impact of a microfinance intervention when response data are used for IAs. The paper finds that the issues of endogeneity and simultaneity are the main reasons why the statistical properties of response data collected through surveys might suffer and hence become unreliable to assess the true impact of a microfinance intervention. Thus, the key concerns of this paper may be suggested as below:

- Is response-based data, unadjusted for its costs and benefits, still subject to law or large numbers and the central limit theorem?
- What are the major costs of response data?
- What are the major benefits of response data?

Review of Evidences

Noteworthy studies on this theme include, but are not limited to, Gertler et al., (2016), Hulme (2000), Hulme (2009), Rai (2010), RBI (2011), Sen (1981), Kabeer (2003), and Banerjee et al., (2015a, 2015b). A brief overview of the major wisdom on this issue in the extant literature in India can be explained by the Table 1, below:

Table 1.Scale of Response-Based Data and the Consequent Impacts

Scale of Responses			
Nominal	Ordinal	Interval	Ratio
1. Qualitative Impacts		2. Quantitative Impacts	
3. Experimental Impacts			

Source: Authors' analysis of the extant literature.

The nature of an impact, its costs and benefits, can be understood in terms of the kind of response data that it depends upon in order to infer causality. Literature suggests that IA studies pertaining in microfinance have generally hovered around quantitative, qualitative and at times mixed impacts. The operationalization of all these kinds of 'impact' is primarily driven by a strong reliance on response-based data. Quantitative impacts are characterized by the use of responses on such variables and parameters that can be measured at least on the interval scale and ideally on the ratio scale. The interval scale defines the lower bound the kind of responses that are needed for measuring quantitative impacts. Qualitative impacts on the other hand are characterized by responses that are at best measurable on an ordinal scale. The third kind of microfinance impact that has relied upon response-based data and which is an important innovation within the analytical toolkit of the impact analyst may be called the experimental impact. Such an impact is derived by operationalizing causality within a Randomized Control Trial (RCT) framework. The response data collected after rigorous randomization of the targeted beneficiaries are thereafter analyzed in terms of their responses and the differences in their responses across time, space and at times both.It is quite clear that any serious microfinance impact assessment shall have to

depend upon response-based data and that the concept of impact that is adopted in terms of the scale of response data required, will have immense bearing on the final outcomes of the impact study. In each case, the costs and benefits of response data differ due to differences in the underlying assumptions, sources of such data, socio-economic profile of the respondents and many such factors.

Methodology

This study primarily depends upon a rapid review of literature consisting of 75 research sources selected using pre-defined inclusion and exclusion criteria. The same have not been elaborated here due to space constraints. Furthermore, some of the major rounds of the National Sample Survey Organization (NSSO) in India have also been studied along with a study of some data sets obtained through microfinance IA research. The findings from across these sources are presented in this paper.

Findings

A common feature of the research on IAs in microfinance industry in India has been the lack of attention given to the major questions raised in section two above. However, one can locate construct the theoretical cost and benefit functions of the use of response data by analyzing various studies in this context.

The Cost Function of Response base Data

Costs of response data are characterized by two kinds of factors. First are the statistical factors, second are economic in nature. Statistical costs of response data are generally understood in terms of two problems that such data pose for deriving the true impact of any IA exercise. The statistical sources of the costs of response data under the quasi-experimental IA method are elaborated in detail in Hulme (1997) and the interested readers can refer the same for more insights. Two factors from Hulme's schema are particularly noteworthy in the current context, mainly the problem of endogeneity and the issue of simultaneity that are generated by use of response data in IAs irrespective of the method of IA that is adopted. Endogeneity can be defined as the overlapping of cause with effect (Gertler et al. 2011) and hence difficulties in deriving causal inferences from response-driven IAs. Simultaneity is the simultaneous representation of response data as both cause and effect and hence the difficulty in dissecting an effect from its cause or causes. These two problems together constitute the statistical sources of the costs function in this regards.

The economic sources are characterized by the economic effect of the divergence between the observed and the true degrees of impact of a microfinance intervention. Every microfinance programme or service requires funds and thus one way to measure the economic costs of response data is to compare the amount of funds actually spent on a microfinance programme to the theoretically correct amount that should have been spent on funding the microfinance programme if all its statistical costs were to be accounted for while undertaking its IA. In other words, the amount of expenditure incurred for undertaking a microfinance programme can be compared to a theoretical optimum derived by adjusting the observed impacts for the statistical costs response data. The larger the distance between these two factors, the larger will be the economic costs of response data. Economic costs thus measure the financial implications of statistical costs of response data. The main challenge here is to derive the theoretical optimum financial spending and this demands a lot of empirical work along with high degree of expertise in statistics and the economics of microfinance. Dependency on subjective opinions on what constitutes the theoretically optimum spending shall remain a major constraint in this regards.

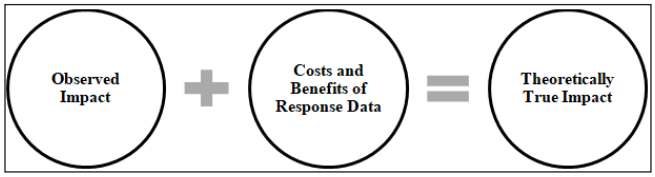

Figure 1.Composition of the True Impact of Microfinance Interventions

The Benefit Function of Response based Data

The fact that response data through survey method are the most popularly used statistical inputs in IA exercise across the world implies the existence of a theoretical benefit function of such information. The analysis of various evidences reveals that the ease of collection of such data and the existence of the economies of scale in data collection cost are probably two major benefits of these data in microfinance IA. There is a strong consensus on the ways in which response-driven survey data are to be used in microfinance IAs. This is well documented by Gertler et al., (2016), which elaborates in detail the IA methodologies that use response data as their main statistical inputs. Due to a large body of methodological evidences and the easy availability of well-trained personnel to undertake surveys, response data are easier to collect than observational and experimental data for example. Furthermore, with many large scale surveys being frequently undertaken in microfinance industry, the per-unit cost of data collection falls as the number of respondent increases. These factors have probably made response data very popular in the present context. One way to economically measure these benefits is to compare the actual amount of spending on microfinance programme to the amount that would have been spent if the benefits of response data were accounted for. The problems of estimating the theoretical optimum in this regards shall be a major constraint as in the case of estimating the economic costs of response data explained.

The Net Benefit Function of Response based Data

Synthesizing the costs and benefits of response data in terms of properly specified mathematical functional equations can allow the construction of a simple model that can help Impact analysts to adjust their observed impacts for the costs and benefits of response data and thereby derive the "true" impact of the same. Theoretically, once the costs are netted out of the benefits, the net benefit function could be negative, zero or positive depending on the values of the cost and benefit functions which will be different for every situation and context. However, a mathematical framework could allow the analysts to easily adjust the observed impacts for the net benefits of response data and then decide whether the true impact exceeds, is equal to, or is lesser than the observed impact.

Limitation

This work has not gone deeper into the mathematical specification of the cost and benefit functions of response data. Such a work is being currently undertaken by the authors of this paper and this study was an attempt to only highlight some of the major issues related to the use of response data in microfinance IAs in India. Furthermore, there can be many more parameters in the cost and benefit functions and the same can perhaps be better analyzed by statistically more refined researchers on this matter. Future research can also put to application the framework highlighted in this paper to real cases and data sets of IA surveys in India.

Conclusion

Response data are complex statistical inputs in the process of microfinance IA exercises. Their nature is complicated by the fact that they pose both costs and benefits for the researchers using such data in deriving the true impact of a microfinance intervention. However, the true impact is distorted by the not accounting for the net benefits of response data and thus creates a divergence between the true and observed impacts of a microfinance programme, policy or service. This paper has provided a very elementary outlook on this matter which can perhaps be refined by future research.

The development policy discourse in India is driven by large scale and small scale surveys throughout the breadth and width of the country. Various rounds of NSSO on employment and unemployment, assessment of various Government programmes and schemes, impact assessments of the SHG programme of the Government, financial and social evaluations of the success and failures of microfinance programmes of the Government are some of the major areas that can be benefitted by a more exhaustive assessment of response data. This is all the more true because response data continue to guide many aspects of development policy making in India and such data become the guiding forces for large scale fiscal expenditures incurred by the Government. Probably, the fiscal imbalances and the fiscal space might improve if the true impacts of Government scheme could be analyzed by adjusting the observed impacts of policy interventions for the net benefits of response data on which the evaluation of the success of such interventions relies upon.

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Article

Role of Survey Research for the Assessment of Medicinal usage of Four Economically Important Plants in the Garhwal Himalaya, Uttarakhand

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How to cite this article:
Bhattacharyya M, Bhattacharyya N, Debnath K et al. Role of Survey Research for the Assessment of Medicinal usage of Four Economically Important Plants in the Garhwal Himalaya, Uttarakhand. *Proceedings ICSTRDA* 2021; 98-106.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-03-06

A B S T R A C T

Indian Himalaya is rich in flora and fauna. Plants growing in Himalayan region are greatly valued by local village dwellers for curing diseases. This survey has been conducted in five villages (Khirsu, Gwad, Mangshu, Mandi, Madhi) of Pauri and Tehri Garhwal district of Uttarakhand to evaluate the medicinal value of four economically important plants; Malus domestica Borkh. (Apple, local name Seb/ syo), Ricinus communis L (Castor, local name Arandi), Prunus persica L (Peach, Local name Aroo), Carica papaya L (Papaya, local name Papita) in rural life. The aim of the survey was to know the disease treated using the above mentioned plants. These data were collected from randomly chosen individuals of different age groups having different types of knowledge sources regarding medicinal plants. This survey research strategy was the multimode type containing close ended questions in the form of questionnaire. Questions were asked verbally and via telephone to less educated people in the form of interview and distributed for filling up to others. Survey revealed demographic and personal characteristics of rural people. This was done in the month of Oct-Dec 2020 (during unlock 5 and 6.0) and the survey explored that, rural people significantly use the above-mentioned plants for recovery from gastrointestinal disorders, Pain/ Arthritis, fever and aches, for removing weakness, anemia and Dengue. For validation, data were collected from Ayurveda doctors using the same questionnaire with the help of face-to-face, Computer Assisted Telephonic Interview (CATI) and telephonic interviews. In this paper, based on survey results and data analysis, it is concluded that, these four plants are not only economically useful, they have medicinal properties also. People with increased age and female farmers use these plants in the above-mentioned diseases and the knowledge of using these plants in the above-mentioned diseases came from their parents as well as from spiritual manuscripts.

Keywords: Disease Recovery, Medicinal Plants, Rural People, Villages

Introduction

Indian Himalaya is rich in biodiversity. It has more than 64 species of gymnosperms, 17,000 species of angiosperms, 2,850 types of bryophytes, 1,200 pteridophytes and 2,021 lichens (Joshi and Pant, 2012). In India, 7,500 species have been reported by scientists to have several medicinal properties (Shiva, 1996). Indian Himalaya has a wide range including tropical, sub-tropical, temperate and alpine areas. Uttarakhand is a state of India which is situated in the lap of Himalaya. Rural dwellers of Uttarakhand are still dependent on medicinal plants for curing diseases. As per World Health Organization (WHO) mentioned that about 25% of modern medicines are developed from medicinal plants. (Malla et al., 2015, WHO, 2002). Local people get knowledge of the medicinal properties of plants through their need, observation and the knowledge acquired from ancestors as well as books like spiritual manuscripts. Most diseases cured by Ayurveda doctors are like aches and pains, respiratory diseases, musculoskeletal ailments and wounds. Doctors also suggest medicinal plants to the village people to cure diseases (Singh et al., 2017). Knowledge of using medicinal plant parts may be passed from generation to generation via mouth (Jansen 1981) or with the help of spiritual manuscripts (Teklehaymanot and Giday, 2007). This study focused on identifying the medicinal importance of four economically important plants of Uttarakhand i.e. Malus domestica Borkh, Prunus persicaL, Ricinus communis L, and Carica papaya L Malus domestica Borkh has several phytoconstituents like, Cinnamic acids, Chlorogenic acid, Caffeic acid, Ferulic acid, P-coumaric acid, Caffeoylquinic acid, P-coumarylquinic acid, Cinnamic acid, Catechin, Epicatechin, Proantho Cyanidins, Flavonols, Quercetin and quercetin glycosides, (Wolfe KL, Liu RH, 2003, Eberhardt et al., 2000; Podsedek et al., 2000; Wolfe et al., 2003; Liu et al., 2005; He and Liu, 2008; Kumar and Chauhan, 2010; Boyer et al., 2004). Prunus persica L. consists of more than 17 types of phenolics including chlorogenic acid, neochlorogenic acid, caffeoylquinic acid, 3-O-feruloylquinic acid, catechin, procyanidin B1, procyanidin B2, procyanidin dimer, procyanidin C1, procyanidin trimer isomer 1, procyanidin trimer isomer 2 etc. (Zhang et al., 2019).Ricinus communis L. plant has Aldehydes (C26 and C28), Alkanes (C26-C29), α-Amyrin, β-Amyrin, N Butylmorpholine, Chlorogenic acid, Camphor, 1, 8-Cineole, Citric acid, β- Caryophyllene, Decanamine, N-Demethylricinine, Di-butylphthalate, 2, 5 Dihydroxybenzoic acid (Gentisic acid), β-Eleosteric acid, Ellagic acid, (-) Epicathechin, Fumaric acid, Gallic acid, Hexacosane-1, 3-diol, 3 Hexen 1 ylacetate, Kaempferol, Kaempferol 3-O-β-D-glucopyranoside, Kaempferol 3-O-β-D-xylopyranoside, Kaempferol 3-O-β-rutinoside, Linoleic acid, Linolenic acid, Lupeol, Myristic acid, Malic acid, Methyl gallate, Neochlorogenic acid, 4- Octa decylmorpholine, Oleic acid, Palmitic acid, Palmitoleic acid, α-Pinene, Primary alcohols, Quercetin, Hyperoside , Quercetin 3-O-β-Rutinoside, Quercetin-3-O-β-D-glucopyranoside, Quercetin 3-O-β-D-xylopyranoside, Ricinine, β-Sitosterol, Stigmasterol, Stearic acid, Tartaric acid, Tannins (Singh and Gitanjali, 2015) and Carica papaya L, leaves have phenolic acids, as well as trace amounts of chlorogenic acid, compared to flavonoids and coumarin compounds(Vyas et al., 2014).

Material and Method

Study Area

The study was carried out in five villages of Pauri and Tehri Garhwal districts of Uttarakhand, India, which is situated near the bank of Alaknanda river. The district Pauri is located between 29°20′-29°75′ N latitude and 78°10′-78°80′ E longitude. Tehri Garhwal is located at 30˚3′00" to 30˚53′00" N latitude and 77˚56′00" to 79˚04′00" E longitude on the ranges of the Central Himalaya (Figure 1) (Table 1).

Figure 1.Survey areas of Pauri and Tehri Garhwal Districts

Table 1.Details of the Study Villages (Created in https://www.mapcoordinates.net/en)

Village	District	Latitude	Longitude	Elevation
Khirsu	Pauri	30.1712389°N	78.868-2084°E	1787 m
Gwar	Pauri	30.17869978°N	78.8664-7391°E	1592 m
Mangshu	Tehri	30.22994197°N	78.8177-0326°E	559 m
Mandi	Tehri	30.22727222°N	78.8098-0683°E	538 m
Madhi	Tehri	30.22489905°N	78.8053-4364°E	571 m

Selection of plants

For our survey, we have selected four plants, Malus domestica Borkh. (abbreviated as Md), Prunus persica L. (abbreviated as Pp), Carica papaya L (abbreviated as Cp) and Ricinus communis L (abbreviated as Rc). These plants are commonly available in Pauri and Tehri districts

areas and can grow easily. Among these, three plants are commonly used by local people as fruits and the fourth is used for domestic purposes. We have selected these plants to know about the beneficiary role of these plants for health purposes of rural inhabitants.

Selection of Diseases

For this study, we have selected eleven diseases. These diseases are: 1. Gastrointestinal disorders, 2. Pain/ Arthritis, 3. Fever and aches, 4. Diseases of the skin, 5. Remove weakness/ immunomodulator/ anaemia, 6. Ophthalmologic complaints, 7. Poisonous bite, 8. Dental problems 9. Ear ache, 10. Hearing problems, 11. Dengue. These diseases are very common to local inhabitants and don't seek serious medical supervisions or surgery. To cure these diseases, local people use local plants. These villages are situated in remote places in the lap of Himalaya, transport system is poor in these areas specially in night and don't have sufficient hospitals. For that reasons, local people trust on Ayurveda as well as in medicinal plants. It is also due to more faith on herbal medicines with no side effects than allopathic medicines, a belief that is getting stronger as evident by emerging shift to herbal based medicines.

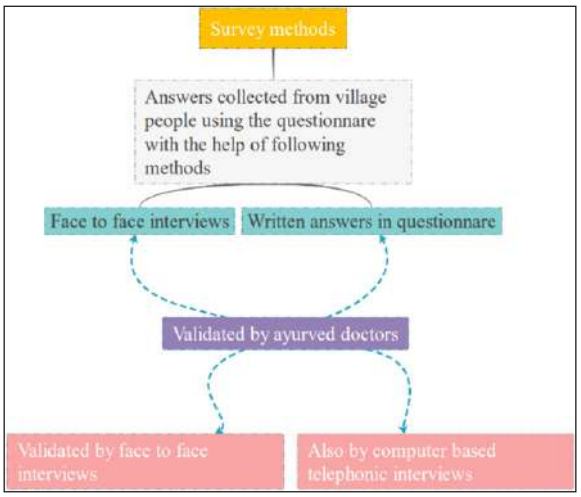


Figure 2.Methods of Survey done in Five Villages in Garhwal Himalaya (Created in Mindmaster Software)

Field Survey and Data Collection in the Form of Semi Structured Interview

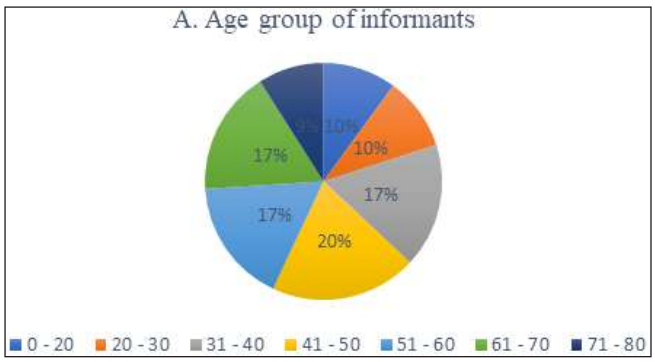
Local surveys including uses of economically important plants were done between October-December 2020. Total 100 people were randomly selected from 5 villages. Survey was done in local languages, Garhwali and Hindi. Researchers are fluent in Garhwali and Hindi. Following information as responded earlier, local people answered their opinion (Appendix 1) in their own languages (Garhwali/ Hindi), as a topic 4 medicinal plants picture were there. Then, the question and answers were put together in the detailed form as the plants were taken in local names, native use how to prepare drugs or use of drug, quantity of dose. Answers were collected using multimode pattern in the form of questionnaire consisting of close ended questions by using different methods like written and verbal methods. Telephonic and CATI (Computer assisted telephonic interviews) were also performed. Local Ayurveda doctors also searched to relate their knowledge with the answers collected from local people (above Figure 2).

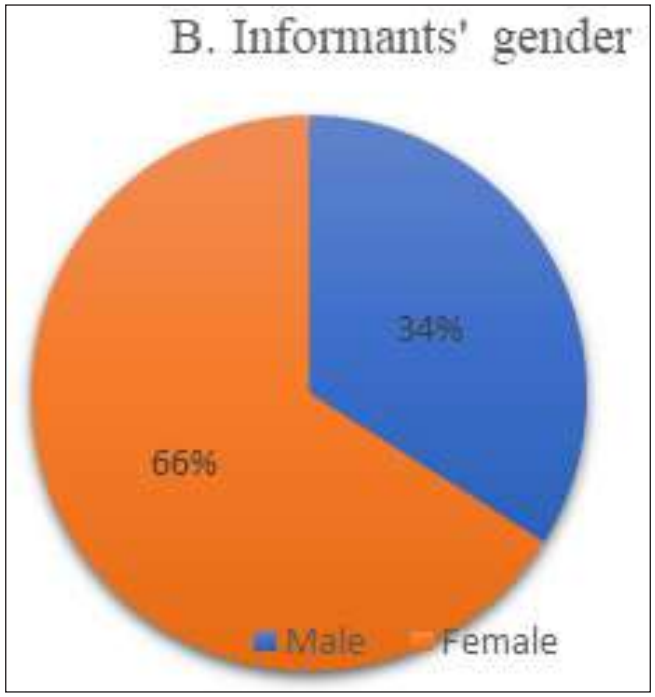
Result

Data were collected from hundreds of village people and three govt registered Ayurveda doctors. Data revealed demographic characteristics of respondents (Figure 3 A, B, C). Collecting answers about the usage reports of four above mentioned plants in eleven above mentioned diseases researchers created a cut off of 40%. This cut off tells that, if more than 40 people out of 100 people responses the use of any above-mentioned plant in any above mentioned diseases; this plant may have the potentiality to cure that disease. Here Na means not so significant and Y means yes. Statistical analysis also performed to validate all collected data. (Figure 4 A-D) (Table 2-5).

Table 2.Demographic Characteristics of Respondents

Variables	Categories	Number
Age	0-20	10
	20-30	10
	31-40	17
	41-50	20
	51-60	17
	61-70	17
	71-80	9
Total		100
Gender	Male	34
	Female	66
	Local Ayurveda doctors (Male / Female)	3
Total including doctors		103
Education level	Illiterate	16
	1 to 5	14
	5 to 10	24
	10 to 12	24
	>12	22
Sources of knowledge	By parents	16
	By others	16
	Self-experiments	2
	Books	87





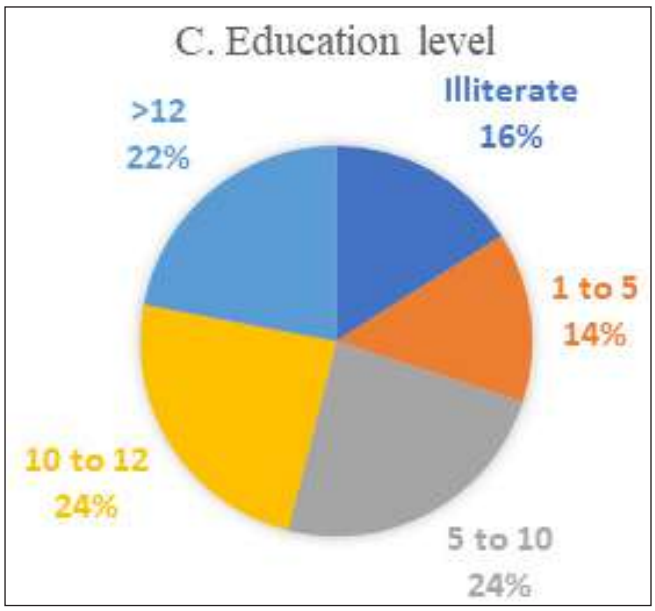


Figure 3 A,B,C.Pictorial Presentation of Demographic Details of Local Inhabitants

Table 3.Percentage of usage Reports of the Four Plants in the Eleven Diseases

Ailment category	Md%	Pp%	Cp%	Rc%
Gastrointestinal	Na	Na	50	Na
Disorders	Na	Na	Na	Na
Pain/ Arthritis	Na	Na	Na	100
Fever and aches	Na	Na	43	Na
Diseases of the skin	Na	Na	Na	Na
Remove weakness, immunomodulator, Anaemia	74	Na	Na	Na
Ophthalmologic complaints	Na	Na	Na	Na
Poisonous bite	Na	Na	Na	Na
Dental problems	Na	Na	Na	Na
Ear ache	Na	Na	Na	Na
Hearing problems	Na	Na	Na	Na
Dengue	Na	Na	67	Na

Table 4.Data Collected from Local Ayurved Doctors

Ailment category	Use reports			
	Md	Pp	Cp	Rc
Gastrointestinal disorders	Y	-	Y	-
Pain/ Arthritis	-	-	-	Y
Fever and aches	Y	-	Y	-
Diseases of the skin	-	Y	-	
Remove weakness, immunomodulator, anaemia	Y	-	Y	-
Ophthalmologic complaints	Y	-	Y	-
Poisonous bite	-	-	-	-
Dental problems	-	-	-	-
Ear ache	-	-	-	-
Hearing problems	-	-	-	-
Dengue	-	-	Y	-

Table 5.Table Shows Significant usage Report from Village People and its Validation by Ayurveda Doctors

Ailment category	Significant uses reported by village people	Significant uses reported by Ayurveda doctors
Gastrointestinal disorders	Carica papaya L. has significant uses	Validated by doctors
Pain/ Arthritis	Ricinus communis L. has significant	Validated by doctors

Fever and aches	Carica papaya L. has significant uses	Validated by doctors
Remove weakness, immuno-modulator, anaemia	Malus domestica Borkh. has significant uses	Validated by doctors
Dengue	Carica papaya L. has significant uses	Validated by doctors

Statistical Analysis

To validate our findings, we performed some statistical tests by creating both null and alternate hypothesis under the umbrella of chi square test. To build the chi square test we have created fifteen "two way contingency tables" using demographic characters and medicinal plant's potentiality to cure a certain disease. Also we created expected contingency table from the actual contingency table. By putting the formula (O-E)2/E which follows the (r – 1) *(c-1) distribution, where r is the number of row level and c is the number of column level.

Below is the summary Table of our research hypothesis (both null and alternate hypothesis). Inference column here depicted the acceptance of null or alternative hypothesis at 95% significance level (Table 6).

Table 6.Summary Table

Factors	Df	Critical values	p value	null hypothesis	alternate hypothesis	Inference
gastro_ papaya_age	1	16.268	0.01	There are no significant association between age & papaya uses for the treatment of Gastrointestinal disorders	There are significant association between age & papaya uses for the treatment of Gastrointestinal disorders	Alternate hypothesis accepted
Pain_ castor_age	1	4.91	0.55	There are no significant association between age & castor uses for the treatment of Pain.	There are significant association between age & castor uses for the treatment of Pain	null accepted
fever_ papaya_age	1	9.41	0.15	There are no significant association between age & papaya uses for the treatment of Fever	There are significant association between age & papaya uses for the treatment of Fever	null accepted
weakness_ apple_age	1	18.441	0.005	There are no significant association between age & apple uses for the treatment of Weakness	There are significant association between age & apple uses for the treatment of Weakness	alternate hypothesis accepted
dengue_ papaya_age	1	6.506	0.37	There are no significant association between age & papaya uses for the treatment of Dengue	There are significant association between age & papaya uses for the treatment of Dengue	null accepted
gastro_ papaya_ gender	6	3.44	0.06	There are no significant association between gender & papaya uses for the treatment of Gastrointestinal disorders	There are significant association between gender & papaya uses for the treatment of Gastrointestinal disorders	null accepted
Pain_ castor_ gender	6	0.267	0.6	There are no significant association between gender & castor uses for the treatment of Pain	There are significant association between gender & castor uses for the treatment of Pain	null accepted

fever_ papaya_ gender	6	16.72	0	There are no significant association between gender & papaya uses for the treatment of Fever	There are significant association between gender & papaya uses for the treatment of Fever	alternate hypothesis accepted
weakness_ apple_ gender	6	5.026	0.02	There are no significant association between gender & apple uses for the treatment of Weakness	There are significant association between gender & apple uses for the treatment of Weakness	alternate hypothesis accepted
dengue_ papaya_ gender	6	0.12	0.6	There are no significant association between gender & papaya uses for the treatment of Dengue	There are significant association between gender & papaya uses for the treatment of Dengue	null accepted
gastro_ papaya_ education	6	27.6	0.0001	There are no significant association between education & papaya uses for the treatment of Gastrointestinal disorders	There are significant association between education & papaya uses for the treatment of Gastrointestinal disorders	alternate hypothesis accepted
pain_ castor_ education	6	45.061	0	There are no significant association between education & castor uses for the treatment of Pain	There are significant association between education & castor uses for the treatment of Pain	alternate hypothesis accepted
fever_ papaya_ education	6	6.901	0.33	There are no significant association between education & papaya uses for the treatment of Fever	There are significant association between education & papaya uses for the treatment of Fever	null accepted
weakness_ apple_ education	6	16.11	0.01	There are no significant association between education & apple uses for the treatment of Weakness	There are significant association between education & apple uses for the treatment of Weakness	alternate hypothesis accepted
dengue_ papaya_ education	6	17.443	0.008	There are no significant association between education & papaya uses for the treatment of Dengue	There are significant association between education & papaya uses for the treatment of Dengue	alternate hypothesis accepted

Discussion

These plants are used by rural people for curing diseases, for boosting energy and immunity. Among these four plants, three plants are cultivated for fruits and not traditionally considered as medicinal plants. But studies from villages explored that these plants can also cure diseases. After setting the >40% criteria we got, Ricinus communis L is involved in curing pain and arthritis. Carica papaya L has significant role in controlling gastrointestinal disorder, fever, aches and dengue. Malus domestica Borkh. is useful for removing weakness. Among these four plants, Carica papaya L. is mostly useful for medicinal purposes. Prunus persica L. is not so useful as medicinal plant. To validate our survey results we visited to Ayurveda medicine shops of local markets. In shops we found Ayurveda medicine to cure dengue named Denguenil vati (Company name: Divya) made from papaya leaf extracts. Two medicines Erand tel (company name: Sharmayu) and Arand tel (Company name:

Vaidyanath) are also available in the medicine shops. Apple cider vinegar (Company name: Chirayu) and Apple vinegar (Company name: Patanjali) are also available in the shops for the removing weakness. No such medicines prepared from papaya for recovery from gastrointestinal disorders and fevers are found in local Ayurveda shops (Figure 4, 5, 6, 7, 8,).

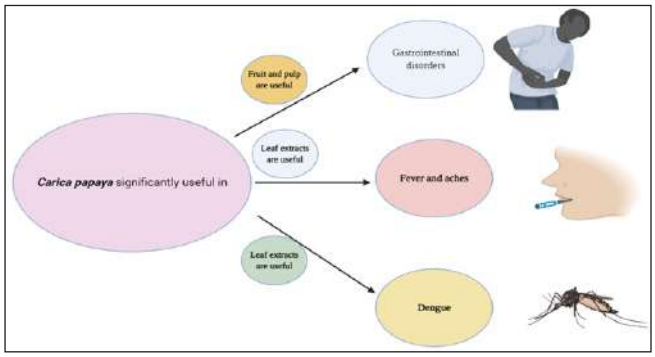


Figure 4.Pictorial Presentation of Usefulness of Carica Papaya Plant Reported by Village Dwellers (Created with Biorender.com, https://Biorender.com/)

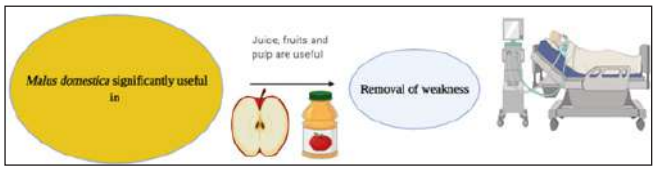


Figure 5.Pictorial Presentation of Usefulness of Malus Domestica Plant Reported by Village Dwellers (Created with BioRender.com, https://biorender.com/)

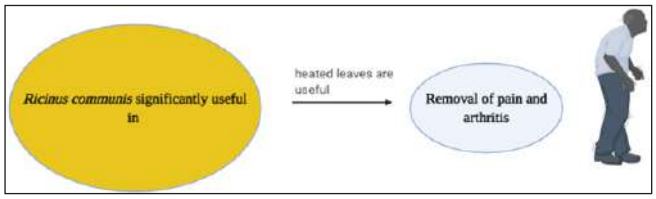


Figure 6.Pictorial Presentation of Usefulness of Ricinus Communis Plant Reported by Village Dwellers (Created with BioRender.com, https://biorender.com/)

Statistical analysis revealed that, irrespective of age, all respondents use castor in pain, papaya in fever and dengue. Irrespective of gender all uses papaya in gastrointestinal disorder and dengue; and castor in pain/ arthritis. Irrespective of education level, all uses papaya in fever. There are significant associations between age and papaya uses in gastro disorder, apple in weakness removal. Significant associations are also present between gender and usage of papaya in fever, usage of apple in removing weakness. Also, significant associations are present in education and in the uses of castor in pain, usage of apples in weakness removal and papaya for the treatment of dengue and gastro intestinal disorders.

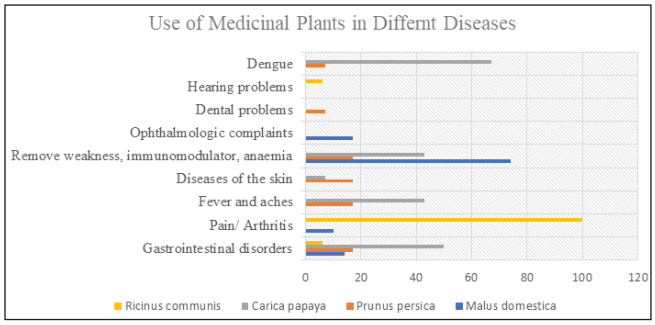


Figure 7.Use of Four Plants in Different Diseases as Per Respondents Knowledge

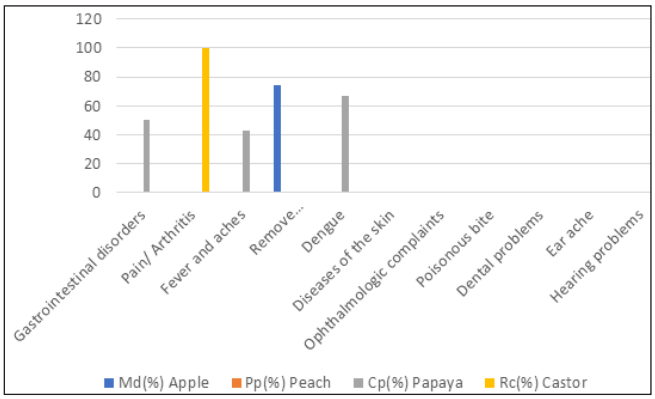


Figure 8.Bar Graph of Responses Collected from Villagers about the Potentiality of Four Plants for Curing Diseases

Conclusion

As, people living in Uttarakhand mostly believe in traditional medicines, our study was to identify medicinal uses of four abovesaid plants. Aged people, female farmers have deep knowledge about medicinal plants in Garhwal Himalaya. Survey revealed Papaya plant is useful for curing dengue, fever, aches and gastro intestinal disorders. Apart from that, Apple is useful for removing weakness and castor is useful for removing pain. Statistical analysis revealed that, rural people irrespective of their gender and age group have faith on castor leaves to get relief from pain/ arthritis and dengue. Chi square tests also revealed that, usage of medicinal plants is significantly related along with education level in most of the cases. That means, possibly people with higher education do not have trust on medicinal plants. Ayurveda doctors suggest people to have papaya fruits, juice and pulp in gastro intestinal disorders. In fever, aches and dengue doctors suggest to have papaya leaf extracts. They also suggest to take whole apple fruit and apple juice to remove weakness. Pharmacological activity on most of the plants is yet under research. No such ayurvedic medicines developed from papaya plants were found in local markets which can cure fever and gastrointestinal disorders. So, new drug design may be possible from papaya plants to cure fever and gastrointestinal disorders.

Acknowledgement

We would like to thank Mr. Ankit Singh Rawat, Sudeep Chandra, Yashwant Singh Tariyal, research scholar; HAPPRC; Dr. Rajendra Prasad Bhatt retired Senior Medical Officer Ayurveda, Shiv Prasad Bhatt retired Senior Medical Officer Ayurveda, Uttarakhand and Ayurvedacharya Dr. Rahul Kumar Vaidya. Also, we would like to thank Mr. Abir Sinha, Alumnae, Indian Statistical Institute, Kolkata, Dr. Pankaj Singh, alumnae HNB Garhwal University, Miss. Bratati Mukherjee, research scholar NISER, Bhuvaneswar, Mr. Srinjay Dutta alumnae IIT Bombay and all library staves of HAPPRC for their kind co- operations.

Author's Contribution

MB, KD, AK performed survey in villages. Both MB and AJ wrote this paper. NB created all graphical presentations. Both ARN and BP guided and corrected this paper.

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Questionnaries

Informants Details

1. What is your name?
2. Your gender
3. How old are you?
4. Education level
5. Occupation
6. Location/ residence
7. Knowledge about medicinal plants
8. Altitude (altimeter)
9. Knowledge about plants
10. Local name
11. Habit (tree/ herb/ shrub/ climber)
12. Number/ Name of diseases treated
13. Identification type of particular disease
14. Plant part
15. Method of crude drug preparation
16. DosageCollection and storage process

Survey Details

1. Local name
2. Life form
3. Local uses
4. Method of use
5. Time span

Plant Part use

1. Root-percentage
2. Leaves-percentage
3. Aerial part-percentage
4. Seed-percentage

Plants Details

1. Storage timing
2. Storage expiry date
3. Knowledge sources
4. Other importance
5. Cultivated/ Wild
6. Wild availability
7. Natural pockets (collection site)
8. Availability of particular pockets

Article

Rubric Techniques for Analyzing Usefulness of Open Educational Resources

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How to cite this article:
Parmar SS, Kumbar R. Rubric Techniques for Analyzing Usefulness of Open Educational Resources. *Proceedings ICSTRDA* 2021; 107-111.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-02-18

A B S T R A C T

Open Educational Resources (OERs) are those open-licensed resources that anybody can reuse in different contexts and are available without any financial burden. COVID-19 pandemic has shown an unpredictable shift of teaching and learning activities in school education in virtual mode. Indian school educators have started taking online classes to engage students in carrying out their routine academic activities. Parallelly, the school librarians have also developed new skills to assist educators by providing the required resources or helping them carry out online classes. The situation has paved the way for OERs to be adapted in numerous academic contexts. Librarians provide various OERs to their users in multiple formats, namely audio, video, PDF files, flipbooks and websites. But a practical exercise that schools should carry out before they provide OERs to their students and educators is to analyse the resources to find out their suitability for use in classrooms and the students' purpose of learning. The paper's objective is to apply the rubric's techniques checklist, rating and analytics scale rubrics to analyse the usefulness of the OERs. School educators, librarians and students are slowly becoming the vital users of OERs in the Indian education environment. Adopting the method of analysing the usefulness of OERs will help identify the context in which the school educators can use them to provide the best OERs to their students.

Keywords: Open Educational Resources, OER Analysis, School Educators, Rubric, Checklist

Introduction

Technology has a reasonable claim on improvisation in the field of education. Significant changes are being experienced in the approach and delivery process of information. The openness of educational resources is due to technology only. The open system to knowledge is possible because scientists, scholars, students and teachers ensure that the access barrier to their scholarly content is removed. Budapest Open Access Initiative (BOAI) in 2002 first used the term open access. With the passage of time and the increased reach of knowledge to everyone through the internet, open resources, open education and open educational resources started emerging. Teaching pedagogy also has been modified due to the moment of open education. The Open Educational Resources (OERs) started appearing as supplementary learning resources and are supporting teaching content in a big way in school education.

Open Educational Resources (OERs) are educational materials in the public domain or published under open

licences (such as Creative Commons) that specify how they can be used, reused, adapted and shared. OERs can include textbooks, curricula, syllabi, lecture notes, assignments, tests, projects, audio, video and software. (Fedration University Library, 2021)

COVID-19 pandemic and various other variables resulted in a sudden shut down of academic institutions. The numerous learning concepts such as learning with peers, exchanging notes, visiting the libraries and meeting the teacher to clear the topics have become entirely obsolete (Gumb, 2020). The world adjusted to the new norms of social distancing and adapted to online platforms like Google Meet, Skype or Zoom, which became the new delivery stations of education.

School libraries are vibrant if the services and resources are used to the optimum by their users. But the pandemic has impacted this lifeline of libraries. In this unexpected situation, the libraries served the users by providing online resources through their websites or delivering them straight to their handheld devices or apps. But in the process of providing these OERs, the resources have gone through any analytical tool to analyse its suitability and usefulness to the students and teachers. As the evaluation of any content/ source is an integral part of its use. OERs also need to be evaluated before providing them to the teachers and students. Such evaluation or analysis gives them confidence in the information and source they are consuming.

The study advocates the analysis of OERs using fundamental yet simplest forms of rubrics analysis. In the school education system, the use of rubrics is not a common assessment tool. Teachers have been seen using the rubrics to assess the Student's performances and event values. The rubric technique applies to qualitative, numerical or descriptive nature of OERs. Hence, checklists, rating and analytics scales are suggested to be used as tools to analyse the OERs. These scales help the investigator to collect the information about the proposed object on specific pre-decided criteria. These scales are best objects to record the observer's observations, providing assessment tool to gather the information or records. The development of rubrics is based on the criteria decided to analysis the OERs. The suitable rubrics are developed with the set criteria, including essential information reuse factor, would help school librarians analyse the OERs in a manageable and speedy way. On the other hand, if libraries supply any content to the Students after analysis, it will create a positive library service image.

Literature Review

The study seeks to implement rubric technique to analyse the usefulness of OERs. Rubrics are matrix used to make the scale level assessment of an object, information, content, human behaviour, work etc. to give a position, grade or ranking to the assessed product (University of Waterloo, n.d.). It's an outcome base, multi-purpose scoring guide for assessing effects and performances. (Wolf and Stevens, 2007). Development of rubrics includes three steps:

- Identifying Performance Criteria
- Setting Performance Levels
- Creating Performance Descriptions

Dianna and Stephanie have developed a checklist to evaluate OERs. They have included a breadth of perspectives and accuracy, alignment, production quality, accessibility, student access, student engagement, cultural relevance and sensitivity, licensing and adaptability. The checklist can use as a readymade document in the OER assessment (Morganti and Towery, 2020). The literature review revealed that studies use various kinds of rubrics to evaluate the students' performance and even on OER implication. Developed checklist/ rating scales rubrics were also found during the literature review, but their use in OERs content analysis could not trace.

Research Objectives

During the COVID pandemic, there was a heavy buzz of delivery of OERs or open informational sources. Depending on the need of the hour and the fact that libraries are the backbone, the academic institutions must continue the resources' supply. But before providing access to any OER content to the students or teachers of the school, libraries should analyse the OER. Hence the following were the objectives of the study:

- To understand thoroughly the technique of rubric
- To apply the checklist, rating and analytics scaling of rubrics to OERs
- To identify the usefulness of OERs by testing the OERs on rubric techniques

Limitations of the Study

- Only checklist, rating and analytics scale rubrics are considered in the study
- Pre-Set conditions used in the study to show the OER analysis are entirely based on the researcher's observations and used only as example
- The results of observation and analysis of OER can vary between studies

Methodology

The study adopted an implication method of rubric techniques for the assessment of the usefulness of OERs. Three OERs content in three different formats i.e. video, audio and text has been taken as a sample and assessed on the specific pre-developed criteria. The developed rubrics are attended based on the observations.

All the three rubric scales are discussed below with their implications on OER:

A popular and common method of evaluation is checklist scaling. The technique is best to assess the behavioural pattern of the object. It does not provide any rating. The technique uses the binary format decision making concept, i.e., either Yes or No. The developed criteria for the content are checked based on the decided binary framework. The content with the highest positive response from the fixed binary concept finds the fulfilling majority of set criteria and will be the most suitable content to be made available to the users. The implication of checklist scale rubric in OER assessment:

Figure 1, is a screenshot of a video title 'How Flies Fly' from 'ibiology' (www.ibiology.org). Following are the criteria to analyse the content of the video:

- Educational reuse of content
- Opportunities for students to test their understanding of the material
- Alternative formats
- Sound Clearity
- Transcript/ subtitles availability

The video checked on the criteria, responses are recorded in the 'Yes' and 'No' column of Table 1.

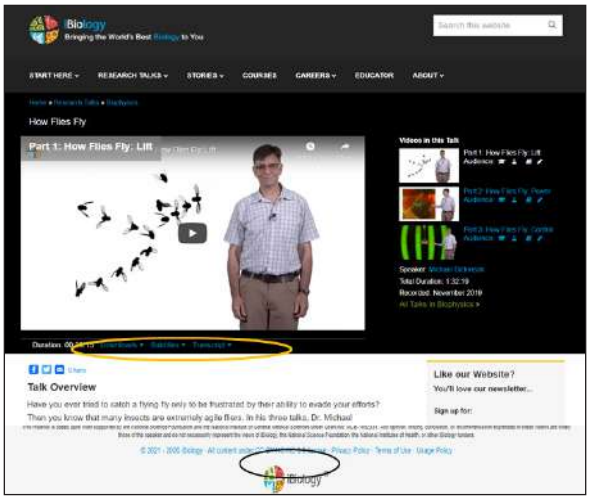

Figure 1.Screenshot of Video Content 'How Flies Fly' from 'iBiology'

Table 1.Assessment of Video Content 'How Flies Fly' from 'iBiology'

Assessment questions	Yes	No
Educational reuse of content	1	
Opportunities for students to test their understanding of the material		0
Alternative formats		0
Sound Clarity	1	
Transcript/subtitles availability	1	

In the analysis process using the checklist scale of rubric from the decided criteria, the video has received three 'Yes' and two 'No'. The video 'How Flies Fly' follows the openness of the information. Hence it can be supplied to the students and teachers. It is with clear sound and video quality and has subtitles to support the learning.

Rating Scale Rubrics

Rating scale rubrics are used to evaluate qualitative and quantitate information on the developed criteria (Didactics of English Language, n.d.). As in the Likert scale, the respondent must choose the suitable rating number for the decided components. Similarly, in the rating scale rubrics, the set criteria are written on the extreme left column and each criteria assessment marks will be provided according to the observation. Implementation of rating scale rubric in OER assessment.

Figure 2.Screenshot of an eBook Resource 'Concepts of Fitness & Wellness' from 'Open Textbook Library'

Table 2.Assessment of an eBook resource 'Concepts of Fitness & Wellness' from 'Open Textbook Library'

Assessment questions	Below Expectation	Meets Expectation	Exceeds Expectation
Accurate Information		2	
Error Free		2	
layout and interface easy to navigate		2	
Alternative formats		2	
CC License		2	

Figure 2, is a screenshot of a website resource page title 'Concepts of Fitness & Wellness' from 'Open Textbook Library' (https://open.umn.edu/).

Following are the criteria decided to analyse the contents of the resource:

- Accurate Information
- Error Free
- Ease of navigation of the layout and interface
- Alternative formats
- CC License

The above Table 2, shows that the selected OER resource meets most of the expectations. On the rating scale rubric, it has received ten grades from a total of 12. The resource follows the CC-BY-NC-SA license, allowing users to use the resource for non-commercial purposes and share with others. It allows online reading and downloading of PDF file for offline use. As it provides multiple formats, allows openness and meets other criteria, the library can give the e-book to the students and teachers.

Analytic Scale Rubrics

In the analytic scaling rubric method, specific decided criteria listed out in the first left column and remaining columns remain blank to fill the performance level's scoring by the requirements. Each standard should be scoring separately whichever the score decided for any criteria in that column, the reason needs to be justified (DePaul University, n.d.). The last row contains the total score. The higher the score, the best the resource content, accessibility and feasibility will be. The list of criteria is wholly base on the observer. While deciding the requirements, the librarian should try to keep all the possibilities included so that all the relevant information about the type of resource should get covered. Analytic rubrics are useful to provide the best feedback. As each strength and weakness related to chosen criteria can be check. Unless each criterion is not weighted, one cannot conclude the usefulness.

The implication of analytic scale rubric in OER assessment

Figure 3, is a screenshot of a musical piece resource title 'My Little Kingdom' from 'Free Music Archive' (https://freemusicarchive.org/). To assess the resource four criteria were decided namely:

- Music Sound
- Organisation
- Technology used
- Openness

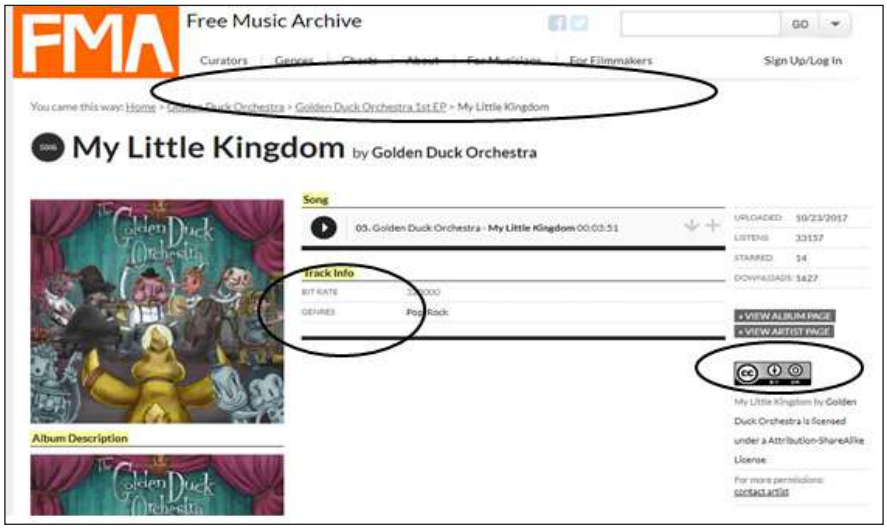

Figure 3.Screenshot of Music Resource 'My Little Kingdom' from 'Free Music Archive

Table 3.Assessment of Music Resource 'My Little Kingdom' from 'Free Music Archive

Particulars	Poor 1	Fair 2	Good 3	Exceptional 4	Total Score
Music Sound				Music sound appears clear	4
Organisation			The listing of music is appropriately categorised as Genres, Musician, Filmmakers		3
Technology used				Downloading and playing of music is convenient	4
Openness				CC-BY SA Licensed	4
Total Score					15/16

Table 3, shows the analysis of music OER through analytic scale rubric. In the observation on the decided criteria, the content receives an impressive 15 out of 16. Hence the resource is suitable to be provided to the students and teachers for their learning. The music has good sound quality, the content is well organised on the website and can be searched through genres, musicians or filmmakers. It is licensed under CC-BY SA, means allowing the reuse of the music piece. But the new work should be licensed under the same license under which current music is licensed.

The school librarians similarly can adopt the method of any form of the rubric in the assessment process of OERs. Most of the time, they can make OER assessment observations by taking sample OER content. But the librarians need to observe the OERs wisely, without any biases and give their users open knowledge experience.

Conclusion

School educators, librarians and students are slowly becoming vital users of OERs in the Indian education environment. School libraries are developing their platform to provide the OERs. But the librarians need to take care when online content or shared links are being provided to the library users since they are being provided to the people who might not be aware of the copyright or usefulness. The provided OER content usage will not be known. Hence, it is the library's responsibility to evaluate the content before giving access to any online content to the users. It should assess the information and informational source on specific criteria like copyright, authenticity, reuse value and quality. The rubrics like checklist, rating and analytics scales can be customised and OER resources can be evaluated using these tools.

When the open resources are analysed using the basic rubrics techniques, they will help the school teachers and students use a tested and trusted information resource. Secondly, as the copyright issues, reuse information possibilities and other technical requirements will be pre-checked by the librarian and noted, the users need not worry about these conditions. Librarians can also assure that the users' resources are genuinely open and relevant to their users' needs. Steven Redhead has rightly said, "Careful evaluation of information that is portrayed as fact is critical." Therefore, adopting the right methods of analysing the usefulness of OERs will help identify the context in which the school educators can use them to provide the best OERs to their students.

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Article

Scholars' Perceptions and Practices on Research Data Management in the Universities of Gujarat: A Survey

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How to cite this article:
Kumari M, Parmar M. Scholars' Perceptions and Practices on Research Data Management in the Universities of Gujarat: A Survey. *Proceedings ICSTRDA* 2021; 112-117.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-03-08

A B S T R A C T

Research Data and its management process is a foundation practice of scholars. The research data included collected raw data from the selected samples for the research as well as the output of research in form of suggestions and analysis. Therefore to manage and preserve the raw data of research, one electronic platform would be needed that takes good care of data as well as enabled to serve it as per the requisites of the scholars during the research. Research Data Management, is a platform to conscious in taking care, authenticity, preservation and services of it. Collected Data is the backbone of any research. So it's much needed to organize, store and preserve the collected data during research in a proper way. Research Data Management (RDM) is that approach which overcomes all the obstacles of data collection and proper application. When data is collected in organized form then it's very easy to apply any statistical tools and techniques. Institutes can easily archive them so it helps the prospective researchers to use them in the future. It increases the usability and longevity of the data. In this digital era, data generation is exponential. To organize this huge amount of data there should be an effective management plane. In this study researcher uses the survey method of data collection through the questionnaire. The questionnaire has been filled by research scholars of the universities of Gujarat. After analyzing the responses received, get a pattern of scholars' perceptions and practices. The core objective of this study is to make scholars aware of the use of RDM and its effect on the ease of doing research. The limitation of this study only conducted on only research scholars of universities of Gujarat. Research scholars of the total of 25 universities of Gujarat i.e. state and central level are taken as a sample. This helps know the actual status of awareness and practices of research data management among research scholars. To find out, the areas that need to improve. By knowing the actual problem institute or RDM planner can plan the solution efficiently. Well structured strategy or resources like software and institutional repositories helps universities to improve Research Data Management (RDM). RDM services influence the research level. Good research always adds gems to the institution.

Keywords: Research Data Management, Research Data, Collected Data, Data Archiving, Data Preservation

Introduction

Nowadays data management is becoming an inseparable part of almost every research subject area. Library and information science is one of the set of social sciences domain. Library professionals or prospective librarians deal with the data of all disciplines so it much requires knowing the practices and perceptions about them. The advent of technology triggers the research for more data generation. As a result, the technology is taken care of the storage, preservation and curation. We are in the era of technology. The research is not out of this. Almost every facet of the research process gets entangled with technology. Research data management is also much handled by the technology. Research data is generated, stored and preserved during any research activity. Generated data may be in physical or in electronic form. The process and perception of all activity related to research data is known as Research Data Management (RDM). management of research data gives the support to researchers of organization from initiation of research to the final evaluation (Bunkar, Bhatt, 2020). Research scholars' practices and perceptions about the research data management give the ideas about whole system.

The proliferation and wider availability of high-performance computing, the advancement of visualization, simulation, and other sophisticated analysis techniques and the capacity to store vast quantities of data are driving a revolution in research (Carlson, Garritano, 2010). This complies the researcher to know about recent trends and technology. So it's necessary to get some insight into the practices or software used by research scholars.

(Davidson, Jones, Molloy and Kejser, 2014)cooperation and support of a diverse range of research-related staff. Researchers, librarians, administrators, ethics advisors, and IT professionals all have a vital contribution to make in ensuring that research data and related information is available, visible, understandable and usable over the mid to long term. This paper will provide a summary of several ongoing initiatives that the Jisc-funded Digital Curation Centre (DCC gave some points regarding emerging trends of the research data management in UK universities. Researchers found that Jisc and DDC founded UK universities developing a good environment for sustainable and supporting systems for research data management. This type of system gives a basic idea or encouragement to implement research data management systems and policies.

Literature Review

Research data sets have usability even after use in one research. The reusability of data sets is not deniable (Darch, Sands, Borgman and Golshan, 2020)why they make these decisions, the effects on future data reuse. We present a study, comprising interviews (n = 43. So there is a need to examine the perceptions and practices among research scholars. Without data we can't imagine any research to be authentic or complete, so it's much needed to store, preserve, curate and manage them for accurate results and analysis. Various tools and techniques are used for the management of data generated by any research. So many softwares are also used to manage data. Wulff,(2019) did a comparative study of software like PURE, Converis, and Symplectic. Researchers found that software helps in better preservation and curation of the data. Metadata standers also help in better interoperability. As we know that by the penetration of ITC, all subject domains got much exploration. This exploration is an effect of research and data analysis. Aydinoglu, Dogan and Taskin, (2017) discoverable, accessible and reusable. In this regard, the purpose of this paper is to investigate the perceptions and practices of Turkish researchers on the subject of RDM. Design/methodology/ approach: An online survey was distributed to the academicians in 25 universities in Turkey, 532 responses were gathered. Findings: Results indicate that although Turkish researchers are aware of the benefits of data management, are willing to share their research data with certain groups, have decent preservation habits, they express that they lack the technical skills and knowledge needed for RDM. In addition, no institutionalized support (staff, training, software and hardware surveyed the perceptions and practices of research scholars of 25 top universities of Turkey. Surveyor questioned about the practices used by academicians for their research data management. In 2017 the researchers of turkey were not much towards the new strategies for the RDM. They found that there is a lack of proper planning and policy. There is a need for technical skill and knowledge about the effective use of RDM. The closed system of data storage and preservation is also an issue. For proper protection and preservation, they used multiple platforms to save the data. This multiplies the same work many folds.

(Tripathi, Chand, Sonkar and Jeevan, 2017) talked about the metadata standers, preservation, sharing, storage and availability of data in the public domain. The researcher found that 45% of researchers have depended on experimental data and 42.7% depend on sample surveys. Researcher and faculty members generate varieties of data but didn't use metadata for their organizations.

Objectives

The main aim of the study is to know the pattern of research scholars in managing research data. Practices and perceptions of the research scholars of selected universities in Gujarat about research data storage form of data preferred by them, the metadata used by them, and the backup plans.

- To find out the level of awareness about RDM by the research scholars of Selected Universities in Gujarat
- To identify the data pattern preferred by the research scholars
- To find out the most preferred storage space or electronic platform used for data preservation/storage by the research scholars
- To identify the research data backup strategy of research scholars
- To find out the institutional repository used in the Universities
- To find out the metadata standard used by research scholars

Limitations

This study is mainly focused on the perception of research scholars collected through structured questionnaires. Various studies have questioned the authenticity of survey-based researchers. However, it would be interesting to study the RDM practices and policies of different Universities. A comparative study of RDM practices can also be undertaken.

The survey is conducted among research scholars of LIS at the universities of Gujarat. There are a total of 25 universities governed by the central government and state government. However, courses in Library and information science are being conducted in only 9 universities. The discussion and conclusion is only based on the responses received by the research scholars of respective universities.

Table 1.Number of Responses Received by Respective Universities

Name of the university	Total number of responses
Central University of Gujarat	6
Gujarat Vidyapith	2
Gujarat University	4
Sardar Patel University	5
M.S. University	2
Saurashtra University	1
Bhavnagar University	-
Veer Narmada South University	-
Hemchandracharya North Gujarat University	-

Methodology

The investigator has used the survey method through online. The questionnaire is prepared for the collection of data. The questionnaire is prepared through Google form and circulated among the research scholars. Both types of questions are used in the questionnaire i.e. close-ended and open-ended. The selection of research scholars for the survey has done randomly. Participation has been voluntary in the survey. A total of 22 completed responses have been received. 18 responses have been under study while 4 responses out of the sample area. Based on the responses investigator evaluated and presented the study.

Data Analysis and Interpretation

Awareness About RDM

Awareness about the Research Data Management (RDM) is the primary perception of the research scholars. Research data is the backbone of any research so, it must be necessary to get an idea about how to manage it. According to (Wiorogórska, Leśniewski and Rozkosz, 2018) the knowledge about research data management is directly linked to higher education. It reflects the level and status of the institutes through their scholars. According to the response to the questionnaire, 94.40% of research scholars know about the Research Data Management (RDM). This a good sign. Only 5.60% don't know about RDM. These responses show the research scholars are attentive and active regarding the concept and perception of RDM.

Method of Storage and Backup

Table 2.Responses for Storage and Backup of Research Data

Storage and backup	Response %
Desktop/ laptop computers	77.8%
External hard drive s (including USB drives)	44.4%
Lab books/ field notes/ other printed or handwritten materials	16.7%
Internet-based storage (dropbox, Google docs or other software)	44.4%

Research data storage and backup is the crucial stage in the research data management process. The device or process of storing data gives a base for use over and over. It assures the researcher that the collected data is safe and it won't be lost. According to Louise Corti stated that, data collection and sharing the strategies allows researchers to how they handle data during the study process (Stoyanova, 2015). Table 2, shows that 77.8% of researchers use desktop or laptop computers for their research data storage and backup whereas internet-based storage like dropbox, Google docs, or other software is used by 44.4% of researchers. These data show that most of the research scholars rely upon and having faith in private storage devices like desktop or laptop computers. This shows the fear of stolen or showing the intention of not making data public. Internet-based storage (44.4%) shows the open approach of data storage by the use of research data management software or cloud platform.

Institutional Repository

According to the (Witt, 2008) repository architecture of Purdue libraries' is distributed with several repositories which handles different types of content, workflow and several structures. There are three repositories for files, papers, and study datasets that were used in 2008 as "Purdue e- Scholar", which function as an umbrella for all repositories. Repositories of any institution or university give the researchers a great platform to store, preserve, curate and options for future use. According to the responses 50% of institutes/ universities having Institutional Repositories (IR) whereas 50% don't have. This shows the lack of infrastructure and lack of interest to upgrade the institutes or universities.

Types of Institutional Repository

Table 3.Preferred Types of Data Repository

Types of repository	Response %
Centralized multidisciplinary data repository	50
Centralized discipline-specific data repository	27.8
Decentralized multidisciplinary data repository	16.7
Decentralized discipline-specific data repository	5.6

According to the questionnaire responses, 50.0% of research scholars prefer centralized data storage with a multidisciplinary repository. This is a good sign that research scholars prefer to multidisciplinary data repository which facilitates interdisciplinary data sharing. One time data collection may help more than one discipline, ultimately makes cost-effective for infrastructure.

Research Data Loss and Reasons

Table 4.Data Loss Reasons and Response %

Data loss reasons	Response %
Deleting files accidentally	38.9
Mechanical damage of hardware	22.2
Theft of computer or hardware	5.6
No, I don't lose	50

In the current situation with the advent of technology, researchers generate and collect enormous data. For the storage of a vast amount of data, there is a need for a comprehensive plan and policy (Tenopir et al., 2011). These plans and policy reserve and secure the research data. Researchers can't afford the loss of data. Research data loss is the loss of complete study. So it's necessary to make backup collected research data that does not affect the researcher's effort. Responses say that 50% don't lose their research data but 50% losses their research data. If 5 out of 10 researchers lose their research data, that is the subject of concern. So there should be planned strategies and systems that no data should be lost. Data loss means loss of study then ultimately loss of development. According to responses, 38.9% of researchers lose their research data accidentally, whereas 22.2% by mechanical damage and 5.6% by device theft.

Use of Metadata while Storing Research Data by Researchers

Metadata is data about the data. Metadata describes the collected data. While storing research data the use of metadata makes data interoperable. It makes it more accessible in the sense of the future. Metadata standers like Dublin Core provide the ease to export or import the data on a common platform. The use of Metadata standards makes institutes or universities more communicable in respect of data sharing or preservation(Tenopir et al., 2011). Questionnaire responses show that 50% of researchers don't use any type of metadata while storing their research data. Only 22.2% of researchers use metadata standards while storing data. Rest has used the metadata but not with standers, which does not help in storing and sharing the data. These data tell that we need to make policy or practices while storing data, which facilitate preservation, data curation, sharing and maximize the use of data to a greater extent.

Discussion

Research data management awareness is foundation knowledge for any research scholar. A significant number of researchers know about the RDM according to the responses. At the same time, most of the researchers prefer desktop and laptop computers or data storage. Which shows not very much intended towards the technology or internet-based option. The policy and plane and some training are needed to make them familiar with internet-based options. Very few respondents used internet-based services like Google drive or cloud-based options. The institutions and universities should develop the institutional repository infrastructure for data storage, curation and sharing. Centralized and multidisciplinary data storage is promoted by maximum research scholars. There should be proactive planning and policy regarding RDM from the parent organization. The metadata standards are the main concern. Because most of the users don't use metadata standards while storing data. This makes the data for limited use. It makes it tough to interoperate. So, metadata standers must be used by researchers, institutions or guides should increase to use them. The survey summarizes that the researcher should take the research data management process as a crucial process in the duration of the study. It makes difference in getting accurate and reliable results.

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Questionnaire

1. Do you know about Research Data Management (RDM)?

a. Yes
b. No

2. What is your current method of data storage or backup?

a. Desktop/laptop computers
b. External hard drive s (including USB drives)
c. On department/ university server
d. Internet-based storage (dropbox, Google docs)
e. Lab books/field notes/other printed or handwritten materials

3. Do you use metadata for storing your research data?

a. Yes, with metadata standards
b. Yes, individually and consistently
c. Yes, individually and not consistently
d. No
e. I don't know about it

4. Which type of data repository do you prefer to store your data?

a. Centralized multidisciplinary data repository
b. Centralized discipline-specific data repository
c. Decentralized multidisciplinary data repository
d. Decentralized discipline-specific data repository.

5. Have you ever experience research data loss?

a. Yes
b. No

6. Reason for data loss:

a. Deleting files accidentally
b. Mechanical damage of hardware
c. Theft of computer or hardware
d. No, I don't lose

7. Is there an institutional repository in your institution or university?

a. Yes
b. No

Article

Scientometric Analysis of Research Output of Central University of Kerala

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How to cite this article:
Nidhisha PK, Sarangapani R. Scientometric Analysis of Research Output of Central University of Kerala. *Proceedings ICSTRDA* 2021; 118-123.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-03-15

A B S T R A C T

The study portrays a scientometric analysis of the research output of Central University of Kerala during 2010-2020 indexed on the Web of Science database. A total 560 records were downloaded and analyzed using Bibilometrix R packages. The major objectives of the study includes to find out the annual growth, document type, most prolific authors, most collaborative institutions and country, most preferred journals and top research areas of research publications. The number of publications shows a fluctuation in between even though it shows exponential growth. All the publications are in English Language and the lion's share of research publications are in the form of Articles. It has been concluded that most of the journals have good Impact Factor more than 3 and it shows that Central University of Kerala pursuing quality research. Comparatively the university does not have a good number of collaborative works with international institutions. So the study suggested that to increase joint research with international institutions which will make the institution to be recognized at international level also.

Keywords: Scientrometric, Bibilometrix, Central University of Kerala, Fluctuation

Introduction

Measuring research output of a university is a tool to understand the competitive research scenario. It allows making decisions regarding budget distribution and policy making for the future development of research projects. Research performance of university is a gauge of academic performance. As per UGC consolidated list there are 30 Central universities functioning in India. Central University, Kerala is one of the 15 central universities established in 2009 by Indian Parliament under the Central Universities Act, 2009. The main campus of the university is situated in Periya, Kasargod District. The university has 12 academic schools which include Biological Sciences, Global Studies, Physical Sciences, Language and Comparative Literature, Social Sciences, Earth Science Systems, School of Legal Studies, Medicine and Public Health, School of Business Studies, Cultural Studies, School of Education and School of Economics. UG, PG and PhD courses are pursued under the university. Central University of Kerala is a centre of information for the academic community of the University and is expected to be developed into a hub of knowledge to all the academic community and a gateway to national and global knowledge. It ensures fair access to knowledge to the academics on the campus in particular and to each individual related to the university in general.[4]

Scientometrics is a method of measuring published literature. It is used to measure the scientific activity of the literature indexed in databases. Most of the scientometric

studies are based on the publications in a particular subject, a particular institution or a country etc. Web of science is an online subscription based scientific citation indexing service that provides a comprehensive citation research. It gives access to multiple databases that reference cross disciplinary research, which allows for in-depth exploration of specialized subfields within an academic or scientific discipline.[5] A scientometric analysis of the publication output of Central University, Kerala will help to get an idea about the performance of the institution and also the impact of the research work. The result of the study will be valuable information on the performance of individual scientists.

Review of Literature

Rohit et al., (2019), carried out a study with an objective to find out the authorship pattern and degree of collaboration in the research publications of Central University of Gujarat. The study found a gradual growth in the number of publications. Multi-authorship was higher in the publication with 0.87 degree of collaboration. Nidhisha and Sarangapani (2019), conducted a study to analyze the research productivity of the National Institute of Technology, Calicut. The study analyzed 875 records of five years and the objectives to analyze the year wise productivity of the institution, type of publications, research areas, sources preferred for publication, most productive authors, authorship pattern, collaborating countries and institutions etc. Patel and Malhan (2018), analyzed the publication productivity of NIT, Hamirpur. Article was the most published form of research findings and the multi authored pattern was dominating. South Korea was the top collaborative country and Indian Institute of Technology, Roorkee was the most collaborative institution. In a study by Prabahar and others (2017), they analyze the scholarly communications of faculties and researchers of Indian Institute of Astrophysics (IIAP), Bangalore. To find out the year-wise distribution of publications, the authorship pattern, most productive author, year-wise citations to the articles published, most prolific authors, most preferred journals and application of Lotka's Law were the objectives set for the study. The study found that the three author collaboration was dominating and the degree of collaboration was 0.88. Most of the authors chose foreign journals to publish their work and concluded that the study non-confirms the Lotka's Law. Hadimani (2015) conducted bibliometric study to analyze the research output of Indian Institute of Science Education and Research, Thiruvananthapuram during the period of 2008-2013. The study attempts to analyze the growth of literature, most prolific author, most preferred source etc. A total of 2717 authors have contributed to the 157 articles and it was found that the annual growth rate is an average 111%. IISER-TVM scholars are more likely to collaborate with authors from the United States, Germany, England, Italy, etc. Hasan and Singh evaluated the research output of five top ranked Indian Institutes of Technology (IITs) based on the Web of Science. IIT Bombay, IIT Delhi, IIT Kanpur, IIT Kharagpur and IIT Madras were considered for the study. Out of the total contribution of India, IITs' attained 9.32% of publications. IIT Kharagpur was found to be the most productive institution among these 5 IITs. Similar study was done by Bid (2016) on the research output of IIT Kharagpur. It has been found that contributors from IIT Kharagpur have a tendency to publish their work in international journals having more impact factor.

Objectives of the Study

The major objectives of the study include:

- To identify the annual growth of publications of Central University, Kerala
- To find out the document type of publications
- To identify the most prolific authors
- To explore the most collaborative institutions and country
- To find out the most preferred journals
- To explore the research areas

Methodology

The study was carried out to analyze the research publications of Central University, Kerala during the period of 2010-2020. The data were collected from the Web of Science database on 1st January 2021. The search has been used for the data collection using: (Organization Enhanced= "Central University, Kerala'', Time span=2010- 2020). Total 560 data were downloaded and analyzed using bibliometrix R packages as per the objectives framed for the study.

Analysis and Discussion

The major details of the research publications of Central University, Kerala retrieved from Web of Science are given below in Table 1.

Table 1

Details	Value
Time span	2010: 2020
Sources (Journals, Books, etc)	317
Documents	560
Average years from publication	3.59
Average citations per documents	7.239
Average citations per year per doc	1.532
h-index	26
No. of Authors	4275
Single Authored documents	5

The data collected for the study during the time span 2010-2020. A total number of authors 4275 contributed the

560 research publications. All the publications of Central University, Kerala are in English language.

Annual Scientific Production

The year wise contribution shows that there is an increase in research publications from 2010 to 2013 that is from 1 to 32 publications and it declined in the years 2014 (20 publications) and 2015 (23 publications). From 2015 to 2020 the publications show an increasing trend.

Table 2.Annual Scientific Production

Years	Records	Cumulative	% of 560	Cumulative %
2020	116	116	20.714	20.71
2019	118	234	21.071	41.79
2018	97	331	17.321	59.11
2017	79	410	14.107	73.21
2016	47	457	8.393	81.61
2015	23	480	4.107	85.71
2014	20	500	3.571	89.29
2013	32	532	5.714	95.00
2012	19	551	3.393	98.39
2011	8	559	1.429	99.82
2010	1	560	0.179	100

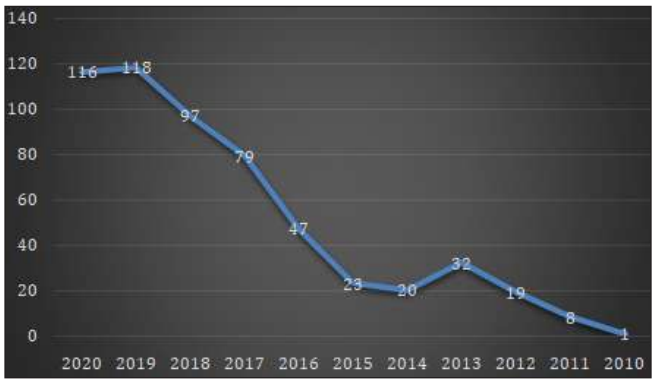

Figure 1.Annual Scientific Production

Table 3.Document type of publication

Document Types	Number of records	Percentage
Article	485	86.61
Review	26	4.64
Proceedings paper	20	3.57
Correction	5	0.89
Letter	4	0.71
Meeting abstract	4	0.71
Editorial material	2	0.36
News item	2	0.36

Document Type of Publication

Table 2, shows that lion's share of research publications are in the form of Articles (485 records, 86.61%) followed by Review (26 records, 4.64%), Proceeding Papers (20 records, 3.57%) etc. The share of other types of documents gives only 3.21% of total records. There is only 1 book chapter found in the 560 publications.

Table 4.Most Relevant Authors

S. No.	Authors	Records	Percentage
1.	Kurup MRP	43	7.68
2.	Mathew V	35	6.25
3.	Sahoo SC	28	5.00
4.	Sakthivel A	26	4.64
5.	Sinu PA	26	4.64
6.	Nair SS	25	4.46
7.	Prasad E	24	4.29
8.	Rathie AK	22	3.93
9.	Kumar VBS	20	3.57
10.	Gehlot J	18	3.21
11.	Kumavath R	18	3.21
12.	Nath S	18	3.21
13.	Shamlath A	17	3.04
14.	Jhingan A	16	2.86
15.	Shareef M	16	2.86
16.	Thankappan KR	16	2.86
17.	Kanade SR	15	2.68
18.	Laveen PV	14	2.50
19.	Madhavan N	14	2.50
20.	Ajith R	13	2.32

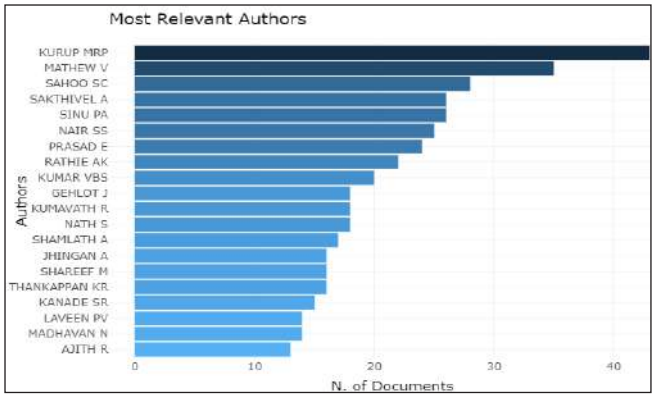

Figure 2.Most Relevant Authors

Most Relevant Authors

Above Table 4 and Figure 2, shows the top 20 authors based on the number of contributions. Kurup MRP (43

publications) contributed the highest number of publications followed by Mathew V (35 publications) and Sahoo SC (28 publications).

Collaborative Institutions

The institutional collaboration of Central University, Kerala is shown in Table 5. The Cochin University Science Technology (56 publications), Council Of Scientific Industrial Research CSIR India (32 publications) and University of Delhi (31 publications) are first three the top collaborative institutions. University of Calicut and University of Kerala are the two institutions other than Cochin University Science and Technology included in the top 20 collaborative list within Kerala. The top 20 list of collaborative institutions shows that the researcher has collaboration with international universities in Australia, Brazil, Germany and UK.

Table 5.Collaborative Institutions

S. No.	Affiliations	Publications	Country of Institution
1.	Cochin University Science Technology	56	India
2.	Council Of Scientific Industrial Research CSIR India	32	India
3.	University Of Delhi	31	India
4.	University Of Calicut	28	India
5.	Inter University Accelerator Centre	26	India
6.	Indian Institute Of Technology System Iit System	24	India
7.	University Of Kerala	23	India
8.	Australian National University	21	Australia
9.	Universidade Federal De Minas Gerais	18	Brazil
10.	Karnatak University	17	India
11.	Panjab University	17	India
12.	University Of Hyderabad	17	India
13.	Bharathiar University	15	India
14.	Department Of Science Technology India	15	India
15.	Friedrich Schiller University Of Jena	15	Germany
16.	Manipal Academy Of Higher Education Mahe	15	India
17.	University Of London	15	UK
18.	University Of Melbourne	15	Australia
19.	Bhabha Atomic Research Center Barc	14	India
20.	Indian Institute Of Technology Iit Bombay	14	India

Table 6.Top 20 Collaborative Countries

Countries	Records	% of 560
USA	61	10.893
South Korea	40	7.143
Australia	39	6.964
Germany	34	6.071
England	31	5.536
Japan	21	3.75
Brazil	20	3.571
Singapore	17	3.036
Canada	16	2.857
Peoples R China	16	2.857
Russia	15	2.679
Scotland	15	2.679
Italy	14	2.5
Mexico	14	2.5
South Africa	13	2.321
Wales	13	2.321
Egypt	12	2.143
Finland	12	2.143
Israel	12	2.143
Sri Lanka	12	2.143

Collaborative Countries

Central University, Kerala has collaborative research with a total of 123 countries and the top 20 countries engaged in research work are shown in above Table 6. The USA with 61 publications (10.89%) has highest collaboration followed by South Korea with 40 publications (7.15) and Germany with 34 publications (6.96%).

Research Area Wise Distribution of Publications

The top 20 research areas of research output are shown

in Table 7. Chemistry is at the top position with 112 publications (20%) followed by Physics with 107 Publications (19.107%) and Material Science with 67 publications (11.61%). Chemistry and Physics has more than hundred publications.

Table 7.Research Area wise Distribution of Publications

S. No.	Research Areas	Publications	% of 560
1.	Chemistry	112	20
2.	Physics	107	19.11
3.	Materials Science	65	11.61
4.	Science Technology Other Topics	57	10.17
5.	Biochemistry Molecular Biology	41	7.33
6.	Engineering	30	5.35
7.	Environmental Sciences Ecology	30	5.35
8.	Mathematics	27	4.83
9.	Cell Biology	26	4.65
10.	Microbiology	23	4.11
11.	Geology	17	3.04
12.	Plant Sciences	17	3.04
13.	Energy Fuels	16	2.85
14.	Biotechnology Applied Microbiology	15	2.67
15.	Pharmacology Pharmacy	14	2.50
16.	Optics	13	2.33
17.	Marine Freshwater Biology	12	2.15
18	Crystallography	11	1.96
19.	Entomology	11	1.96
20.	Public Environmental Occupational Health	11	1.96

Table 8.Top Ranked Journals

S. No.	Journals	Articles	% of 560
1.	Physical Review C	23	4.11
2.	Journal of Molecular Structure	10	1.79
3.	Polyhedron	10	1.79
4.	Current Science	9	1.61
5.	Materials Research Express	9	1.61
6.	Scientific Reports	9	1.61
7.	Journal of Magnetism and Magnetic Materials	8	1.43
8.	Journal of Superconductivity and Novel Magnetism	8	1.43
9.	Inorganica Chimica Acta	7	1.25
10.	Applied Organometallic Chemistry	6	1.07
11.	Journal of Materials Science-Materials in Electronics	5	0.89
12.	Molecular Biology Reports	5	0.89
13.	RSC Advances	5	0.89
14.	ACS Omega	4	0.71
15.	Advances in Difference Equations	4	0.71
16.	Applied Physics Letters	4	0.71
17.	Basic & Clinical Pharmacology & Toxicology	4	0.71
18.	Chemistryselect	4	0.71
19.	Integral Transforms and Special Functions	4	0.71
20.	Journal of Applied Physics	4	0.71

Top Ranked Journals

The top 20 journals in which the Central University of Kerala published research output are listed in Table 8, with a number of articles, h-index and Total Citations. It has published more papers in Physical Review C (23 articles) with IF 3.240 followed by Journal of Molecular Structure, IF 2.463 and Polyhedron, IF 2.343 with 10 articles each.

Co-Citation Network of Authors

Author co-citation refers to the phenomenon in which two authors are co-cited in other documents. By computing author co-citation relationships, the interconnections between academic communities and authors within a research field can be revealed (Liu and others, 2018). The co-citation network consists of 25 most prolific authors which distributed in 5 clusters are shown in Figure 3. Each node represents the individual author and the size of the node is indicating the total citation received by the author. It reveals that Sheldrick G M and Farrugia LJ is the most cited author.

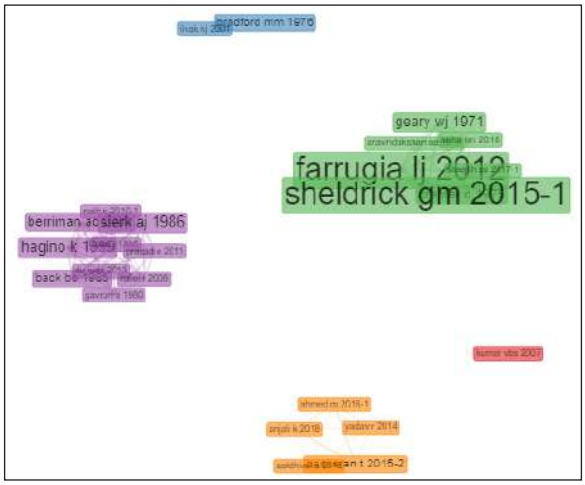

Figure 3

Conclusion

The scientometric analysis of research publications of Central University of Kerala shows that the number of publications shows a fluctuation in between even though it shows exponential growth. All the publications are in English Language and the lion's share of research publications are in the form of Articles. Among the 4275 authors Kurup MRP (43 publications) contributed the highest number of publications followed by Mathew V (35 publications) and Sahoo SC (28 publications). The Cochin University Science Technology, Council of Scientific Industrial Research CSIR India and University of Delhi are at the first three collaborative institutions. University of Calicut and University of Kerala are the two institutions other than Cochin University Science and Technology included in the top 20 collaborative list within Kerala. The USA has the highest collaboration followed by South Korea and Germany. Chemistry and Physics has more than hundred publications. It has been found that more number of papers in Physical Review C with IF 3.240 followed by Journal of Molecular Structure, IF 2.463 and Polyhedron, IF 2.343. The co-citation network of authors reveals that Sheldrick G M and Farrugia LJ is the most cited author. It has been concluded that most of the journals have good Impact Factor more than 3 and it shows the quality of research work of Central University of Kerala. Comparatively the university does not have a good number of collaborative works with international institutions and so the study suggested that to increase joint research with international institutions which will make the institution to be recognized at international level also.

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Article

Sentinel-1 SAR Data Analysis for Soil Moisture Estimation in Godhra Taluka, Panchmahal District

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I N F O

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How to cite this article:
Sutariya S, Hirapara A, Meherbnali M et al. Sentinel-1 SAR Data Analysis for Soil Moisture Estimation in Godhra Taluka, Panchmahal District. *Proceedings ICSTRDA* 2021; 124-130.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-03-04

A B S T R A C T

The major objective of this study was to explore the potential of Sentinel-1 C-Band Synthetic Aperture Radar (SAR) data acquired in Informetric Wide (IW) swath mode with VV-VH polarizations for soil moisture estimation. The Sentinel-1 data acquired on 27 Feb-2020 was downloaded from Copernicus website covering the study area. The Sentinel-1 SAR microwave data was analysed using open-source tools of Sentinel Application Platform (SNAP) software for estimation of backscattering coefficient (σ^0). The backscattering coefficient image of Godhra taluka was generated using the Sentinel-1 data for the date of 27-Feb-2020. The Backscatter Coefficient σ^0_{VV} (dB) and σ^0VH (dB) values of major land use classes in Godhra Taluka were also generated. In Godhra taluka, five villages were randomly selected and in each village five soil sample collection sites were identified on the maps created in GIS. The soil samples were collected from 25-selected sites, near synchronous with respect to the Sentinel-1 acquisition date. The soil moisture was determined using the gravimetric soil moisture determination method. The dataset of field measured soil moisture (%) of sample test sites in each village, σ^0_{VV} (dB), were created for regression analysis to estimate and map soil moisture content. The field measured soil moisture (MS %) was considered as dependent variable, σ^0_{VV} was chosen as independent variable. As a result of regression analysis, mathematical model for soil moisture estimation from σ^0_{VV} was generated for Godhra taluka. The results of regression analysis using σ^0_{VV} and σ^0_{VH} polarization with soil moisture indicated that σ^0_{VV} polarization was more sensitive to soil moisture content as compared to σ^0_{VH} polarization and the coefficient of determination (R^2) value for VV and VH polarization were determined as 0.72 and 0.27 respectively. This linear regression equation was used to compute the predicted soil moisture for Godhra taluka.

Keywords: Sentinel-1, SAR Data, Soil Moisture, Backscattering Coefficient, Polarization

Introduction

Soil moisture content plays a key role in the crop production as it acts as a nutrient and serves as a solvent for other nutrients such as sodium, potassium, carbon and nitrogen. It makes a significant impact on plant growth, percolation, and evaporation, microbiological decomposition of the soil organic matter. For many applications in hydrology, horticulture, geotechnical, agriculture and meteorology moisture content on surface of the soil is an important parameter(Ansari, Deshmukh, 2017). In agriculture point of view, soil moisture information is essential for many applications like plant stress, plant turgidity, irrigation scheduling and improving crop yield. It has a vigorous structure and thus, monitoring spatial and temporal variations in soil moisture is great importance for ecological balance.

Estimation of soil moisture from space without coming in contact with soil is one of the most important topics in remote sensing society. There are many studies on estimating soil moisture using both passive and active remote sensing satellites. Active microwave remote sensing systems have been recently preferred in soil moisture studies because of the remarkable penetrating capabilities of radar signal into the surface. Synthetic Aperture Radar (SAR) sensor is the most common active microwave remote sensing system for Earth observation. Considering bare soil, the backscattered SAR signal is affected strongly from soil moisture (Şekertekin, Marangoz, Abdikan, Aliihsan and Marangoz, 2018). The Sentinel-1, a polar orbiting satellite system mission is a part of the Global Monitoring for Environment and Security (GMES) program of the European Space Agency (ESA) and the European Commission (EC) and is intended to provide continuous global all-weather, day-and-night radar imaging in support of GMES applications (Drusch et al., 2012) designed to establish a European capacity for the provision and use of operational monitoring information for environment and security applications. ESA's role in GMES is to provide the definition and the development of the space ground-related system elements. GMES Sentinel-2 mission provides continuity to services relying on multi-spectral high-resolution optical observations over global terrestrial surfaces. The key mission objectives for Sentinel-2 are: (1. The major objective of this study was to estimate and map spatial distribution of soil moisture using Sentinel-1 C-band SAR data in Godhra taluka.

Material and Method

Study Area

Godhra taluka lies between latitude 22.777º N and longitude 73.620º E at 73 m (240 ft.) above the sea level. In this region farmers are taking crops of maize, paddy, bajra, pulses, cotton etc. with two to three crops annually. The soil of the taluka is sandy loam type in nature. The location map of Godhra taluka is shown in Figure 1.

Remote Sensing Satellite Data used

Sentinel-1 satellite provides C-band images in both singular and dual polarization within 12 days of repeat cycle. It can acquire images in three acquisition modes as Strip map (SM), Interferometric Wide Swath (IW), Extra Wide Swath (EW) and Wave (WV) with different processing levels (Drusch et al., 2012) designed to establish a European capacity for the provision and use of operational monitoring information for environment and security applications. ESA's role in GMES is to provide the definition and the development of the space- and ground-related system elements. GMES Sentinel-2 mission provides continuity to services relying on multi-spectral high-resolution optical observations over global terrestrial surfaces. The key mission objectives for Sentinel-2 are: (1. The Sentinel-1 SAR data was downloaded from the https://scihub.copernicus.eu/dhus/#/home Copernicus website. In this study, Level-1, GRD product with VV and VH polarization with the acquisition mode of IW was acquired for analysis. The details of Sentinel-1 SAR digital data are given in Table-1.

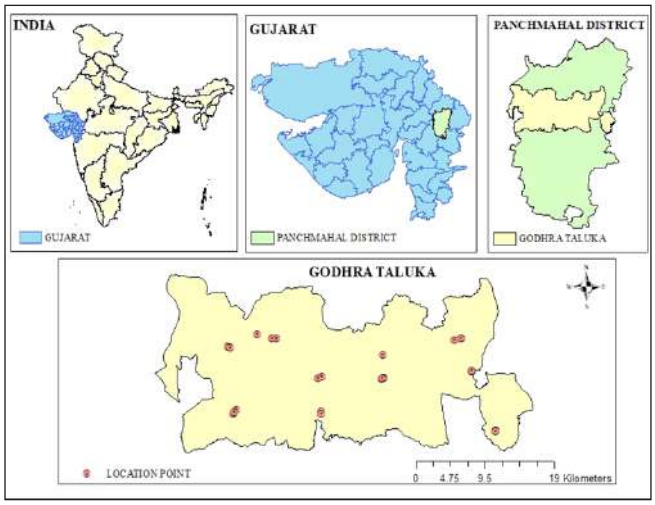

Figure 1.Location Map of Study Area in Gujarat State

Table 1.Specifications of Satellite Data used

Satellite	Specifications	
Sentinel-1 SAR	Acquisition date	27-FEB-2020
	Acquisition orbit	Descending
	Imaging frequency	C-band (5.4 GHz)
	Spatial Resolution (m)	10
	Imaging Mode	IW
	Polarization	VV-VH
	Data product	Level-1 GRD

Soil Sample Collection in the Field

The soil samples were collected near synchronous with respect to the Sentinel-1 acquisition date and well distributed over the Godhra taluka. It was observed that there was no crop or vegetation cover in the test fields. The surface roughness, which is another important variable which affects backscattering coefficient, was ignored because it was not so high for the test sites. Also, the selected fields for soil sample collection were not irrigated or there were no rains in the study area. The soil samples were collected using the soil auger from the depth of 10 cm and these soil samples were packed in air tight polythene bags. These collected soil samples were brought to the laboratory and put into the aluminium containers. A total number of 25-soil samples were collected from the identified sample points in different villages of Godhra taluka. The collected soil samples were oven-dried in the laboratory. The process of soil sample collection in the field and drying them in the hot-air oven is given in Figure 2.

Figure 2.Soil Samples Collection in the Field and Oven Drying of Soil Samples

Soil Moisture Determination using Field Data

In recent decades, many different methods are available to determine soil moisture content. Determining soil moisture is generally considered in two groups, namely direct and indirect methods. In direct methods, the soil moisture is calculated relating to the difference between the weights of the soil sample before and after drying. In indirect methods, soil moisture content is determined by sensors and using other variables which affect the moisture content and it depends upon the device accuracy. So, the gravimetric method (direct method) is more authentic and provides accurate soil moisture than the indirect method such as dielectric method, tensiometric method etc. In this study, a gravimetric soil moisture determination method was used (Myhre, Shih, 1990). In the gravimetric method firstly the soil samples are collected from the field and weighted, then placed in the hot-air oven and dried at 105°C temperature for 24 hours (Almaw Ayele Aniley, Naveen Kumar SK and Akshaya Kumar A, 2018).

After complete drying the samples are weighted again to obtain dry weights, and soil moisture is estimated using the following equation (1):

$$\text{Soil Moisture (\%)} = (M_w / M_s) \times 100 \quad (1)$$

Where, Mw is mass of water and Ms is the mass of dry soil.

M_w = (weight of wet soil + can)-(weight of oven dry soil + can)

M_s = (weight of oven dry soil + can)-weight of can

Sentinel-1 Image Pre-processing

Sentinel-1 provides data with a spatial resolution of 10 m and a temporal resolution of 12 days, in both VV and VH polarizations. In this present study, VV polarization data were used to estimate the soil moisture. Previous studies have shown that VH data has only a limited potential for the estimation of soil moisture, in particular as a consequence of its high sensitivity to volume scattering, which depends strongly on the geometrical alignment and characteristics of the vegetation(Chauhan, Srivastava, 2016). ESA announced some steps to be performed with open-source tools of Sentinel Application Platform (SNAP) software for determining backscattering coefficient (σ^0). The steps of this analysis included: apply orbit file, thermal noise removal, border noise removal, radiometric calibration, speckle filtering, range doppler terrain correction and

Conversion to dB (Filipponi, 2019)providing complete, free and open access to satellite data, mainly acquired by Sentinel satellites. Sentinel-1 Synthetic Aperture Radar (SAR. After applying all these steps, final backscattering coefficient image was generated from the high-resolution Level-1 Ground Range Detected (GRD) product with a spatial resolution of 10 m x 10 m.

For Sentinel-1 SAR data preprocessing the Sentinel Application Platform (SNAP) software was utilized to perform radiometric and geometric corrections. The DN values of raw Sentinel-1 data were first converted to σ^0 using radiometric calibration. Then, the calibrated Sentinel-1 data was georeferenced using the terrain correction algorithm. In the second step, the mean values of σ^0 are extracted for each field sample. For this, the selected fields were identified on image based on their geographic coordinate. Then the border of each field was determined and the average of σ^0 for internal pixels was calculated (Mirsoleimani, Sahebi, Baghdadi and El Hajj, 2019)Iran. In the first part, the performance of the models is evaluated based on the field measurement and the mentioned backscattering models, CIEM and MDB performed with root mean square error (RMSE. The methodology flow-chart adopted for data analysis is given in Figure-3.

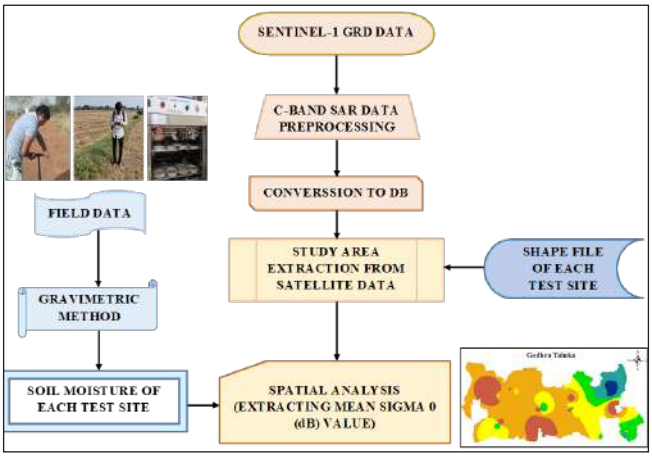

Figure 3.Methodology Flowchart of Data Analysis

Pre-processing (Calibration) of Sentinel-1 Product

The main task of calibration is to derive the calibration constant by measurements of targets with exactly known backscatter coefficients. The methodology for performing the data analysis of backscatter data (Filipponi, 2019) providing complete, free and open access to satellite data, mainly acquired by Sentinel satellites. Sentinel-1 Synthetic Aperture Radar (SAR as is follows:

Apply Orbit File

The orbit state vectors provided in the metadata of a SAR product are generally not completely accurate and can be refined with the precise orbit files which are available days to weeks after the generation of the product. Based on accurate satellite position and velocity information, the orbit state vectors in the abstract metadata of the product are updated. For Sentinel-1, resituated orbit files and precise orbit files may be applied. Precise orbits are produced a few weeks after acquisition.

Thermal Noise Removal

Thermal noise removal reduces noise effects in the inter-sub-swath texture, in particular, normalizing the backscatter signal within the entire Sentinel-1 scene and resulting in reduced discontinuities between sub-swaths for scenes in multi-swath acquisition modes. It can be applied to Sentinel-1 Level-1 SLC products as well as Level-1 GRD products which have not already been corrected. The operator can also remove this correction based on the product annotations (i.e., to reintroduce the noise signal that was removed). Accordingly, to allow for re-application of the correction product annotations will be updated. The Level-1 products provide a noise LUT for each data.

Border Noise Removal

While generating level-1 products, it is necessary to correct the sampling start time in order to compensate for the change of the Earth's curvature. At the same time, azimuth and range compression leads to radiometric artefacts at the image borders. The border noise removal algorithm, available as an operator in SNAP, was designed in order to remove low intensity noise and invalid data on scene edges.

Calibration

Calibration is the procedure that converts digital pixel values to radiometrically calibrated SAR backscatter. The information required to apply the calibration equation is included within the Sentinel-1 GRD product, specifically, a calibration vector included as an annotation in the product allows simple conversion of image intensity values into sigma nought values. The calibration reverses the scaling factor applied during level-1 product generation and applies a constant offset and a range-dependent gain, including the absolute calibration constant.

Conversion to dB

As a last step of the pre-processing workflow, the unit less backscatter coefficient is converted to dB using a logarithmic transformation, to dB as $10*\log_{10} \sigma_0$. The scattering behaviour depends on the physical characteristics of the terrain, primarily the geometry of the terrain elements and their electromagnetic characteristics.

Regression Analysis

In this study back scattering coefficient σ^0vv (dB) is considered function of soil moisture as given in Equation 2.

$$MC\ (\%) = X_1 * \sigma^0(dB) + c \qquad (2)$$

Where, σ^0 (dB) is backscattering coefficient. In this multiple regression analysis, MC (%) is considered as a dependent variable, whereas σ^0 (dB) is independent variable.

Validation of Soil Moisture

For the validation of the predicted soil moisture, performance indices namely coefficient of determination (R^2), standard deviation (S) and standard error (SE) were utilized. The equation of these performance indices is presented in Equation 3, 4 and 5.

$$R^2 = \left[\frac{\sum_{i=1}^{n}(O_i-\bar{O})(P_i-\bar{P})}{\sqrt{\sum_{i=1}^{n}(O_i-\bar{O})^2\sum_{i=1}^{n}(P_i-\bar{P})^2}}\right]^2 \quad (3)$$

Where, O_i and P_i are the observed soil moisture and predicted soil moisture respectively and are the mean values of the observed soil moisture and predicted soil moisture respectively and n is the number of data sets.

$$S = \sqrt{\frac{\sum_{i=1}^{n}(x_i-\bar{x})^2}{(n-1)}} \quad (4)$$

Where, S is the standard deviation of data set, x_i is each value in the data set, $\bar{x}$ is the mean of all values in data set and n is the total number of data sets.

$$SE = \frac{\sigma}{\sqrt{n}} \quad (5)$$

Where, SE is the standard error and σ is standard deviation and n is number of samples.

The shape file was created for each test site, mean σ^0 (dB) values of both VV and VH polarization were extracted using the shape files in ArcGIS software. The regression analysis was carried out between backscattering coefficient σ^0 (dB) with field measured soil moisture values.

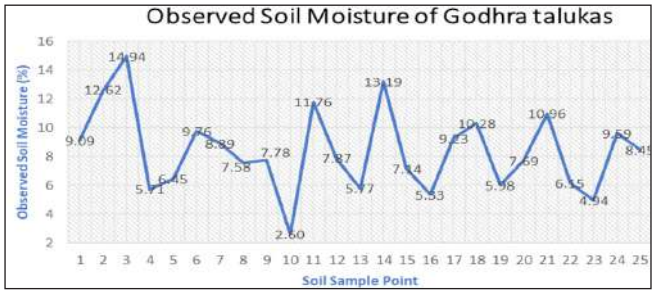

Figure 4.Observed Soil Moisture (%) in Godhra Taluka

Result and Discussion

Estimation of soil moisture content from field Data

At the 25 sample fields of different villages of Godhra taluka of Panchmahal district soil samples were collected with the help of auger and soil moisture of these 25 fields were estimated by gravimetric method. The results soil moisture estimation in each point of Godhra taluka is given in Figure 4.

Estimation of Backscattering Coefficient (dB) and (dB) from Sentinel-1 Satellite Data

The open-source tools of Sentinel Application Platform (SNAP) software were used for determining backscattering coefficient values from Sentinel-1 data. All the steps were described in this software from applying orbit file to conversion to dB were applied and the backscatter image of VV and VH polarization was generated for each 10 cm × 10 cm grid. The efficiency of single polarization (VV) is better than the cross polarization (VH) of backscatter data for soil moisture estimation. Backscattering coefficient image of Godhra taluka was generated using the Sentinel-1 data for the date of 27-Feb-2020. The Backscatter Coefficient σ^0_{VV} (dB) and σ^0_{VH} (dB) images of Godhra Taluka are given in Figure 5 and 6 and the values of major land use classes are given in Table-2.

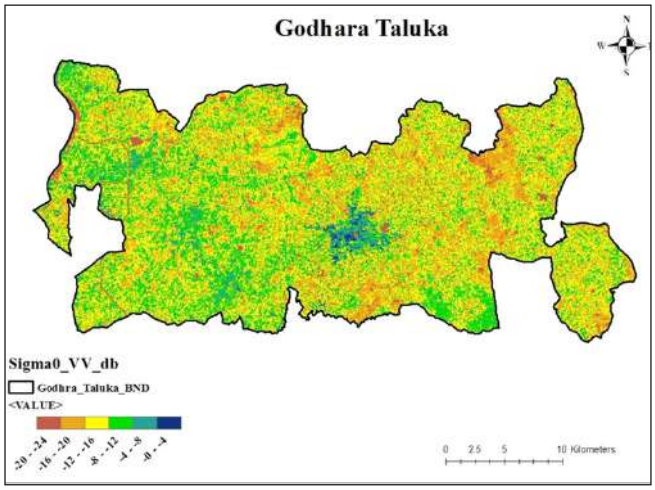

Figure 5.Backscatter Map of VV Polarization of Godhra Taluka (27 Feb 2020)

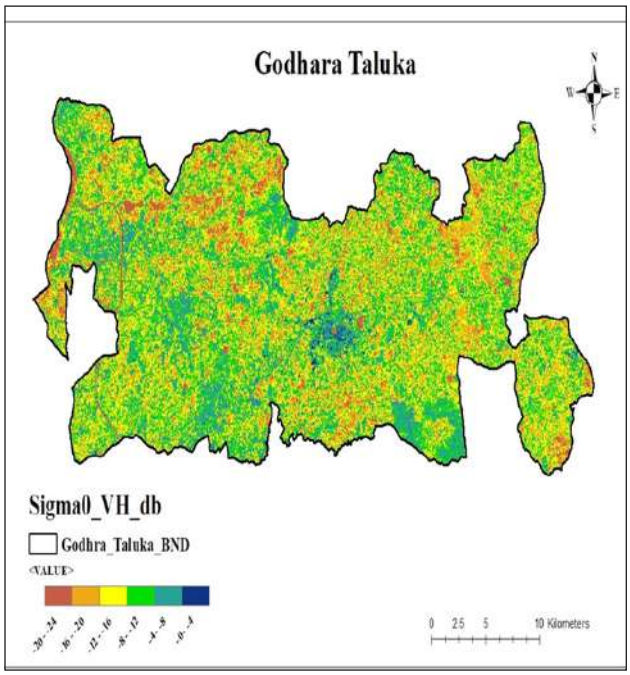

Figure 6.Backscatter Map of VH Polarization of Godhra Taluka (27 Feb 2020)

Table 2.Backscattering Coefficient (dB) VV of Different Land use Classes for Godhra

S. No.	Class	Area (ha)	Mean σ^0_{VV} (dB)	Mean σ^0_{VH} (dB)
1.	Agriculture	22263.6	-10.21	-16.25
2.	Water body	1853.8	-12.98	-18.68
3.	Built-up	43262.4	-11.00	-17.04
4.	Waste Land	9071.5	-10.93	-16.51

Comparison of VV and VH Polarization for Soil Moisture Estimation

All polarizations of Sentinel-1A data (VV, VH) were analyzed in order to determine which polarization is more sensitive to soil moisture content. The datasets of field measured soil moisture (%) of sample test sites in each village, σ^0_{VV} (dB), and σ^0_{VH} (dB) were generated and used in regression analysis to estimate soil moisture content. The field measured soil moisture (MS%) was considered as dependent variable, σ^0_{VV} and σ^0_{VH} (dB) were chosen as independent variables. The results presented in Figure 7 indicated that VV polarization was more sensitive to soil moisture content than the VH polarization and the coefficient of determination (R^2) values for VV and VH polarizations were determined as 0.72 and 0.276, respectively in Godhra Taluka.

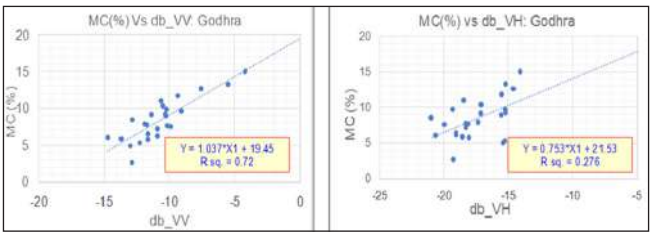

Figure 7.Soil Moisture Estimation using and Polarization in Godhra

Linear Regression Analysis

For estimate the soil moisture content of sample fields in Godhra taluka, the shape files of each field were created and mean σ^0 (dB) values of both VV and VH polarization of each test site were extracted using the shape files in ArcGIS software. The datasets of field measured soil moisture (%) of sample test sites in each village and σ^0 (dB) values of both VV and VH polarization were created. These datasets were used in the linear regression analysis to estimate and map soil moisture content. The field measured soil moisture (MS %) was considered as dependent variable and σ^0 (dB) values were chosen as independent variables. As a result of linear regression analysis, mathematical models for soil moisture estimation from σ^0_{VV} and σ^0_{VH} were generated and these regression equations are as follows:

VV polarization: Soil Moisture (SM %) = 1.0374* σ^0_{VV} (dB) + 19.455

R^2 = 0.720, Adj. R^2 = 0.707, Std. Error = 1.548, N = 25

VH polarization: Soil Moisture (SM %) = 0.7536* σ^0_{VH} (dB) + 21.531

R^2 = 0.276, Adj. R^2 = 0.245, Std. Error = 1.737, N = 25

This linear regression equation of VV polarization was used to compute the predicted soil moisture, the observed and predicted soil moisture in Godhra taluka is given Figure 8.

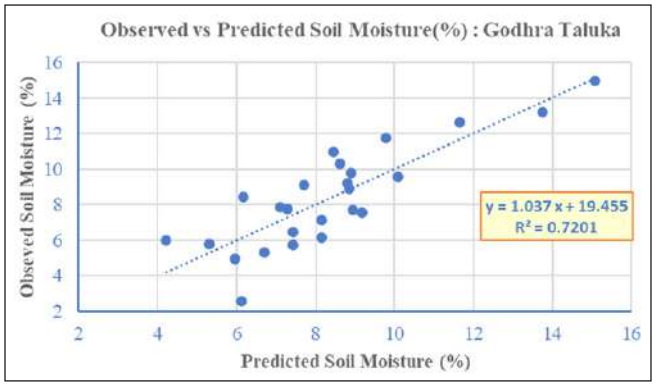

Figure 8.Linear Regression Analysis Between Observed and Predicted Soil Moisture

Spatial Distribution of Soil Moisture

Spatial distribution map of soil moisture content was carried out using the Inverse Distance Weighted (IDW) method in ArcGIS software. The soil moisture content ranged varying between the 3% to 17% in Godhra taluka. The spatial distribution map of soil moisture in Godhra Taluka is given in Figure 9.

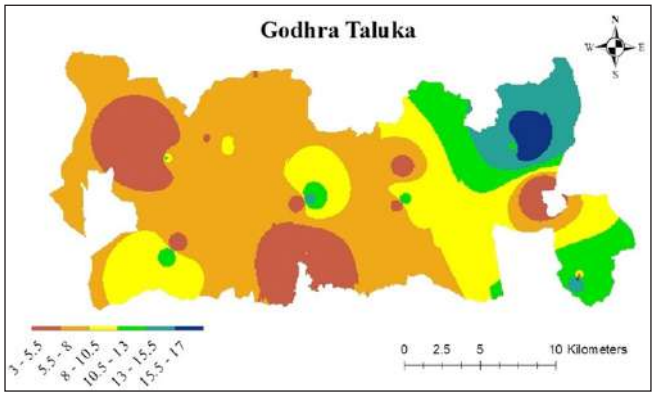

Figure 9.Spatial Distribution of Soil Moisture (%) Map of Godhra Taluka

Conclusion

In this study, Sentinel-1 C-band SAR was analyzed for soil moisture estimation in Godhra taluka of Panchmahal district, Gujarat State. A total number of 25-soil samples were collected near synchronous with respect to the Sentinel-1

acquisition date from the identified sample points in different villages of Godhra taluka. The in-situ soil moisture content was determined using the gravimetric method. The Sentinel-1 SAR microwave data was analyzed using Open-source tools of Sentinel Application Platform (SNAP) software for estimation of backscattering coefficient. The σ^0_{VV} (dB), σ^0_{VH} (dB) was generated and used in regression analysis to estimate soil moisture content. The field measured soil moisture (MS %) was considered as dependent variable, σ^0_{VV} and σ^0_{VH} (dB) were chosen as independent variables. The regression analysis using σ^0_{VV} and σ^0_{VH} polarization with soil moisture indicated that σ^0_{VV} polarization was more sensitive to soil moisture content as compared to σ^0_{VH} polarization and the coefficient of determination (R^2) values for σ^0_{VV} and σ^0_{VH} polarizations were 0.72 and 0.276, respectively in Godhra Taluka. The linear regression analysis using field measured soil moisture (MS %) as dependent variable, σ^0_{VV} and σ^0_{VH} independent variables were carried separately which resulted in the coefficient of determination (R^2) of VV and VH polarization were determined as 0.72 and 0.27, respectively. The linear regression equation was used to compute the predicted soil moisture. The results of this study indicated that the Sentinel- 1A C-band SAR data is very useful in soil moisture estimation at regional scale.

Acknowledgement

The authors express their sincere thanks to Director General (DG), Bhaskaracharya National Institute for Space Applications and Geo-informatics (BISAG-N), Ministry of Electronics, Information Technology (MEITY), Government of India, for his keen interest and encouragement to carrying out this study. We are also thankful to Dr. DK Vyas, Head of the Department of Renewable Energy Engineering, College of Agricultural Engineering and Technology, Anand Agricultural University, Godhra, Gujarat, India for providing equipment and necessary support to carry out gravimetric soil moisture analysis. The Sentinel-1 data acquired from the European Space Agency (ESA) is thankfully acknowledged.

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Article

Skillful Presentation of Research Data

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I N F O

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How to cite this article:
Mondal P, De S. Skillful Presentation of Research Data. *Proceedings ICSTRDA* 2021; 131-135.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-03-12

A B S T R A C T

Research is a continuous process. Researchers always want to analysis and present the data in a lucrative way that might be easily understandable and make attractive to the readers. Researchers collect data from the primary or secondary sources to establish the study is new one and has the originality. To present the data researchers have to select the appropriate tools. Before creating charts for presentations, determine what data are going to show and design the visuals tailored to the audience. Keep them as simple as possible. Charts, graphs and diagrams should explain themselves. There are so many different types of charts, diagrams and graphs that it becomes difficult to choose the right one. It's so important to understand the way it works and know how to describe, charts, Tables and graphs correctly. Researchers will also need this skill to be able to complete the tasks, which is usually to describe and discuss a diagram or any other visuals with figures and facts. As to the use cases, diagrams and other visuals perfectly fit for describing trends, making a comparison or showing relationships between two or more items. This study shows different types of presentation visuals.

Keywords: Research Tools, Graph, Data Charts, Diagrams

Introduction

Information is a bunch of realities that give a halfway image of the real world. The use of information must be continually remembered, regardless of whether information are being gathered with a specific reason or gathered information are being used, questions in regards to what data the information are passing on, how the information can be utilized.

Researchers get information usually in raw format, so the data needs to be summarized, organized and analyzed to practically derive information from them. Similarly, the skillful use and presentation of datasets is essential because it is dependent on the purpose of information generation.

In research process if a question is asked the answer must be clearly defined and for that the research results must be clear. A broad question results in vague answers and results that are hard to interpret. In other words, a well-defined question is crucial for the data to be well-understood later. Once a detailed question is ready, the raw data must be prepared before processing.

For systematic utilization of information, data are often summarized, organized and analyzed with statistical packages or graphics software. Data are prepared in such a way they are properly recognized by the program being used. The present study tries to portray the skillful use and representation of different statistical tools used in a research process.

The paper describe the roles and appropriate use of text, Tables and Figures (Figures, plots or charts), all of

which are commonly used in reports, articles, posters and presentations. Furthermore, it discuss the do's and don'ts that must be addressed when presenting various kinds of information, effective methods of presenting data, which are the end products of research and of emphasizing specific information.

Data Presentation

According to the data format, methods of data presentation must be determined. Inappropriate data presentation fail to clearly convey the information to the readers depending on what specific information is going to be addressed, different methods of presentation must be employed, even when the same information is being conveyed.

The method of presentation must be chosen after carefully keeping note of the advantages and disadvantages of different methods of presentation. For example, if one wishes to compare or introduce two values simultaneously, it is appropriate to use a Table than text or written language. A Table is the most appropriate medium where when all information requires equal attention, it allows readers to selectively look at information of their own interest. Graphs allow readers to understand the overall trend in data, intuitively understand the comparison results between two groups. One thing to always bear in mind regardless of what method is used, however, is the simplicity of presentation.

Data can be presented in one of the three ways:

- As text
- In tabular form
- In graphical form

Text Presentation

Text is the principle strategy for passing on data as it is utilized to clarify results and drifts, give relevant data. Information are generally introduced in sections or sentences. Text can be utilized to give translation or underline certain information. In the event that quantitative data to be passed on comprises of a couple of numbers, it is more fitting to utilize composed language than Tables or diagrams.

For instance, information about the incidence rates of delirium following anesthesia in 2016-2017 can be presented with the use of a few numbers: "The incidence rate of delirium following anesthesia was 11% in 2016 and 15% in 2017, no significant difference of incidence rates was found between the two years." If this information were to be presented in a Figure or a Table, it would occupy an unnecessarily large space on the page, without enhancing the readers' understanding of the data.

On the off chance that more information are to be introduced, other data, for example, that with respect to information patterns are to be passed on, a Table or a chart would be more proper. Commonly, information take more time to read when introduced as writings and when the primary content incorporates an extensive rundown of data, readers and reviewers may experience issues in understanding the data.

Table Presentation

Tables, which pass on data that has been changed over into words or numbers in lines and sections, have been utilized for almost 2,000 years. Anybody with an adequate degree of education can undoubtedly comprehend the data introduced in a Table. Tables are the most fitting for introducing singular data, can introduce both quantitative and subjective data.

The strength of Tables is that:

- They can accurately present information that cannot be presented with a graph. A number such as "132.145852" can be accurately expressed in a Table
- Strength is that information with different units can be presented together. For instance, blood pressure, heart rate, number of drugs administered, anesthesia time can be presented together in one Table
- Finally, Tables are useful for summarizing and comparing quantitative information of different variables. However, the interpretation of information takes longer in Tables than in graphs, Tables are not appropriate for studying data trends. Furthermore, since all data are of equal importance in a Table, it is not easy to identify and selectively choose the information required

Table 1

Marks	Number of Students		Total
	Males	Females	
30 – 40	8	6	14
40 – 50	16	10	26
50 – 60	14	16	30
60 - 70	12	8	20
70 – 80	6	4	10
Total	56	44	100

Heat Maps are used for Better Visualization of Information Than Tables

Heat maps help to further visualize the information presented in a Table by applying colors to the background of cells. By adjusting the colors or color saturation, information is conveyed in a more visible manner, readers can quickly identify the information of interest.

Software such as Excel (in Microsoft Office, Microsoft, WA, USA) have features that enable easy creation of heat maps through the options available on the "conditional formatting" menu.

Basic Guidance While Preparing a Table

- Ensure the Table has a proper title

- Label the components of the Table
- Indicate the source of data with date
- Provide the number of data as a reference point
- Add footnote if more information is needed

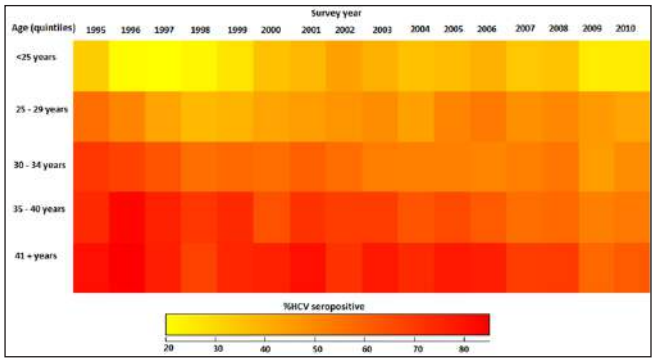

Figure 1

Graph Presentation

Whereas Tables can be used for presenting all the information, graphs simplify complex information by using images and emphasizing data patterns or trends, and are useful for summarizing, explaining, or exploring quantitative data. While graphs are effective for presenting large amounts of data, they can be used in place of Tables to present small sets of data. A graph format that best presents information must be chosen so that readers and reviewers can easily understand the information.

Basic Guidance while Preparing a Graph

- Construct the graph so that it conveys approximate proportional relationship at point in time
- It is able to compare part of a whole at a given point of time
- Emphasize a small proportion of parts
- Do not use it for exact comparison values
- Use column bar/ charts for rank data, use multiple bar/ charts for grouped data
- If proportions vary greatly, do not use multiple pies to compare corresponding parts

Scatter Plot

Scatter plots present data on the x- and y-axes and are used to investigate an association between two variables. A point represents each individual or object, an association between two variables can be studied by analyzing patterns across multiple points. A regression line is added to a graph to determine whether the association between two variables can be explained or not.

Basic Guidance while Preparing a Scatter Plot

- Use it to show measurements over time
- Convey an overall impression of the relation between two variables.

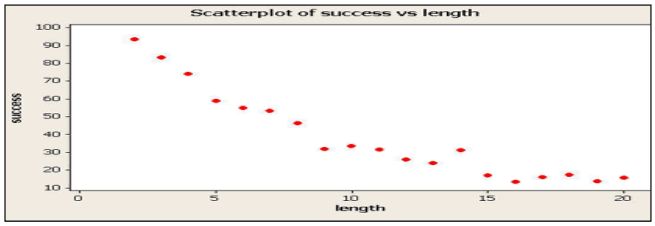

Figure 2

Bar Graph and Histogram

A bar graph is utilized to demonstrate and compare the values in a discrete class or gathering, the recurrence or other estimation boundaries (for example mean). Contingent upon the quantity of classes, the size or unpredictability of every classification, bars might be made vertically or horizontally.

The height (or length) of a bar denotes the measure of data in a classification. Bar graphs are flexible, can be used in a grouped or subdivided bar format in cases of two or more data sets in each category.

By comparing the endpoints of bars, one can identify the largest and the smallest categories, understand gradual differences between each category. It is advised to start the x and y-axes from 0. Illustration of comparison results in the x and y-axes that do not start from 0 can deceive readers' eyes and lead to overrepresentation of the results.

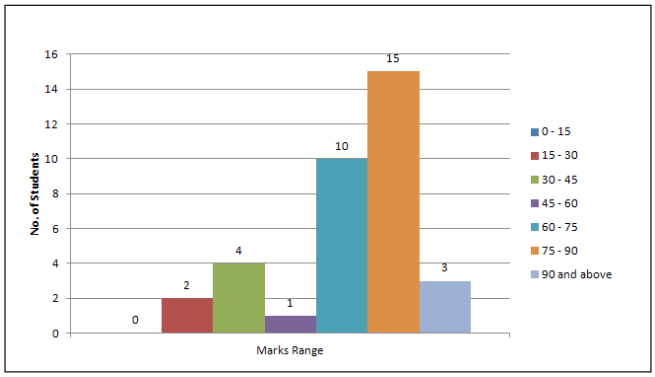

Figure 3

Basic Guidance while Preparing a Bar-Graph

- Bar graphs should be used to present a part whole relationship over time
- Show proportional relationship over time
- Segmented bar graphs provide more accurate results that pie graphs because distances can be more accurately estimated than areas
- Use a horizontal bar chart if the labels are too long to fit under the columns
- Avoid shadows or 3D elements on your graph. It just distracts from the information. Keep the imagery of any data visualization as simple as humanly possible

One form of vertical bar graph is the stacked vertical bar

graph. A stack vertical bar graph is used to compare the sum of each category, analyze parts of a category. While stacked vertical bar graphs are excellent from the aspect of visualization, they do not have a reference line, making comparison of parts of various categories challenging.

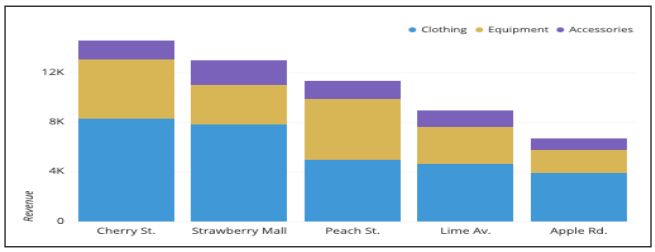

Figure 4

Pie Chart

A pie chart, which is used to represent nominal data (in other words, data classified in different categories) visually represents a distribution of categories. It is generally the most appropriate format for representing information grouped into a small number of categories. It is also used for data that have no other way of being represented aside from a Table (i.e. frequency Table). Experts say when you've got 2-3 data points that are significantly different, then its fine. You can have your pie at that time. This is the one instance when pie charts are helpful they're good at showing people what a fraction of something looks like.

Basic Guidance While Preparing a Pie Chart

- Don't use more than five sections-Too many skinny slices are hard to read. They cloud the information as much as they reveal it
- Place the largest slices from "12" at the top (like on a clock) and work your way around the circle
- Avoid comparing one pie chart to another
- Don't use 3-D pie charts-They make some slices of the pie seem larger than others. This makes the chart even harder to read, possibly downright deceptive

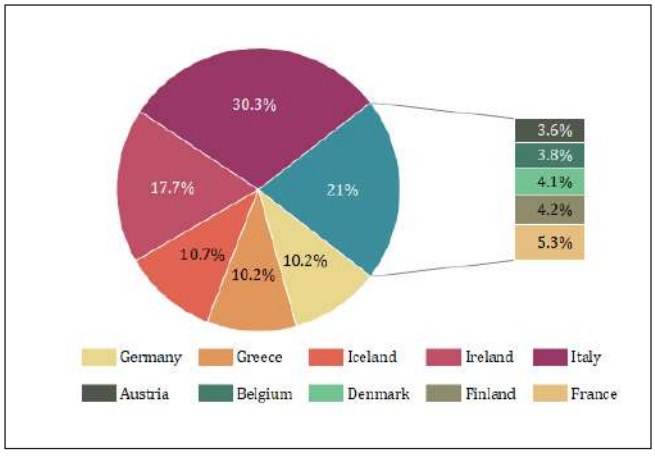

Figure 5

Line Plot with Whiskers

A line plot is useful for representing time-series data such as monthly precipitation and yearly unemployment rates, in other words, it is used to study variables that are observed over time. Line graphs are especially useful for studying patterns and trends across data that include climatic influence, large changes or turning points, are also appropriate for representing not only time-series data, but also data measured over the progression of a continuous variable such as distance. If data are collected at a regular interval, values in between the measurements can be estimated. In a line graph, the x-axis represents the continuous variable, while the y-axis represents the scale and measurement values. It is also useful to represent multiple data sets on a single line graph to compare and analyze patterns across different data sets.

Basic Guidance While Preparing a Line Plot

- Have a clear introduction- try to include all information from the two axis and the name of categories
- Put all the main trends in an overview statement- this should be contained in one paragraph. Do not divide your key points in different paragraphs. Make sure you include the main increases and decreases shown
- Use a range of vocabulary
- Don't always give from to for the amounts
- Put numbers or percentage to support your numerical data
- Be selective if the number graph contains numerous lines

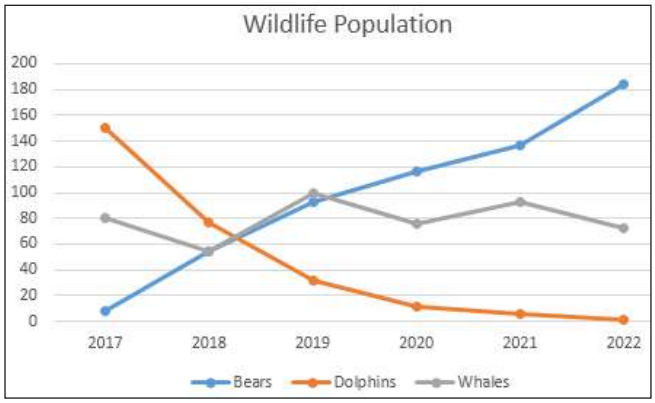

Figure 6

Box and Whisker Chart

A Box and Whisker Plot (or Box Plot) is a convenient way of visually displaying the data distribution through their quartiles. The lines extending parallel from the boxes are known as the "whiskers", which are used to indicate variability outside the upper and lower quartiles. Outliers are sometimes plotted as individual dots that are in-line with whiskers. Box Plots can be drawn either vertically or

horizontally. Although Box Plots may seem primitive in comparison to a Histogram or Density Plot, they have the advantage of taking up less space, which is useful when comparing distributions between many groups or datasets. Here are the types of observations one can make from viewing a Box Plot:

- What the key values are, such as: the average, median 25th percentile
- If there are any outliers and what their values are
- Is the data symmetrical?
- How tightly is the data grouped?
- If the data is skewed and if so, in what direction
- Two of the most commonly used variation of Box Plot are: variable-width Box Plots and notched Box Plots

Basic Guidance While Preparing a Box and Whisker Chart

Use box and whisker plots when you have multiple data sets from independent sources that are related to each other in some way. Examples include:

- Test scores between schools or class rooms
- Data from before and after a process change
- Similar features on one part, such as camshaft lobes
- Data from duplicate machines manufacturing the same products

Conclusion

Text, Tables and diagrams are compelling correspondence media that introduce and pass on information and data. They help readers in understanding the content of research, support their advantage, viably present huge amounts of complex data. As journal editors and reviewers will look over these introductions prior to read the whole content, their judgment can't be dismissed. Therefore, researchers should give as close consideration to choosing statistical tools for information presentation as when they were gathering information of good quality and analyzing them. What's more, having a grounded comprehension of various techniques for data presentation, their appropriate use will empower one to build up the capacity to perceive and decipher improperly introduced information or information introduced so that it misdirects readers' eyes.

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Article

Survey Methodology: Its Importance and Needs

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How to cite this article:
Dabarase JB. Survey Methodology: Its Importance and Needs. *Proceedings ICSTRDA* 2021; 136-139.

Date of Submission: 2021-02-09
Date of Acceptance: 2021-03-14

A B S T R A C T

In the 21st century need to use survey method in research to solve any critical problem and easy live of human being. Survey methodology is playing important role in a scientific and a profession field, scientifically surveys are carefully built with an eye towards validity, reliability, replicability and generalization. Survey methodology as a scientific field seeks to identify principles about the sample design, data collection instruments, statistical adjustment of data, data processing, data analysis and finally Reporting it should be create accurate and systematic, specifically given above in terms include main five components to the survey design and process. Empirically in profession focuses to reduce the survey errors. Therefore in future to get its benefits to the survey designers to decisions making on the typical task with involves a large set of about thousands of individual features of a survey in order to improve it. And about professional view every organization's eager to understand what their customers think about their products or services and makes better business decisions. Researchers can conduct research in multiple ways and main aspects of it to develop in research through survey methodology, like questionnaires, interviewers and non-response follow-up techniques. Surveys provide important information for all kinds of public-information and research fields, such as marketing research, psychological, sociological, health-care i.e Corona Pandemic issue and how to be aware of it, covaccine provision and it distribution, sports related event, education etc. So surveys are proven to be one of the most effective and trustworthy research methods. In Survey research methodology can use quantitative research strategies (e.g., using questionnaires with numerically related items), other qualitative research strategies (e.g., using open-ended questions), both together strategies (i.e., mixed methods). The primary purpose of this online survey research was to obtain information describing characteristics of a large sample of individuals of interest relative quickly. Large census surveys obtaining information reflecting demographic and personal characteristics and consumer feed-back surveys are prime examples. These surveys is often provided through the mail and social media.

Keywords: Critical Problem, Scientific, Replicability, Empirically, Typical Task, Questionnaires, Interviewers, Qualitative, Mixed Methods, Open-Ended Questions, Demographic, Mail and Social Media

Introduction

The survey method gathers data from a relatively large number of cases at a particular time. It is not concerned with characteristics of individuals as individuals. It is concerned with the statistics that result in data or abstracted from a number of individual cases. It is essentially cross-sectional. All type of survey data above were obtain from resources on the internet, which provides a new method of disseminating information's much more quickly than through the usual publication channels in analyzing political, social, economic conditions, one of the first step is to get the facts about the situation or a picture of conditions that prevail or that are developing. All type data may be gathered from survey of the entire population, others are inferred from a study option sample group carefully selected from the total population. At time the survey may describe a limited population that is the only group under consideration. The survey is an important type of study it must not be confused with the mere clerical routine of gathering an tabulating figures. It involve a clearly defined problem and definite objectives. It require expert and imaginative planning, carefully analysis and interpretation of the data gathered and logical and skillful reporting of the finding.

What is Survey Research? Survey research is used: "to answer questions that have been raised, to solve problems that have been posed or observed, to assess needs and set goals, to determine whether or not specific objectives have been met, to establish baselines against which future comparisons can be made, to analyze trends across time, and generally, to describe what exists, in what amount and in what context." (Isaac and Michael, 1997).

Social Survey

Surveys become a common method of data collection in the first of these century in the late 1930 a significant social survey was directed by the Swedish sociologist Gunnar Mydral and sponsored by the Carnegie Foundation Myrdal and his staff of researcher made a comprehensive analysis of the social, political and economic life of various country of citizens. Such type of organizations collect information's on behaviors and events of interest to them. The national safety council conducts surveys on the nature, extent and causes of automobile accidents in all parts of the United States, state high school athletic associations conduct surveys on the nature and extent of athletic injuries in the member schools and of courses US Census bureau collects information on the shifting US populations demographic.

Public Opinion Surveys

In our culture, where so many opinions on controversial subjects are expressed by well-organized special interest groups, it is important to find out what the people think. Without a means of polling public opinion, the views of only the highly organized minorities are effectively presented through the printed page, radio and television.

How do people feel about legalized abortion, the foreign aid program, busing to achieve racial integration in the public schools, or the adequacy of the public schools? What candidate do they intend to vote for in the next election? Such questions can be partially answered by means of the public opinion survey. Many research agencies carry on these surveys and report their findings in magazines and in syndicated articles in daily newspapers. Because it would be impracticable or even impossible to get an expression of opinion from every person, sampling techniques are employed in such a way that the resulting opinions of a limited number of people can be used to infer the reactions of the entire population.

Those who conduct opinion polls have developed more sophisticated methods of determining public attitudes through more precise sampling procedures and by profiting from errors that plagued early efforts. In prediction of voter behavior several well-known polls have proved to be poor estimators of election results.

Using the Internet to conduct quantitative research presents challenges not found in conventional research. Paper-based survey quality criteria cannot be completely adapted to electronic formats. Electronic surveys have distinctive technological, demographic and response characteristics that affect their design, use and implementation. Survey design, participant privacy and confiden-tiality, sampling and subject solicitation, distribution methods and response rates, and survey piloting are critical methodological components that must be addressed. In this article, quality criteria for electronic survey design and use based on an investigation of recent electronic survey literature are presented. The application of these criteria to reach hard-to-involve online population-nonpublic participants of online communities and survey them on their community participation, a topic not salient to the purpose of their online communities is demonstrated in a case study. The results show that a hard-to-reach audience can be reached using the quality criteria that are most important for reaching these types of audiences. The results suggest how the use of some criteria may conflict and what researchers may experience when conducting electronic surveys in an online culture in which people are not tolerant of intrusions into online lives. Kraemer (1991) identified three distinguishing characteristics of survey research. First, survey research is used to quantitatively describe specific aspects of a given population. These aspects often involve examining the relationships among variables. Second, the data required for survey research are collected from people and are, therefore, subjective. Finally, survey research uses a selected portion of the population from which the findings can later be

generalized back to the population. In survey research, independent and dependent variables are used to define the scope of study, but cannot be explicitly controlled by the researcher. Before conducting the survey, the researcher must predicate a model that identifies the expected relationships among these variables. The survey is then constructed to test this model against observations of the phenomena. In contrast to survey research, a survey is simply a data collection tool for carrying out survey research. Pinsonneault and Kraemer (1993) defined a survey as a "means for gathering information about the characteristics, actions, opinions of a large group of people" Surveys can also be used to assess needs, evaluate demand, and examine impact. The term survey instrument is often used to distinguish the survey tool from the survey research that it is designed to support.

Survey Design

According to Levy and Lemeshow (1999), survey design involves two steps. First, a sampling plan must be developed. The sampling plan is the methodology that will be used to select the sample from the population. The sampling plan describes the approach that will be used to select the sample, how an adequate sample size will be determined, the choice of media through which the survey will be administered. Survey media include telephone and face to face interviews, as well as mailed surveys using either postal or electronic mail. Second, procedures for obtaining population estimates from the sample data and for estimating the reliability of those population estimates must be established. This process includes identification of the desired response rate and the preferred level of accuracy for the survey, Survey design procedures require inputs from the people who will use the survey data and from those who will conduct the survey. The data users should identify the variables to be measured, the estimates required, the reliability and validity needed to ensure the usefulness of the estimates, any resource limitations that may exist pertaining to the conduct of the survey (Levy, Lemeshow, 1999; 6). The people who conduct the survey should provide additional input regarding resource requirements and offer alternative sampling procedures that they deem feasible and appropriate to the task. Statisticians integrate these inputs to develop a survey design that will meet the data users' requirements within the specified resource constraint.

Two Types of Survey Questions, Open-ended Questions and close ended question. Open-ended survey questions allow respondents to answer in their own words. Open-ended questions also allow the researcher to explore ideas that would not otherwise be aired and are useful where additional insights are sought. They are also useful where the researcher is less familiar with the subject area and cannot offer specific response options. Open-ended questions require greater thought and contemplation on the part of the respondent, therefore, more time intensive to answer. The results obtained from open-ended questions are also more difficult to analyze. Finally, it is more difficult to identify a single course of action from the broad range of responses that are received to open-ended questions.

Closed-ended Questions in contrast, closed-ended questions require the respondent to choose from among a given set of responses (McIntyre, 1999, 75). Closed-ended questions with ordered choices require the respondent to examine each possible response independent of the other choices. The choices form a continuum of 2-7 responses, such as those provided by Likert scales and numerical ranges. These types of questions are easiest for respondents to answer and for researchers to analyze the data. The second type of closed-ended question is the closed-ended question with unordered choices. These questions ask the respondent to compare possible responses and select one. Multiple choice questions are an example of this type. The researcher must ensure that the respondent is given a comprehensive selection of responses. Closed-ended questions with unordered choices are useful for ranking items in order of preference. The third type of closed-ended question is the partial closed-ended question in which the respondent is asked to compare possible responses and select one, or write in "other". Observed that most respondents choose one of the given responses when this type of question is presented. Closed-ended questions may also be categorized as: (a) questions that describe and evaluate people, places and events, (b) questions that measure responses to ideas, analyses, proposals and (c) questions that measure knowledge.

Conclusion

Using the Internet as a tool for survey research offers exciting new possibilities to the research. It is use also for the social, economical political. Purpose to collect data for achieve the goal, opinion pole, filling the objective type E-questionnaire through Google form. This sources is very easy to use and get quickly all type of information.Now a day very effectively use it for all fields. However, whilst it is important that the potential of the Internet is grasped it is equally important that its limitations on research are understood. Using the Internet as a means to accessing samples in some way representative of general populations is currently prevented by who has access to it and who is using it. Moreover, even when the desired sample is of Internet users themselves significant technical and operational problems remain in terms of how to ensure the population targeted is in fact the population which responds. Given this, doing survey research on the Internet will, for the time-being, continue to present a certain amount of unknowns regarding sample

bias. Despite these problems it is has been the purpose of this paper to refer the reader to a number of pieces of survey research undertaken via the Internet where the indicative data was deemed to be useful and the research worthwhile. For while the Internet poses methodological problems of one kind it opens up possibilities of others: access to hard to reach populations on sensitive topics. Researchers that are aware of the problems presented by doing survey research via the Internet and who apply themselves appropriately, can, I am sure will increasingly carry out important research via this medium.

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Statistical Tools and Techniques for Research Data Analysis
Biostatistics: Analysis Of Variances (ANOVA)

Introduction

Statistics refers to the subject of scientific activity which deals with the theories and methods of collection, analysis and interpretation of such data. Biostatistics is the term used when tools of statistics are applied to the data that is derived from biological organisms. It helps in presenting large quantity of data in a simple and classified form.

It gives the methods of comparison of data and helps in finding the conditions of relationship between the variables to eventually guide in planning and shaping future policies and programme in number of fields viz. railways, Banks, Army, etc. Applied in physiology, anatomy, pharmacology, medicine, ecology, environmental computing, community medicine and public health.

ANOVA

ANOVA is literally "ANalysis Of VAriance" showing variances assigned by different groups, that are the variables (different regions, flowering type, etc.) and residuals (individual errors). It is one of the most frequently used statistical analysis in the biological, ecological and environmental research.

It is a powerful statistical procedure for determining if differences in means are significant and for dividing the variance into components.

It is an extension of t-test, used to test whether averages of more than two groups are same or not and contrast a continuous dependent variable *y* across levels of one or more categorical independent variables *x*.

Variance σ^2 : It is an absolute measure of dispersion of raw scores around the sample (group) mean, the dispersion of the scores resulting from their varying differences (error terms) from the means. The square of standard deviation is called variance and is denoted by σ^2 .

Mean Square: The measure of variability used in the analysis of variance. Sum of squared deviation from mean divided by degrees of freedom.

$$Mean\ square = \frac{Sum\ of\ squared\ deviation\ from\ mean}{Degrees\ of\ freedom}$$

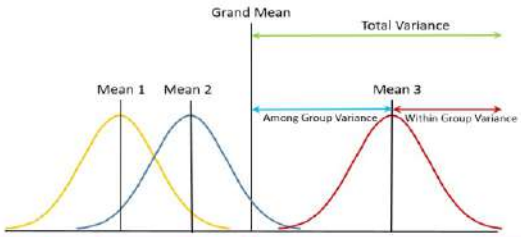
Assumptions in the analysis of variance

(i) The samples are independently drawn.

(ii) The population are normally distributed, with common variance.

(iii) They occur at random and independent of each other in the groups.

(iv) The effects of various components are additive.



Technique for analysis of variance

(a) One-way Anova: Studies the effect of a single independent factor at various levels on a response variable.

(b) Two-way Anova: Studies the effect of two independent factors and their interactions at various levels on a response variable.

ANOVA = Statistical technique for analysis of variables.

ANCOVA = Analysis of co-variance is used when groups are to be compared.

MANOVA = Multivariate analysis of variance is used when there are more than two dependent variables.

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Steps of calculation

(i) Set up the null hypothesis and alternate hypothesis.

Null Hypothesis (H_0) says there is no statistical significance between t two variables in the hypothesis. A hypothesis is to be tested to determi whether to reject it. It is the hypothesis that the researcher tries to disprov

Alternate Hypothesis (H_a) is contradictory to the (H_0). It says there statistically important relationship between the two variables. T observations are taken to be the result of a real effect, with some amount chance variation superposed.

(ii) Calculate total T of all the observations in all samples.

$$T = \sum X_1 + \sum X_2 + \sum X_3 .... + \sum X_K$$

(iii) The correction factor is $\frac{T^2}{N}$ $\quad N = n1 + n2 ... + nk$, $n1$ & $n2$ = size of the group

(iv) Calculate sum of square deviation (total) *i.e.*,

$$SST = \sum X_1^2 + \sum X_2^2 + \ldots + \sum X_K^2 - \frac{T^2}{N}$$

(v) Calculate sum of squares of deviation between the samples i.e., *SSB*.

$$SSB = \left[\frac{\sum (X_1)^2}{n_1} + \frac{\sum (X_2)^2}{n_2} + \frac{\sum (X_3)^2}{n_3} + \cdots + \frac{\sum (X_K)^2}{n_K}\right] - \frac{T^2}{N}$$

(vi) Calculate sum of squares of deviation within the samples *(SSW)*

$$SSW = SST - SSB$$

(vii) Now calculate mean square deviation between the samples (MSB):

Dividing *SSB* by the degrees of freedom $V_1 = K - 1$

$$MSB = \frac{SSB}{V_1}$$

In the same way, calculate mean square within the samples *MSW*.

Dividing *SSW* by the degrees of freedom $V_2 = N - K$

$$MSW = \frac{SSB}{V_2}$$

(viii) Calculation of F statistic:

Both *MSB* and *MSW* are independent unbiased estimates of the sam population variances. Therefore

$F = \frac{MSB}{MSW}$ In general $MSB > MSW$.

If $MSB < MSW$, then $F = \frac{MSW}{MSB}$

(ix) Compare calculated value with the tabulated value and if greater th reject null hypothesis or lesser then accept the hypothesis.

Two-way Anova

It is used to investigate the simultaneous effects of two independer variables on a dependent variable. Here one variable is represente along the rows and others framed along the columns.

***(a)* Two-way Anova with replications**: It is used when every combinatio of the two factors, one level of each has been applied on more than on individual. The effect of each combination of independent variable i given by the replicated observations in a group of individuals.

***(b)* Two-way Anova without replication**: It is used out when ever combination of the two factors, one level of each has been applied on onl one individual. The effect of each such combination of independer variables is given by a single observation only.

Introducing MATLAB to the Field of LIS: A Discussion

Manoranjan Satpathy[1] Ananya Deka[2]

1

Abstract

In the process of conducting research on any topic, a researcher goes through several steps to carry out the research work. Among these data collection and data analysis are the most important. Data collection phase is completed by using various methods and tools while for the data analysis, researcher needs specific statistical tools and as well as need to follow certain techniques. Nowadays there are many statistical tools available in the market. some of the most important ones are Microsoft Excel, SPSS, R, Python, SPS, and MATLAB, which are preferred by various researchers depending on their area of research. MATLAB is a popular statistical tool in the field of engineering while most of the social science researchers prefer the remaining mentioned software. The proposed discussion's main objective is to explore a new viewpoint towards MATLAB and its merits and demerits. A brief literature review will be carried out to explore the idea. The discussion will introduce MATLAB by exploring the software. The study will present the Overview of the MATLAB software and its application in a theoretical basis using its various features.

Introduction

MATLAB is a very popular statistical tool in the field of engineering, which is used for processing and visualization of collected data (Tikhomolov, n.d). MATLAB has a wide range of tools and capabilities which are useful in data processing and presentation. Standard linear algebra routines, data processing tools, interfacing with other programming languages are some general features and can be adapted to a variety of use cases. So, we can use MATLAB in the field of library and information science for various purpose. We can also use MATLAB for many other types of data analysis and presentation with the help of Statistics Toolbox and some basic scripting (Interstate Technology & Regulatory Council [ITRC], 2013). But the challenge is to understand and analyze how much effective and useful it will be four user community and as a LIS student how much effective will it be according to cost of the software.

Background Study

Cleve Moler, a numerical analyst specializing in matrix computation created MATLAB in the early 1970s. In 1984, Moler, Little, and Bangert formed the Mathworks with PC MATLAB as the first product. The logo represents a numerical approximation to the fundamental mode of a vibrating L-shaped membrane, a topic that he discussed in his Stanford PhD thesis in 1965 (Schreiber, 2007). It is a fourth-generation high-level programming language and interactive environment for numerical computation, visualization and programming. It also allows matrix manipulations; plotting of functions and data; implementation of algorithms; creation of user interfaces; interfacing with programs written in other languages, including C, C++, Java, and FORTRAN; analyze data; develop algorithms; and create models and applications (Tutorialspoint, 2021). In initial stage it seems like a difficult software because of lots of commands and signs. But after learning one can do any kind of data processing work this (Capterra, 2021). It also provides a help documentation which helps user to understand and learn the software.

Objectives

- To express viewpoint towards MATLAB
- To understand its advantages and limitations.
- To explore the useable possibilities of MATLAB in LIS field.

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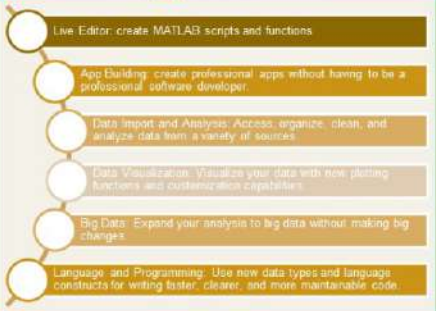
2

MATLAB at a Glance

1. Developer: Mathworks
2. Designed by Cleve Moler
3. New version releases twice in a year in every March and September.
4. Current Released: R2020b
5. Current version: 9.9
6. Best for cloud-based and on-premise programming, modeling and simulation platform.
7. MATLAB pricing starts at $203.63 per year, per user.
8. Do not have a free version but offers a free trail.
9. Software deployment in MAC and Windows.
10. Provides training through live online, webinars and documentation.
11. System Requirements:
    a. Operating Systems: Windows 10 (version 1803 or higher), Windows 7 Service Pack 1, Windows Server 2019, Windows Server 2016
    b. RAM: Minimum: 4 GB, Recommended: 8 GB
    c. Processors: Minimum: Any Intel or AMD x86-64 processor
    d. Disk: Minimum: 3.5 GB of HDD space for MATLAB only, 5-8 GB for a typical installation, Recommended: An SSD is recommended
    e. Graphics: No specific graphics card is required.
12. It is also supported in Linux and MAC.
13. Contact details: WWW.mathworks.com

Highlights / Features



Possible Solutions

Advantages

Limitations

3

Useable possibilities in LIS Field

1. Import and export of data:
   a. Can import collected data to MATLAB and export the processed data easily
2. Data Analysis
3. Data Visualization
   a. Time-series plot
   b. Lag plot
   c. Histogram
   d. Probability plot
   e. Line plot
   f. Bar plot
   g. Pie chart
   h. Topographical maps
   i. Images
   j. 3d plot
      i. Object
      ii. Volume
      iii. Line
4. Numerical computation
   a. Data transformation
   b. Hypothesis testing
   c. Background evaluation
   d. Regression/ trend analysis

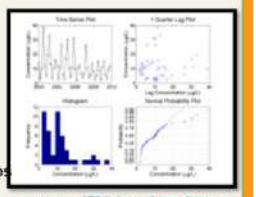


Image source: ITRC-Groundwater Statistics and Monitoring Compliance, P-170

Example of Some Usable Areas

1. Research conducted by LIS students and LIS professionals.
2. Use and user study
3. Analysis of trend in LIS field
4. Compare between two data set like annual statistics of a library
5. Making of Library website and application
6. 3-D presentation of the library
7. Testing of hypothesis set by researchers.
8. Can generate figures and images of services and resources for better user visibility.
9. Usability test of modern tools and techniques used in LIS field.
10. Implication of data visualisation tool to represent author information, Resource details etc.
11. There are also many areas where we can use MATLAB and its different products, features and solutions.

Discussion

There are several application in MATLAB and created for several subsystem (Tikhomolov, n.d). But use of these application depends upon the understanding and experience of the user. Though MATLAB has many limitation and basically designed for Engineering field, but it has also many advantages which can helpful for users to use MATLAB in any field.

Conclusion

Library and Information science filed comes under social science. Most of the social science researcher use SPSS, R and many other software to do their research. Some how the MATLAB can also do a better job in same way as other software do. MATLAB is one of the best statistical tool and data analysis and visualization tool. To cope up with the developments of technology and globalization, changes occurred in society and educational standards new tools and technology should be adopted by all the fields specially the LIS field, because it deals with research, innovation and implementation in all the field (Çevik and Ornek, 2020)

Acknowledgement

Author would like to express his sincere gratitude to all faculty members of School of Library and Information Science, central un for their support during the study.

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Role of survey research for the assessment of medicinal usage of four economically important plants in the Garhwal Himalaya Uttarakhand

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Introduction

- Indian Himalaya is rich in flora and fauna [1]
- Indian Himalaya consists of many economically and medicinally important plants [1]
- Villages in Himalayan areas lack sufficient transport system and medical services
- Local people trust on medicinal plants for curing diseases

Materials and methods:

Study area selection: Five villages; three from Tehri district (named Mandi, Madhi, Mangshu) and Pauri district (named Khirsu and Gawad) are selected randomly for survey

Plant selection: Four plants, named *Malus domestica*- Md, *Prunus persica* – Pp, *Carica papaya* -Cp, *Ricinus communis* -Rc are selected for survey on the basis of:

1. Common availability
2. Domestically useful
3. Abundant in number

Disease selection: 11 diseases are selected on the basis of

1. Frequently occurring
2. Do not need surgery and repeated doctors' supervision
3. Mostly cured at home

Survey has been performed and statistical analysis also has been performed by creating null hypothesis and alternative hypothesis.

Fig 1 A: Map of survey area B: Survey method C. and D: Details collection by scholars

Result and discussion:

Table 1: Demographic details of respondents

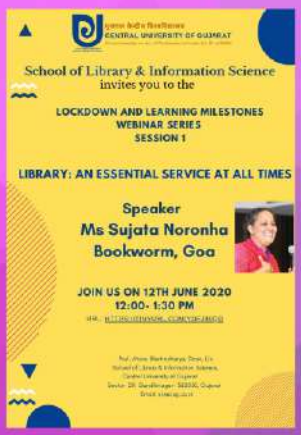
Variables	Categories	Number
Age	0 – 20	10
	20 – 30	10
	31 – 40	17
	41 – 50	20
	51 – 60	17
	61 – 70	17
	71 – 80	9
Total		100
Gender	Male	34
	Female	66
	Local ayurved doctors (Male / Female)	3
Total including doctors		103
Education level	Illiterate	16
	1 to 5	14
	5 to 10	24
	10 to 12	24
	>12	22
Sources of knowledge	By parents	16
	By others	16
	Self-experiments	2
	Books/ Education	87

Table 2: Usage reports of four plants in diseases

Ailment category	Md(%)	Pp(%)	Cp(%)	Rc(%)
Gastrointestinal	Na	Na	50	Na
Disorders	Na	Na	Na	Na
Pain/ Arthritis	Na	Na	Na	100
Fever and aches	Na	Na	43	Na
Diseases of the skin	Na	Na	Na	Na
Remove weakness, immunomodulator, Anaemia	74	Na	Na	Na
Ophthalmologic complaints	Na	Na	Na	Na
Poisonous bite	Na	Na	Na	Na
Dental problems	Na	Na	Na	Na
Ear ache	Na	Na	Na	Na
Hearing problems	Na	Na	Na	Na
Dengue	Na	Na	67	Na

Conclusion: These plants are used by rural people for curing diseases, for boosting energy and immunity. Among these four plants, three plants are cultivated fruits and not traditionally considered as medicinal plants. But studies from villages explored that these plants can also cure diseases. As per report, *Ricinus communis* is involved in curing pain and arthritis. *Carica papaya* has significant role in controlling gastrointestinal disorder, fever, aches and dengue. *Malus domestica* is involved in removing weakness. On the basis of statistical analysis, we have concluded that, irrespective of age, all respondents use castor in pain, papaya in fever and dengue. Irrespective of gender all uses papaya in gastrointestinal disorder and castor in pain/arthritis. Irrespective of education level, all uses papaya in fever. There are significant associations between age and papaya uses in gastro disorder, apple in weakness removal. Significant associations are also present between gender and usage of papaya in fever, usage of apple in removing weakness. Also, significant associations are present in education and in the uses of castor in pain, usage of apples in weakness removal and papaya for the treatment of dengue.

References: 1. B. Joshi and S. C. Pant, "Ethnobotanical study of some common plants used among the tribal communities of Kashipur, Uttarakhand," Indian Journal of Natu Products and Resources (IJNPR), vol. 3, no. 2, pp. 262–266, 2012.



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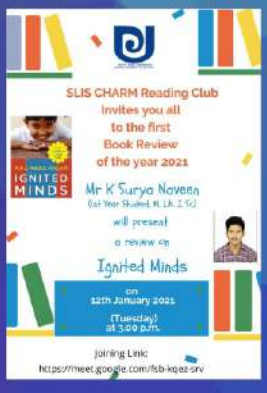
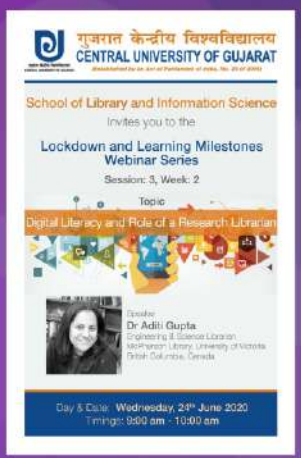




ICSTRDA 2021

Use of Piktochart for Data Visualization

Data Visualization is a visual representation of data or the practice of visualizing data in the form of maps, charts & graphs. It is a useful tool for researchers to display their research data visually in an infographic (Krum, 2014).

Piktochart is a web application, for creating a range of data visualizations including infographics, posters, reports, and promotions. The basic version of the Piktochart application is web-based and does not require an installation. It has an easy to use editor with drag & drop features.

Getting Started

1. Go to www.piktochart.com
2. Click the SIGN UP button
3. Register using one of these three registration options:
   - Sign in with your google account
   - Sign in with your facebook account
   - Use your e-mail address to register for an account.

Available Features

- Drag-and-drop, point-and-click interface
- Use free templates
- Formats for infographics, reports, posters, and presentations
- Find hundreds of icons & images
- Create informative charts & graphs

Creating a Data Visualization

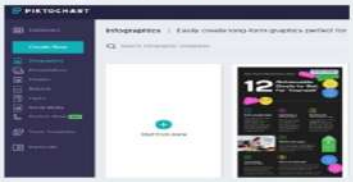
- Select your **Template format** - infographic, poster, presentation, report
- Click **create** and start adding your **text**
- Insert your **graphics**
- **Visualize your research data** using charts, graphs & maps
- **Share and promote** your infographic - publish online or downloading to print

Create an Infographic

1. Choose a template or click the Create Your Own Infographic block (also under Free Templates) to start with a blank template.
2. You can look at samples of the templates by clicking the Preview button.
3. By previewing, you can select a template that seems to fit your ideas for your infographic.

1. Access the site & Sign-in

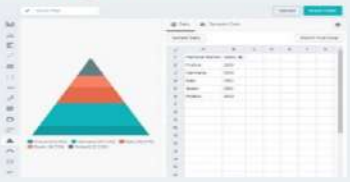
2. Create new infographic



3. Add Graphic Elements & Blocks

4. Explore Tools Menu & Add Charts

5. Visualizing Data using Charts



6. Insert your Text & Text Frame

7. Save & Download to share your work

Features of Free Vs Pro version

Conclusion

1. Reach your audience and make your infographic successful by publishing and sharing it.
2. You can download your work as image, publish to the web, share by email, or share your infographic directly to social media.
3. View your infographic on the output page by following the provided URL when you publish to the web for public viewing.

References

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ISBN 978-81-950016-7-5

978-81-950016-7-5

International Virtual Conference on Statistical Tools and Techniques for Research Data Analysis

ICSTRDA – 2021
(January 21st- 22nd 2021)

Conference Report

Conference Background

- Conference organized intending to bring top researchers in the area of statistics and research data analysis, to the forum and provide an opportunity to explore the intersection of Statistics with Data Analytics and Data Science.
- The objective was to enable the students to utilize sophisticated data analysis methods in learning and applicability in the emerging trends in their research.
- The conference focus was on basics to advanced statistical methods using computational techniques and their application in various disciplines, namely Information science, Humanities, Agriculture, Biosciences, Basic sciences, and Life Sciences.

Main Theme of the Conference

- The conference had invited talks, keynote addresses, research/professional paper presentations and a workshop.
- The main theme of the conference was 'Statistical Tools and Techniques for Research Data Analysis'.
- The sub-themes were Graph Analysis, Research Metrics, Artificial Neural Network, Fuzzy computing, Biostatistics, Bayesian Models and Methods, Financial Statistics, Data Analysis, Survey Methodology, Statistical Quality, Data Visualization, Communicative Statistics, Research Data Management, & Computational Statistics.

Registration

- Participants categorized as
  Students/Scholars
  Working professional/Academician
  Delegates from Abroad

- The fees were 200, 300 and 1500 Rs respectively for the above mentioned three categories.
- The participants submitted their fees in the CUG School of Library and Information Science account, Account No. 5999101000800, which maintain at Canara Bank, CUG Gandhinagar, IFSC Code: CNRB0005999.
- The total amount collected through registration fees is 19100/-

The conference conducted using Microsoft team. The inaugural function was made live on Facebook page to provide ICSTRDA-2021 a wider audience reach out. And the event was captured by Nirmana News (Gujarati News Channel)

- Facebook Link- https://www.facebook.com/cugadmin/videos/449730766177002
- News Link- https://www.youtube.com/watch?v=Vvd0ddmwPeQ&feature=youtu.be

ICSTRDA-2021, Coverage by NIRMANA News Channel

Inaugural Function

The inauguration session was held on 21.01.2021 (Thursday) on Microsoft teams on online mode. Honourable Vice-Chancellor Prof. Rama Shanker Dubey presided over the inauguration

Presidential Address-

In his presidential address Vice-Chancellor, Prof. Rama Shanker Dubey elaborated -

- The principles of statistics for analyzing research data.
- How statistical data is essential to visualize the research findings.
- Scientific researches and data compilation for publications.
- Highlighted the importance of data and statistical analysis in general science, social science, research, agriculture, medicine, life sciences, chemical sciences and environmental sciences.
- Utilizing various statistical tools with their advanced version for example- Sigma plot version 5 that provide 3D images is more promising to the field of research.
- How laboriously COVID-19 vaccine was being prepared and needed to accomplish clinical trials many times before certification and release. The increasing number of trials increase sample size, and it gives the significance of the experiment and result.
- Highlighting the application of statistical tools to various studies with live examples.

Vice-Chancellor Prof. Rama Shanker Dubey

Introductory Remarks

- In his introductory remarks, Prof. Alok Gupta, Offig. Registrar, Central University of Gujarat highlighted the significance of statistical tools and data analysis.
- He also pointed out that in this critical situation of Covid-19, it is an opportunity to meet on virtual mode and share our knowledge. The learned experts from different parts of the world connect and give their views and share research.

Prof. Alok Gupta, Offig. Registrar, Central University of Gujarat

Keynote Address

Esteemed speaker Prof. Sanjay Pal from skyline University, Nigeria set the tone for this conference by highlighting the importance of statistics in every arena, namely business, medical field, sports predictions, etc. He talked on the title: Importance of Statistics in Today's World. He mentioned -

- Human recognizes the significance of statistics from time immemorial that is visible through different documentations available in other countries.
- About statistics as the science of collection, organization, analysis, interpretation & presentation of numerical data.
- Why are statistics vital in our life?

The keynote was followed by the launching of the conference proceedings virtually by our Honourable Vice-Chancellor.

Welcome Address

The Dean of SLIS Prof. Atanu Bhattacharya was welcome to all dignitary and participants in the conference.

Prof. Atanu Bhattacharya, I/C Dean School of Library & Information Science

The presentations by faculty and students of various research and academic institutions were arranged in technical sessions. This multidisciplinary conference on a virtual platform with its technical challenges and different time zones saw active participation from 4 different continents with papers presented from 25 other institutions. They presented their research work in four sessions. There were nearly 50 presentations by researchers, academicians and students from various parts of the country. The presentations and discussions were related to data collection and analysis, various tools and techniques used in various research fields. It included fields of social sciences, library and information sciences, environmental sciences, geology and utilization of GIS and GPS data for climate change impacts on agriculture.

Technical Sessions

- The conference had four technical sessions, four invited talks, one workshop, one special presentation and 40 papers that were submitted.

First Invited Talk

- Delivered by Prof. Devika Madali from DRTC, Bangalore.
- Her topic was 'Open Metrics' in the open-access domain discussing the difference between open and commercial content. It introduced various metrics for measuring the impact of research focussing on open content metrics and Factor demonstrating its computation and relevance in Open Science.
- Dr Rashmi Kumbar chaired the session.

Technical Session- 1

- Subtheme of the session-
  Artificial Neural Network, Bayesian Models & Methods, Bio-Statistics, Communicative Statistics, Statistical Quality
- Ten papers submitted and seven presented virtually.
- The session was engaging and productive as it involved various interfaces of different disciplines.
- This session chaired by Dr K B Agadi and Dr Zakia Firdaus.

Technical Session- 2

- The parallel technical session 2 was on Data Analysis and Graph Analysis
- Ten papers submitted and seven papers presented.
- The session chaired by Dr H.G. Hosamani & Dr Sajaudeen N.C.

Second Invited Lecture

- Prof. Jane Greenberg (Alice B. Kroeger Professor, Information Science), Prof David Breen, (Professor of Computer Science) and Mr Joel Pepper (PhD student, Computer Science from Drexel University USA given their invited talk.
- The title of the talk was Approaches for Computing Specimen Image Research Data.
- The presenters shared approaches used in image informatics, the extraction of quantitative information from images, within the context of a fruit fly study.
- The session chair was Prof. Atanu Bhattacharya.

Day 2, 22nd January 2021 (Friday)

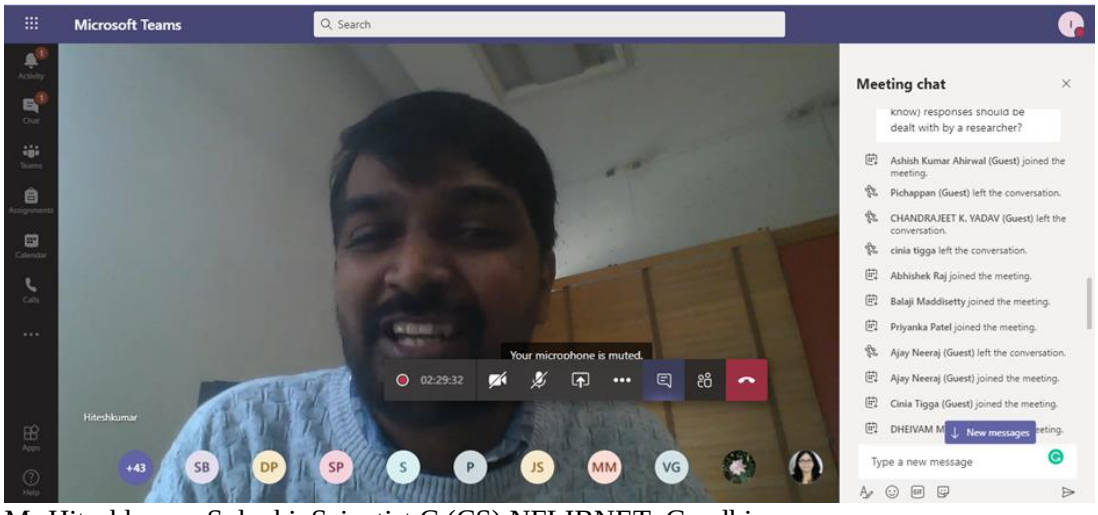
Third Invited Lecture

- Delivered by Prof. Pit Pichhapan, Director, Digital Information Research Labs.
- The talk on the Significance of the Centrality Analysis covered the basic concept of Graph Analysis and the different deep learning and knowledge graphs applied to Graph Analysis.
- He highlighted graph structure and anatomy. Utilization of algorithms in handling extensive data and advanced neural network for N dimension
- This session chaired by Prof. R.Y. Hiranmai, SESD, CUG and Mr Chandrajeet Kumar Yadav, Hindu College, Moradabad, Uttar Pradesh.

Workshop

- A workshop followed the invited lecture on R Markdown: Authoring Framework for Scholarly Communication by Mr Hiteshkumar Solanki, Scientist C (CS) from INFLIBNET Gandhinagar.

- The talk highlighted R studio's features to help prepare publication ready quality journal articles, theses, and data analysis and presentation.
- The expert gave a detailed demonstration of R studio, including installing various external packages as needed and covering the use of various R studio features, especially R Script, R Notebook and R markdown.
- Session chaired by Dr Bhakti Gala and Dr Paulami Sahu.



Mr Hiteshkumar Solanki, Scientist C (CS) NFLIBNET, Gandhinagar

Technical Session 3

- Based on sub-theme Data Visualization, Research Data Management.
- Total No of Presentations scheduled was 11, and the absolute no of papers presented were 06.

Technical Session 4

- It was on the sub-theme: Social media analytics
- Total No of Presentations scheduled was 10, and total No of Papers Presented was 05. Papers presented on applying data analysis techniques using internet-based data, especially in social network analysis, google analytics and knowledge graph.
- The session chaired by Dr Litty Denis and Dr Rashmi Kumbar.

Fourth Invited Lecture

- It deliver by Mr Jay Bhatt, Engineering Librarian from Drexel University, USA
- He gave a very comprehensive overview of the topic 'Information awareness on Research Data in Science and Engineering'.
- Mr Bhatt shared with us data resources from across the globe and India, including the research guides prepared by them at the Drexel University Library.
- Prof. Bhawana Pathak chaired the session.

Prof. Jane Greenberg, Drexel University Philadelphia, USA

Prof. ……., Drexel University Philadelphia, USA

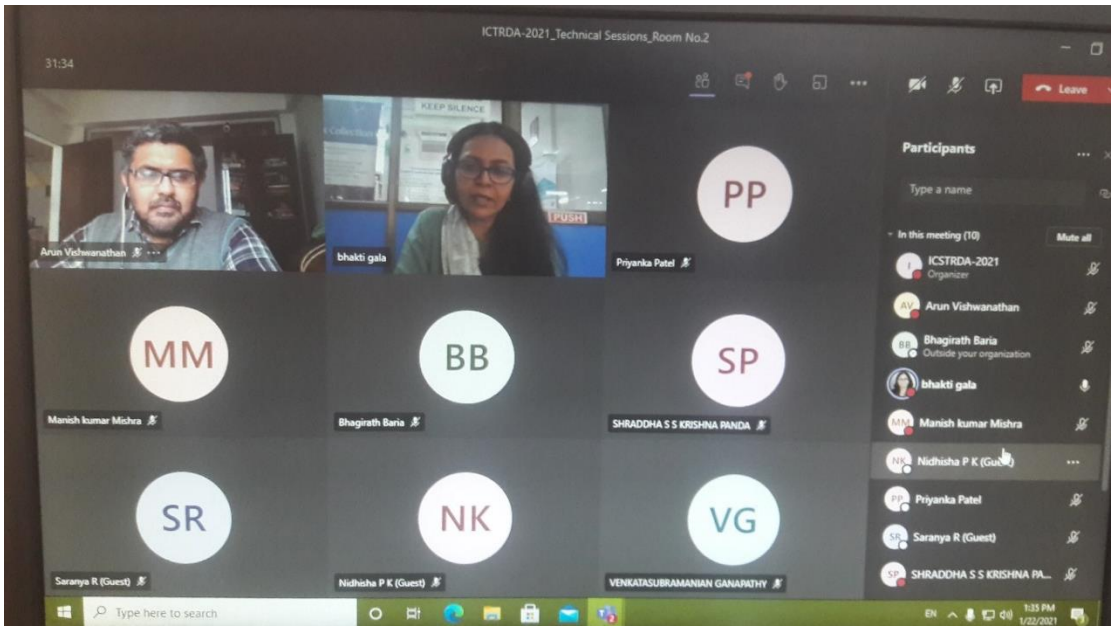
Special Presentation

To maintain the conference's pace till the very end, a special presentation scheduled in the last session on the **Role of data and statistical analysis for assessment of urban water security in the Global South.**

- Subham Mukherjee joined session from the Freie Universität Berlin, Institute of Geographical Sciences, Physical Geography, Berlin, Germany, Trude Sundberg, University of Kent, Q-Step Centre, School of Social Policy, Sociology and Social Research (SSPSSR), Canterbury, Kent, UK; and Prof. Pradip K. Sikdar, Department of Environment Management, Indian Institute of Social Welfare and Business Management, Kolkata.
- The presenters shared their ongoing study experiences to assess low-quality data and data analysis relevant to Urban Water Security and offer strategies to address these issues.
- The researchers discussed how inadequate, unreliable, low quality, socio-politically, and technologically biased, non-inclusive and unorganized databases present a primary challenge. It was interesting to know how Remote Sensing technology and global bio-physical databases can be use for more accurate data collection.
- Prof. Sikdar gave a brief talk on data presentation techniques which can be used by researchers.
- This session chaired by Dr Paulami Sahu and Dr Minaxi Parmar.

Valedictory Function

The concluding session had a valedictory address delivered by Prof. Pabitra Mitra from IIT Kharagpur. His talk discussed the core aspects of data visualization using advanced techniques of machine learning. He pointed out the importance of data analysis and interpretation in research and how different studies handle it. Feedback forms supplied to the participants to receive their views on the outcome of the conference.



The organizing team of the the conference invited Nirman News channel reporter for coverage ICSTRDA-2021.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CENTRAL UNIVERSITY OF GUJARAT
School of Library and Information Science
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SCHOOL OF APPLIED MATERIAL SCIENCES

3.3.2

invites you to LiveStream Webinar on

PANDEMIC CHALLENGES AND ROLE OF CHEMISTRY

07 October 2020 from 11 am to 1 pm

Prof. R S Dubey
Honourable Vice Chancellor,
Central University of Gujarat

Dr. Prakash Jha
Dean, SAMS
(CUG)

Dr. Faraz Shaikh,
University of Macau

Dr. Chandra Sekhar Korapala
Syngene Intl.

Dr. N. Arul Muruga
KTH SWEDEN

Dr. Raju Chowhan,
SAMS (CUG)

LIVE

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Webinar on
Coronaviruses Protective Physicochemical Sciences and Technology Using Borosil Mansingh Survismeter

Jointly Organized by
Central University of Gujarat and
Gujarat Council on Science & Technology
Dept. of Science & Technology, Govt. of Gujarat

Patron:
Prof. Rama Shanker Dubey
Vice-Chancellor
Central University of Gujarat, Gandhinagar

Chief Guest:
Mr. Shreevar Kheruka
Managing Director
Borosil Limited
Mumbai

Dr. H. Purushotham, IAS
Director,
NRDC

Prof. J. P. Singh
Director,
INFLIBNET

Dr. Narottam Sahoo
Advisor,
GUJCOST

Prof. N. B. Singh
Dept. of Chemistry
Sharda University

Prof. Man Singh
Dean, SCS,
Central University of Gujarat

Convenor:
Prof. Man Singh
Dean, SCS
Central University of Gujarat

★

Coordinator:
Dr. Prakash Chandra Jha
oordinator, University-Industry Interface Cell &Dean, SAMS
Central University of Gujarat

★

Organizing Committee:
Dr. Dinesh Kumar,
Dr. Dhananjoy Mondal,
Dr. Dandamudi. V. Lenin,
Dr. Gururaja G. N,
Dr. Panchami Prabhakaran

Date and Time:
2nd July 2020
11:00 am

Registration Link :
https://forms.gle/BNmG9s1pjUmh8RgB8

National Advisory Committee:
Prof. V. K. Srivastav
VC, SCU, Visnagar
Prof. Sanjay Deshmukh
Ex-VC- Mumbai University
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School of Library and Information Science

Invitation

Date : 16 September, 2020

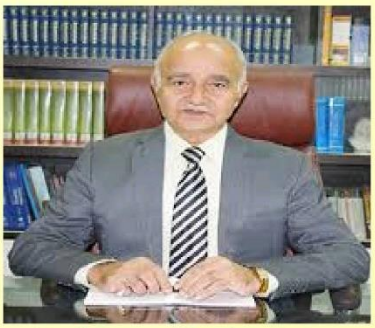
Time : 09.30 am to 11.30 am

Online Seminar

Theme

Digital Repositories and Research Data: Roles and Prospects

Presidential Address



Prof. Rama Shanker Dubey
Hon'ble Vice-Chancellor, CUG

Chief Guest

Prof. Pit Pichappan
Senior Scientist, Digital Information Research Foundation (DIRF), Chennai

Introductory Note

Prof. Alok Gupta
Registrar (Offg.), CUG

Welcome Address

Prof. Atanu Bhattacharya
Dean, SLIS, CUG

Seminar Link:

https://www.facebook.com/cugadmin

Registration URL

https://forms.gle/ZhphpqinKNo9TiQ16

E-Certificate

E certificate will be provided to the participants at the end of the program after filling and submitting feedback form.

Organizing Committee

- Dr. Minaxi Parmar, Organizing Secretary, Coordinator & Asst. Professor, SLIS
- Dr. Bhakti Gala, Asst. Professor, SLIS
- Dr. Rashmi Kumbar, Asst. Professor, SLIS

School of Library and Information Science
Central University of Gujarat
Sector – 29, Gandhinagar.
www.cug.ac.in | slis@cug.ac.in

Digital Repositories and Research Data: Role and Prospects

0n 16th September 2020

School had organised an online seminar on Digital Repositories and Research Data: Role and Prospects and prof Pit. Pichappan, PhD Senior Scientist, Digital Information Research Labs., Chennai, was the invited speaker. The Dean (I/N) SLIS Prof. Atanu Bhattacharya welcomed the guest. The Hon. Vice-Chancellor of the Central University of Gujarat delivered presidential remarks. He positively set the tone for the event.

Prof. Pit has spoken on digital repositories and research data elaborately. He had mentioned the vital role that research data could place in achieving institutional success. The best possible way to store and preserve is the development of Institutional Repositories. He had listed out in his talk various international and national level institutional repositories. Elaborating further, he even talked about varieties of research data, the role of IR and research data.

The event was attended enthusiastically by 250 participants. Two hundred participants received a participation e-certificate. The SLIS MLIBSc and PhD Students were also present in the programme. The topic was beneficial for both kinds of students; for MLIBSc, they have understood the IR concept, and it is a part of their syllabus, whereas PhD students could relate the sessions to their research areas of research data.

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School of Library and Information Science

Sector - 29, Near Jalaram Temple,
Gandhinagar, Gujarat, India - 382030

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Virtual International Conference on
Statistical Tools and Techniques for Research Data Analysis
ICSTRDA 2021
21 & 22 January 2021

School of Library and Information Science
More and more organizations in India are embarking on new concepts in handling information. With the changing times, information formats also have changed rapidly from print on paper to digital. There is a need for qualified and trained Library and Information Science professionals to take the lead and guide developments in helping the end users in the knowledge society. Established in the year 2012, the School of Library and Information Science offers programmes which are highly relevant in the present context of knowledge society. It has been established with the objectives to train competent human resource to build and maintain the reservoir of memory, to conserve and communicate culture, heritage, science, art and folk traditions of the nation; to prepare students in the application of ICT; to develop competent professionals for promoting access to useful knowledge by the process of digitization and to involve in capacity building activities to create a Digital India at large.

About the Conference
The conference is being organized with an intention to bring top researchers in the area of statistics and research data analysis, to the forum and provide an opportunity to explore the intersection of Statistics with Data Analytics and Data Science. This will enable the students to utilize the sophisticated ways of data analysis in learning and applicability in the emerging trends in their research. The conference will focus on basics to advanced statistical methods using computational techniques and their application in research of various disciplines namely Information science, Humanities, Agriculture, Biosciences, Basic sciences, and Life Sciences.

Main Theme
The conference has invited talks, keynote addresses, research/professional paper presentations and a workshop. The main theme of the conference is **'Statistical Tools and Techniques for Research Data Analysis'**. The sub themes are mentioned below. Professional/Research papers are invited on the theme and sub theme of the conference as per the dates mentioned in the brochure.

Sub Themes

| Graph Analysis | Research Metrics | Artificial Neural Network |
| Fuzzy computing | Biostatistics | Bayesian Models and Methods | Financial Statistics | Data Analysis |
| Survey Methodology | Statistical Quality | Data Visualization | Communicative Statistics |
| Research Data Management | Computational Statistics |

Workshop on R Markdown: Authoring Framework for Scholarly Communication
R markdown is a package that mixes markdown and R code chunks. It provides an easy way to produce a rich, fully documented reproducible analysis. The knitr package execute the R code while the obtained result processed and transferred to the final document.

Workshop Report on 'LIBRARIES-2021'

A 2 Day- Workshop (**LIBRARIES 2021) (L**iteracy **I**nitiatives for **B**ridging **R**eaders **A**nd **R**esources **I**nvolving **E**ducators and **S**chools: Two-day Workshop) was organized by School of Library and Information Science in collaboration with Centre for Professional Development of Teacher Educators, Pandit Madan Mohan Malviya National Mission on Teachers and Training (PMMMNMTT), School of Education, Central University of Gujarat on 27th and 28th February 2021.

Objectives:

The following were the major objectives:

- To bring school librarians and LIS students on a single platform to impart Information Literacy
- To impart reading strategies to empower educators to optimize use of information resources.
- To understand the Digital Sources and Platforms to aid the education process in schools.
- To promote Open Education Resources suitable for School Education.
- To discuss the implications of New Education Policy 2020 on Libraries.
- To impart integrated teaching/ learning techniques through optimum use of library resources.
- To explore collaborative initiatives between LIS students, school librarians, and Library Science Schools.

A total of forty-one participants, including Library and Information Science Students of Central University of Gujarat, School Librarians, Professionals associated with LIS professional bodies and education colleges from Ahmedabad and Gandhinagar had registered for the workshop and thirty-two participants attended the workshop. Renowned School Librarians, Educationists, Experts from RIE and NCERTs, gave talks and conducted hands-on sessions on both the days of the workshop.

The workshop was conducted in a blended mode with a few talks in the virtual mode and most of the hands-on sessions in the offline mode with focus on the topics namely Information Literacy, Digital Literacy, Reading Strategies, Teaching Pedagogy, Open Educational Resources, New Education Policy and Libraries, Life Skills, etc.

Day 1 (9.30 a.m. – 6.30 p.m. Saturday, 27th February 2021)

Inaugural Session:

The workshop began with the Inaugural Session which was graced by the Hon. Vice Chancellor, Prof Rama Shanker Dubey, the Registrar, Prof Alok Gupta, the Chief Guest Hon. Vice Chancellor, Dr Harshad Patel, the Project Director Prof H B Patel, and Dean-in-Charge Prof Atanu Mohapatra. The Kulgeet set the tone for the scholarly event and the distinguished guests lighted the lamp to mark the beginning of sharing of the knowledge over the next two days. Prof. Atanu Mohapatra, In-Charge Dean SLIS, CUG. formally welcomed the distinguished guests and the participants and Prof H B Patel, the project director of Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNMTT) gave a brief about the project. The inaugural address was delivered by Dr. Harshad Patel, the Hon Vice Chancellor of Indian Institute of Teacher Education, Gandhinagar. Dr Patel highlighted the role of libraries in education and urged the librarian community to learn new technologies and design innovative services for the benefit of user community.

Hon'ble Vice Chancellor Prof Rama Shanker Dubey delivered the Presidential Address. Prof Dubey talked about the role of librarians in the education process with a reference to the glorious ancient period of knowledge in our country. He elaborated on the contributions of the scholar and social reformer, Pandit Madan Mohan Malviya's contributions to education

development in independent India with a stress on character building of students through providing right access to knowledge and information sources. Dr Minaxi Parmar, coordinator, school of library of library and information science proposed the vote of thanks for the inaugural session. The inaugural session ended with a group photograph.

Keynote Address:

The Keynote Addresses of day I was delivered by Shri Rajendra Patel, a well-known Poet and Ex-Vice President, Gujarati Sahitya Parishad, Ahmedabad. His keynote address highlighted the experiences of his association in the ambitious Reading Campaign, 'Vanche Gujarat' of the Gujarat Government. Under the Vanche Gujarat campaign, Sri Rajendra Patel and his team organized many quiz programmes and competitions to promote the campaign and thereby increase reading habit to people. He cited many inspiring instances, that he terms as the best experience of his life. Shri Patel also gave an overview of Pustak Parab and Chalatu Pustakalay, two of his other popular reading initiatives. He shared many experiences related with these initiatives with the participants and encouraged them to involve in improving the reading habit of the users. The session was chaired by Dr Minaxi Parmar, Coordinator, School of Library & Information Science, Central University of Gujarat.

The first day consisted of two Hands-on Sessions conducted offline and two talks, one of which was offline, and one was online. The summary of the same is presented below.

Hands-on Session I:

The first hands-on session was conducted by Ms. Madhu Bhargava an illustrious personality in the Professional World of School Libraries on the topic 'Developing a School Library program with evidence-based practice: an experiential workshop'. Currently working as the Head Librarian of Aga Khan Academy, Hyderabad, is also the President of School library Association of India. She described the exclusive role of librarians particularly in schools and in education system in general. Her hands-on session began with making the participants understand the components essential to develop a holistic library programme which included events, activities, International collaborations, reading and information literacy skills.

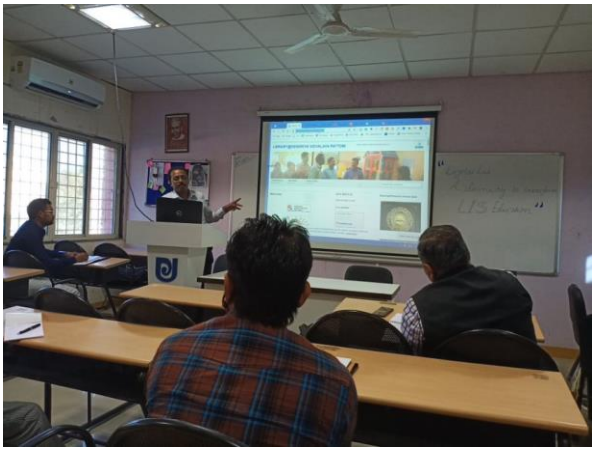
Along the duration of the session, Ms. Bhargava also shared innovative ideas and experiments to attract students towards books and the libraries. She explained the importance of exhibiting books in the library on important days and ways of organizing different activities as well as the need for documentation through the various group activities she conducted in the hands-on session. To drive home the point that every year school librarians organize events like Book Week, Author visit, Book Fair, etc. But they never put efforts to create shreds of evidence of these activities to measure the learning outcomes or any skill development of students. To teach the participant how to develop evidence-based events for the library, she divided the participants into four groups and guided them to perform five goal-based activities. The goals were-

- Reading Promotion
- Critical Thinking
- Information Literacy

- Collaboration
- Connect with The World

A hands-on activity was conducted associated with helping the participants to accomplish each goal. At the end of the workshop, the participants created a school library's yearly calendar including various planned activities, and how the school librarian can keep evidence of the same. Information literacy being the crux of all library operations, this session succeeded in nailing the objective of the workshop that of planning, implementing and sustaining the information literacy programmes thereby catering to the intellectual quotient requirement of the Library and Information Science community. The session was chaired by Dr Minaxi Parmar, Coordinator, School of Library and Information Science, CUG.

Hands-on Session II:



The second hands-on session was on 'Web tools for school libraries' by Mr. S L Faisal, Librarian of Kendriya Vidyalaya, Pattom, Trivandrum and presently working as the General Secretory of SLA-India. He is keen on application of technology in the school library. He introduced different kinds of software for content management, creating videos and audio, classroom teaching, flipped classroom, etc. Mr. Faisal also presented many Google Applications to create web site, blogs, web page, live chat, flip book, etc. for teaching and learning purpose. He demonstrated some of the group sharing tools, audio, and video content developer tools. The session essentially covered the digital literacy element required to be understood and implemented in all the libraries in the 21st century information and technology landscape specially to cater to the needs of the digital natives and millennials who are the active library users. The session was chaired by Dr Minaxi Parmar, Coordinator, School of Library and Information Science, CUG.

Talk I:

Dr. Moortimatee Samantray delivered a talk on "New Education Policy and Role of School libraries". She discussed the various education policies, different commissions, committees, and other platforms as well as their importance in building a strong education system in India. She elaborated about new education policy, its vision, importance, its role, and requirements. The core of her talk was the relevancy of new education policy for schools and their libraries; she also discussed the importance and role of school library and librarians regarding this. The tabulated data on Education management information systems (**EMIS**) on schools, school libraries and school librarians were a real value addition. The deliberations of the session gave the participants and the organizers an overview of how adoption of various aspects of New Education Policy can play a vital role in promoting the usage of the library collection and designing innovative services for our libraries. The session was chaired by Dr Hiten Parmar, Asst. Professor, School of Library and Information Science, CUG.

Talk II:

Prof. Manish Jain, Centre for Creative Learning, IIT Gandhinagar gave a virtual talk on the topic "Joy of Learning". The talk was more of a joyful discussion with the Resource Person interacting with the participants and thereby drive home the point that resources are extremely important in the students' learning process and librarians have a major responsibility in creating interest in children by introducing different types of books. more focused with joy, fun and something interesting which we have never ever think also. He demonstrated making simple toys to impart science principles and mathematics theorems in an understandable way which impressed the audience very well. He motivated the audience to encourage curiosity among children about the science behind small things and let them discover the science behind these things. He explained clearly about the simple but important role that science plays in our day-to-day life. At the end of Day-1, he delighted the participants with his humour peppered talk on the joy of learning with resources. The role of librarians was well realized as the Resource Person referred to one 'Dr T' as the inspiring librarian who acted as a bridge between the resources and users and that made a difference to him as a faculty. The session was chaired by Dr Hiten Parmar, Asst. Professor, School of Library and Information Science, CUG.

Day II (9.30 a.m. – 6.30 p.m. Sunday, 28th February 2021)

Day II of the workshop had a keynote address, one offline talk, one online hands-on session and two offline hands-on sessions. A summary of each of these sessions follows in the next section.

Keynote Address:

The second day began with the recorded keynote address by Ms. Katy Manck, President, International Association of School Librarianship. Ms. Manck began with the glimpse of

unusual snow in the state of Texas and the weather there and wished the participants of the workshop on their getting together to understand reading habits and thereby build a strong reading culture as well as bridge the readers and the resources. She called on the school librarians to create learning opportunities by recording, collating, and publishing their learning in the form of stories. Ms. Manck highlighted the importance of school libraries for children and the communities in the context of attaining Sustainable Development Goals (SDGs) namely to ensure public access to information and inclusive and equitable quality education and promotion of Lifelong Learning opportunities for all. She introduced the Good Life Goals to help everyone to move towards the SDGs. The three inviting challenges namely 'Stretch, Share and Speak' given by Ms. Manck were the take away for every participant in their quest to become better qualified school librarians. She urged them to connect with colleagues and share their learning with one another. She talked about the initiatives of IASL namely the International School Library Month and other activities and asked the participants to involve themselves in these activities as well as connect with new colleagues around the world. She introduced many learning resources namely International Children's Digital Library, Texas Learning Goals, etc. She ended with an important observation that the 'School Library is indeed the Heart of your School' and that the schools, towns and entire country, the children and the communities depend on the school libraries and librarians.

Talk I:

Dr S Nagaraja, Deputy Librarian, Regional Institute of Education, NCERT, Mysuru delivered a talk on 'Open Educational Resources (OERs) for School Libraries'. He introduced the concept of OERs and explained the 5Rs of OERs namely Retain, Reuse, Revisit, Remix and Redistribute. The major OERs at the national level for school libraries like OERs from NCERT namely NROER, EPathshala, DIKSHA, NISHTHA, NCERT textbooks, NCERT journals were

discussed. Along with these valuable resources, Dr Nagaraja also introduced the Open Textbooks, OpenStax, Project Gutenberg, SYAVULA, ICDL, etc. for the benefit of the participants. Resources like Read Works and Common Literature for Reading Programmes, Story, Language and Reading Skills Sources were shared. E-books like NDLI, Audio Books, Magazines were shared. Learning support like DK Find, Learn English, TED Education, BBC History, National Museum of Computing were discussed along with other OERs like E-Acharya, Pratham, etc. The participating school librarians were benefitted as this wealth of knowledge treasure was shared and all the queries regarding the resources were well answered by the Resource Person. The session was chaired by Dr K B Agadi, Assistant Librarian, Central Library, Central University of Gujarat, Gandhinagar.

Hands-on Session I:

The first hands-on session of the day was conducted by Ms. Usha Mukunda, Founder-Member, Center for Learning, Bangalore. Ms. Mukunda began the virtual session by giving a basic understanding of non- fiction and explained the different types of non-fiction such as expository, narrative, and hybrid. Different examples of non- fiction were given. Participating school librarians were asked the varieties of non-fiction in their libraries. A lively discussion took place when participants were asked to remember the earliest non-fiction read by them and share their memory of such works with others. Various hands-on activities were conducted by the resource person such as identifying non-fiction works from a series of different book cover images shown on the screen. Tips for the careful selection of non-fiction works were shared. The importance of encouraging the reading of non-fiction works was explained by Ms. Mukunda. Workshop participants were asked to answer the questions in the handout 'Preamble to the non-fiction session'. Many novel ideas of promoting non-fiction reading material were shared by the resource person by giving a demo of a book talk on Constitution of India for children and others. A fun activity on writing 5 sentences on 'How to…' was completed by

everyone and a few samples were shared by the participants. Though the session was virtual, the connect between the Resource person and the audience was instant and was indeed the highlight of the blended mode of workshop. The session was chaired by Dr Bhakti Gala Assistant Professor, School of Library and Information Science, Central University of Gujarat, Gandhinagar.

Hands-on Session II:

The second Hands-on Session of the day was conducted by Ms. Sujata Noronha, Library Consultant & Founder Member, Bookworm, Goa on the topic 'Books and Children- How libraries can foster relationships between them'. Ms. Sujata started the hands-on session with a story titled, 'Ms. Moore thought otherwise' to highlight the importance of libraries for children. Multiple activities were conducted by the resource person to solicit ideas from the book in the creation of dedicated spaces for children to read and grow. The history of children's libraries in the USA and India was briefly discussed. Groups of two were formed by distributing book activity cards. The teams thus formed were thereafter given clues to help find the correct book from a display of many books. Each team was thereafter asked to identify the core idea from the book which was found by them. Ms. Sujata led the participants through a highly fun filled session with a lot of laughter and learning. The activities generated a lot of questions from the participants to which the resource person answered aptly and patiently. The session was chaired by Dr Bhakti Gala Assistant Professor, School of Library and Information Science, Central University of Gujarat, Gandhinagar.

Hands-on Session III:

The third Hands-on Session was conducted by Dr Sheetal Tank, Librarian, Atmiya University, Rajkot on the topic 'Facilitating Universal Human Value Education during library hours. Dr. Sheetal Tank initiated the session with a short story in Hindi emphasizing the importance of basic human values necessary for a fruitful life. She discussed the course structure of the UGC recommended course on Universal Human Values. Dr. Tank corelated these values with the UN SDG 2030 goals. An exercise on differentiating the concepts of 'desires' and 'wants' was conducted. Participants were asked to list three wants and desires. The resource person described various conflicts arising due to an imbalance between desires and wants. She further described these conflicts especially between human- human and human- nature. Participants were asked to reflect on the how we as humans take resources from the earth without worrying about the sustainability of this environment for our future generations. Dr. Sheetal Tank succeeded in generating an awareness among the participants towards being mindful of focusing on spiritual growth. The session added the much-required spiritual quotient dose to the participating librarians to take back to their libraries and practice the values to strengthen their service element. The session was chaired by Dr Bhakti Gala Assistant Professor, School of Library and Information Science, Central University of Gujarat, Gandhinagar.

Valedictory Session:

The workshop got a befitting end with a wonderful Valedictory Address by Shri Harshad Shah, Hon. Vice Chancellor, Children's University, Gandhinagar, and the presidential Address by respected Prof Alok Gupta, Registrar, Central University of Gujarat, Gandhinagar.

In his Valedictory Address, Shri Harshad Shah talked about the significance of books and the importance of reading in our lives and aptly quoted meaningful paragraphs from popular Gujarati works. He talked about the influence of works like Grantasarathi, Vishwamitra, Shakuntal, Mansagangotri etc. to inspire the audience towards literature. Shri Shah presented an overview of various reading initiatives that he introduced and talked in detail about the 'Vanche Gujarat' Reading Campaign, the initiative of Gujarat Government to promote reading culture among students. He shared numerous anecdotes, his personal experiences which added a fresh dimension to the role of libraries and librarian towards their responsibility to the society. The participants were highly motivated with the kind of experiences shared by the Chief Guest in introducing valuable Reading Programmes for the student community and the society in general.

The presidential remarks were delivered by the Officiating Registrar of Central University of Gujarat, Prof Alok Gupta. He was appreciative of the theme of the workshop and the Resource Persons who enlightened the participants on various fronts of Learning, Literature and

Libraries. He urged the participants to make optimum use of such seminars and workshops to encourage the user community in their respective institutions to make use of the information resources and read to recreate knowledge for the benefit of all.

Participants, Ms Geeta and Mr Himanshu shared their feedback about the workshop. Dr K B Agadi, the Assistant Librarian, Central Library, Central University of Gujarat proposed the vote of thanks and the purposive workshop came to an end with the national anthem.

Outcome of the Workshop:

The major outcomes of the workshop were to focus on imparting integrated teaching/ learning techniques through optimum use of library resources and to explore collaborative initiatives between teachers, librarians, and Library Science Schools.

The following are the major outcomes of the workshop:

- The participants gained knowledge of various Digital Tools and Techniques to search Information, acquire information, organize information, and disseminate information to the user community. The practical demonstration of various applications and software gave the confidence to the LIS professionals to implement in their respective libraries.
- The various Open Education Resources (OERs) for School Education shared by the Resource Persons served as a Knowledge Repository for the participants to add on to the existing resources for the benefit of their users. This Repository can be further enhanced on a continuous basis by the professionals.
- The hands-on sessions on use of different categories of books as well as connecting books and children succeeded in empowering school librarians with various the reading

strategies and teaching pedagogy. These reading strategies can be implemented, and case studies can be compiled for future reference.

- The students of the School of Library and Information Science got to create Academic Posters on various topics ranging from Legendary Educational Reformer - Pandit Madan Mohan Malaviya, Digital Literacy for School Students, IFLA & CBSE School Library Guidelines, OERs for School Libraries, Using You Tube Streaming Servers, Subject Guides, Metadata for children's books, Knowledge Management Centre for School Libraries and on Public Libraries in India.
- The Organizers got an opportunity to explore and initiate collaborations between the LIS professionals, LIS schools and School Librarians for optimizing the use of information resources as well as creating information products to be shared with the School Libraries.
- The Organizers also got to plan exclusive workshops on NEP – 2020 specially for adoption in school libraries in Gujarat.

Poster Presentations by the Students of SLIS








SLIS Alumni Activity (June 2021)

Report on Webinar 1: Research Opportunities for Library and Information Science students and professionals

(**WEAVE-2021- W**ebinars to **E**ngage **A**lumni through **V**irtual **E**nvironment)

As a part of the school alumni activities, a webinar series titled '**WEAVE-2021'** (Webinars to Engage Alumni through Virtual Environment) has been initiated. The first webinar was conducted on **12th June 2021 (Saturday),** at 4.00 p.m. on the topic '**Research Opportunities for LIS students and professionals.'** The resource persons were Dr **Aditya Tripathi,** Professor, Department of Library & Information Science, at Banaras Hindu University, Varanasi, and **Dr Manorama Tripathi,** Chief Librarian, at Central Library, Jawaharlal Nehru University, New Delhi. The Participants were the SLIS Alumni, SLIS current students and the SLIS Faculty.

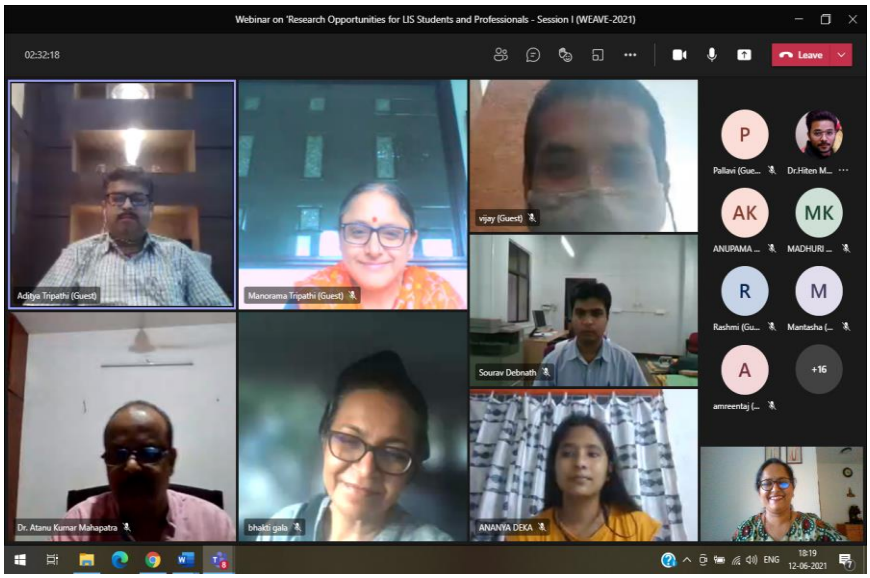
At the outset, the university Kulgeet penned by our Honourable Vice Chancellor Prof Rama Shanker Dubey was played followed by the Welcome Address by the Dean (I/C) Prof Atanu Mohapatra. Dr Rashmi Kumbar, Nodal Person, SLIS – University Alumni Cell, briefed the audience about the various school activities and initiatives as well as the alumni cell of the university while requesting the alumni to register themselves for the university Alumni Cell. Dr Minaxi Parmar, Coordinator, SLIS introduced the first speaker Dr Manorama Tripathi who addressed the audience and talked about the 'Research Opportunities in LIS'. Dr Manorama gave a comprehensive presentation with the details regarding the eligibility and policies regarding pursuing research which gave a lot of clarity to the participants. She elaborated on the trends in LIS, various E-resources available, the importance of use of reference management tools, the need for creating researcher's identity, and the essential competencies required for carrying out research which were value addition to the understanding of the students, specially. She suggested that the students read the UGC document on Good Academic Research Practices to get an insight into how to avoid research misconduct. The alumni and the students shared that the lectures were helpful for them to make decisions regarding their future too.

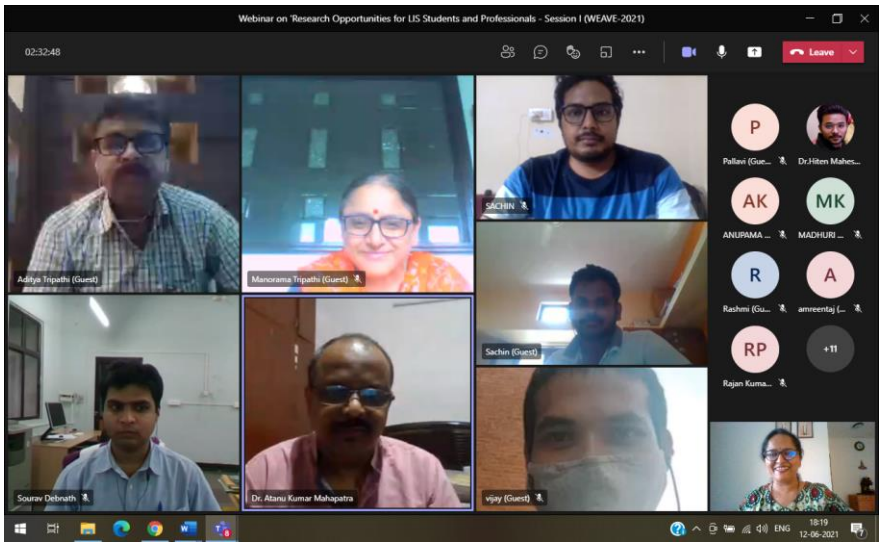
Dr Bhakti Gala, Assistant Professor, SLIS introduced the second speaker, Dr Aditya Tripathi who talked on the topic of 'Library and Information Science, Competencies and Prospects'. The students and alumni were delighted with the first-hand experiences and practical examples shared by Dr Aditya regarding the profession's importance, opportunities, and expectations. Especially the first-year students got a broader perspective about LIS profession

and, the talk was like a roadmap for them to decide on where they would like to find themselves and what are the options for them in this regard. Dr Aditya's take on the LIS Curriculum divided in four quadrants, the transition he depicted in the trinity of librarianship, his elaboration on the framework of digital scholarship and the digital information objects, web 2.0 applications and the clarity Dr Aditya provided on the relevance of knowledge management while rounding up with the professional as well as personal competencies like documentation skills, technological knowledge, communication skills, etc. widened the horizon of the students' thinking and approach towards the LIS profession.

Dr Hiten Parmar, guest faculty at SLIS proposed the Vote of Thanks.

Snapshots of the Webinar:





Invitation to attend the 1st Webinar of the series 'WEAVE-2021' on 12th June 2021 at 4.00 p.m.

Rashmi Kumbar <rashmi.kumbar@cug.ac.in>
Wed 6/9/2021 9:58 PM

To:

- hetalchauhan1983@gmail.com <hetalchauhan1983@gmail.com>;
- anjulakumari6010@gmail.com <anjulakumari6010@gmail.com>;
- priti.dhandhukia@gmail.com <priti.dhandhukia@gmail.com>;
- karuna10278@gmail.com <karuna10278@gmail.com>;
- dipticug@gmail.com <dipticug@gmail.com>;
- sumanparmar44@gmail.com <sumanparmar44@gmail.com>;
- gohiljalpa88@gmail.com <gohiljalpa88@gmail.com>;
- sonpal_kunal@yahoo.com <sonpal_kunal@yahoo.com>;
- vikramparamar@gmail.com <vikramparamar@gmail.com>;
- kamtas99@yahoo.com <kamtas99@yahoo.com>;
- Kalsang Gyaltso <khangsar6@gmail.com>;
- lhatso34@gmail.com <lhatso34@gmail.com>;
- reachdhhungri@gmail.com <reachdhhungri@gmail.com>;
- bhavu361994@gmail.com <bhavu361994@gmail.com>;
- patelreena315@gmail.com <patelreena315@gmail.com>;
- vadherrinkal1@gmail.com <vadherrinkal1@gmail.com>;
- nvpathak21492@gmail.com <nvpathak21492@gmail.com>;
- jyani.vijay@gmail.com <jyani.vijay@gmail.com>;
- priyankakhokate@gmail.com <priyankakhokate@gmail.com>;
- hkbansal999@gmail.com <hkbansal999@gmail.com>
- poonamchandel1995@gmail.com <poonamchandel1995@gmail.com>;
- bavariya.nisha2011@gmail.com <bavariya.nisha2011@gmail.com>;
- Renu Verma <hackerrenu@gmail.com>;
- sonurocks.chand@gmail.com <sonurocks.chand@gmail.com>;
- pappurathore93@gmail.com <pappurathore93@gmail.com>;
- minjvijay08@gmail.com <minjvijay08@gmail.com>;
- suchhanda.behera@gmail.com <suchhanda.behera@gmail.com>;
- pooja prajapati <pprajapati6666@gmail.com>;
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- Jagdish Ayar <ayarjagdish36@gmail.com>;
- dorwang68@gmail.com <dorwang68@gmail.com>;
- dorwang69@gmail.com <dorwang69@gmail.com>

Cc:

- DR. Minaxi Parmar <minaxi.parmar@cug.ac.in>;
- bhakti gala <bhakti.gala@cug.ac.in>;
- Dr.Hiten Maheshkumar Parmar <hiten.parmar@cug.ac.in>

1 attachments (2 MB)
Webinar-1-WEAVE-2021-SLIS-CUG-Invite-Poster.pdf;

There is nothing like returning to a place that remains unchanged to find the ways in which you yourself have altered. - Nelson Mandela

Dear friends,

We thank you all for the spirit to stay connected to your Alma Mater and for your support for the scholastic events of the school, by your participation and presence. Your two years at SLIS, CUG have added unique perspectives to the way you think, live, contribute and we know you all look forward to returning occasionally to the school to renew the memories. This positive outlook of yours motivates us to do small things to enrich your experiences in your professional journey.

Yet another initiative in this direction is, the launch of the webinar series **'WEAVE-2021'** (Webinars to Engage Alumni through Virtual Environment) starting this week with the first webinar scheduled on 12th June 2021 at 4.00 p.m. under the leadership of our Honorable Vice-Chancellor Prof Rama Shanker Dubey and guidance of our Dean (I/C) Prof Atanu Mohapatra. Prof Aditya Tripathi, Banaras Hindu University, Varanasi, and Dr Manorama Tripathi, Chief Librarian at JNU Central Library have consented to be the Resource Persons. The webinar invite is attached herewith for your convenience.

Event: Webinar I on the topic "Research Opportunities for LIS Students and Professionals'
Resource Persons: Dr Manorama Tripathi (JNU) & Prof Aditya Tripathi (BHU)
Date: 12th June 2021 (Saturday)
Time: 4.00 to 6.00 p.m.
Joining Link: https://tinyurl.com/3ute2cez

We are keen to have you all with us and would like to see you participate and interact enthusiastically in the webinar. A line in confirmation will help us with the logistics.

Take care,

Regards,

SLIS Team
--
Rashmi Kumbar (PhD)
Assistant Professor

School of Library and Information Science
Central University of Gujarat
Sector 29
Gandhinagar-382030

Webinar Invite

गुजरात केन्द्रीय विश्वविद्यालय
CENTRAL UNIVERSITY OF GUJARAT

(Established by an Act of Parliament of India, No. 25 of 2009)

Analects @SLIS-2021

(National Library week 2021)

15th to 20th November 2021

Timings: 4.00 - 6.00 p.m.

Platform: Google Meet - http://meet.google.com/ejf-pnef-ewx

Organized by School of Library & Information Science,
Central University of Gujarat - Gandhinagar.

Resource Persons

Shri Navalsinh Vaghela,
Ex Librarian, Gujarat Vidyapith,
Ahmedabad

Dr Nishtha Anilkumar,
Librarian, PRL,
Ahmedabad

Dr Ganapati Batthini,
Librarian, EDII,
Ahmedabad

Dr Mayank Trivedi,
University Librarian,
Smt. Hansa Mehta Library,
The Maharaja Sayajirao University of Baroda,
Vadodara

Dr. Manorama Tripathi,
Librarian, Dr. B. R. Ambedkar Central Library,
Jawaharlal Nehru University (JNU),
New Delhi

Contact: Prof Atanu Mohapatra,
Dean-in-charge, School of Library and Information Science,
Central University of Gujarat, Gandhinagar.
Email:slis@cug.ac.in

Interaction with University of Philippines SLIS (UPSLIS)

bhakti gala <bhakti.gala@cug.ac.in>

Thu 25-Nov-21 10:44 PM

To: **M.Lib. Batch 20-21 <m.lib.batch20-21@cug.ac.in>;phd2017.slisc <phd2017.slisc@cug.ac.in>;**czkamreentaj <czkamreentaj@gmail.com>;sudamsahu09@gmail.com <sudamsahu09@gmail.com>;Madhuri kumari <madhurik909@gmail.com>;Saranya R <sharudevi777@gmail.com>

Cc: DR. Minaxi Parmar <minaxi.parmar@cug.ac.in>

Dear students,

I invite all of you to an interactive session with the faculty and students from the School of Library and Information Studies at the University of Philippines (http://upslis.info/).

Date: **27th November**
Time: 11:30am - 12:30pm.
Platform: Zoom
Zoom Meeting Link: **https://up-edu.zoom.us/j/81709210559**

Meeting ID: 817 0921 0559
Passcode: 37793113

Kathleen Lourdes B Obille- a faculty who teaches Comparative Librarianship will be leading this discussion with a focus on LIS education in both the countries.

The format of the session is quite flexible, with introductions and a brief overview of LIS education in Philippines given by Kathleen followed by a similar overview from me. We will then open it to the faculty and students from both sides. Let's make this session interactive by asking questions.

Hoping to see all of you there!

Best
Bhakti Gala, PhD
Assistant Professor
School of Library and Information Science
Central University of Gujarat
Sector 29, Gandhinagar
www.cug.ac.in

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School of Library and Information Science

INVITES YOU TO A WEBINAR

To observe the International Day for

"UNIVERSAL ACCESS TO INFORMATION - RIGHT TO KNOW".

PRESIDENTIAL ADDRESS

Prof. Rama Shanker Dubey
Hon'ble Vice-chancellor
Central University of Gujarat
Gandhinagar

YOUR RIGHT TO KNOW

INVITED SPEAKERS

Dr. Medha Joshi
Consultant (Information Services)
National Cancer Grid,
Tata Memorial Centre, Mumbai.

Dr. Nishith Joshi (IIS)
News Editor, DD News,
Ahmedabad.

Mr.Umesh Chaturvedi
Consultant, Prasar Bharti,
New Delhi.

WELCOME ADDRESS

Prof Atanu Mohapatra
Dean (Incharge), School of Library and Information Science
Central University of Gujarat, Sector-29, Gandhinagar.

Mark the Date
05-10-2021
Tuesday

04:00 p.m.

LIVE
To Join the Webinar
CLICK HERE

Contact
slis@cug.ac.in

Open access week 2021 by School of library and information science

Ms. Mayuri Mistry <mayuri.mistry@cug.ac.in>

Sun 24-Oct-21 9:18 AM

To: **Student CUG <student@cug.ac.in>;Faculty CUG <faculty@cug.ac.in>**

Cc: Dr. Atanu Kumar Mahapatra <atanu.kumar@cug.ac.in>;DR. Minaxi Parmar <minaxi.parmar@cug.ac.in>

1 attachments (113 KB)

OA-Week-Inauguration-Schedule.pdf;

Dear all ,

Greetings from School of Library and Information Science!

Our School has been observing Open Access Week in the month of October for the past couple of years with an intention to create awareness about the Open Access Movement. Open Access Week is an opportunity to connect the global momentum toward open sharing. Academic institutions, research organizations, funding agencies, libraries, among others use Open Access Week as a platform to host promotional events, scholastic activities on the societal and economic benefits of Open Access. We have organized a session for the inaugural of the website for Open Access which has been developed by our research scholars and an Awareness talk for the benefit of all the students.

The Details of the same are as mentioned below:

Event: Open Access Week 2021
Chief Guest: Prof Atanu Mohapatra, I/C Dean, SLIS, CUG, Gandhinagar
Awareness Talk: 'Open Educational Resources: The Spectrum of Open Access' by Mr. Sagender Singh Parmar, Research Scholar, SLIS, CUG, Gandhinagar
Date: 25th October 2021 (Monday)
Time: 2.30 to 4.00 p.m.
Platform: MS Teams

Joining Link: https://teams.microsoft.com/l/meetup-join/19%3ameeting_YjJlODM0NjYtZmQ4Ny00ZmIwLWFkOTQtNDU3MjMyMTMyNTEz%40thread.v2/0?context=%7b%22Tid%22%3a%22a9f49153-63cf-4340-9806-620cee520e63%22%2c%22Oid%22%3a%2258cbb4fe-be3a-4088-9f9a-5b052c8ec895%22%7d

We cordially invite you for the inauguration and urge you to take advantage of the talk arranged for this occasion.

Regards,

SLIS TEAM
CUG

Open Access Week 2021
Inaugural Session

(Organized by School of Library and Information Science, Central University of Gujarat, Gandhinagar)

25th October 2021 (Monday)

Programme Schedule (2.30 – 4.00 p.m.)

- 2.30 – 2.40 p.m. – Kulgeet
- 2.40 – 2.50 p.m. – Welcome & brief about the OA Week 2021 @ SLIS - Ms. Archita Muchadia, (Research Scholar, SLIS, CUG, Gandhinagar)
- 2.50 – 3.05 p.m. – Inauguration of OA Website & Opening Remarks - Prof Atanu Mohapatra, (Dean (I/C), SLIS, CUG, Gandhinagar)
- 3.05 – 3.30 p.m. – Awareness Talk titled 'Open Educational Resources: The Spectrum of Open Access' by Mr Sagender Singh Parmar, (Research Scholar, SLIS, CUG, Gandhinagar)
- 3.30 – 3.45 p.m. – Q & A Session
- 3.45 – 3.50 p.m. - Vote of Thanks - Mr. Sudam Charan Sahu, (Research Scholar, SLIS, CUG, Gandhinagar)

*****Anchor: Ms. Pichano Kikon, Research Scholar, SLIS, CUG, Gandhinagar

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School of Library and Information Science
in collaboration with ASIS&T South Asia & ADINET

Invite You to a Discourse on

Fake News and Misinformation: Issues and Solutions

PRESIDENTIAL ADDRESS
PROF. RAMA SHANKER DUBEY
Hon. Vice-Chancellor
Central University of Gujarat

WELCOME ADDRESS
PROF. ATANU MOHAPATRA
Dean I/c, School of Library and Information Science
Central University of Gujarat

INVITED SPEAKERS

Prof. K.G. SURESH
Vice Chancellor
Makhanlal Chaturvedi National University of Journalism and Communication, India

DR. SHILPI JHA
Associate Professor
Media Studies, Times School of Media, Bennett University, India

DR. NARESH AGARWAL
Associate Professor
Director, Info. Sc. & Tech. Concentration, School of Library & Information Science, Simmons University, USA

WEDNESDAY, JUNE 30, 2021 | 5:00 PM - 7:00 PM

asis&t South Asia chapter

FACEBOOK LIVE AT
HTTPS://FACEBOOK.COM/CUGADMIN

adinet

RSVP: SLIS@CUG.AC.IN

INFORMATION BOOKLET

2ND INTERNATIONAL WEBINAR

on

POSITIONING MIGRATION STUDIES TO UNDERSTAND THE SHORT AND LONG-TERM IMPACTS OF THE COVID-19 PANDEMIC

Organised by

Centre for Diaspora Studies, Central University of Gujarat, Gandhinagar
in collaboration with

Banaras Hindu University (BHU), Jawaharlal Nehru University (CSRD-JNU), International Institute for Population Sciences (IIPS-Mumbai), and International Geographical Union (IGU-India)

10-11 September 2020

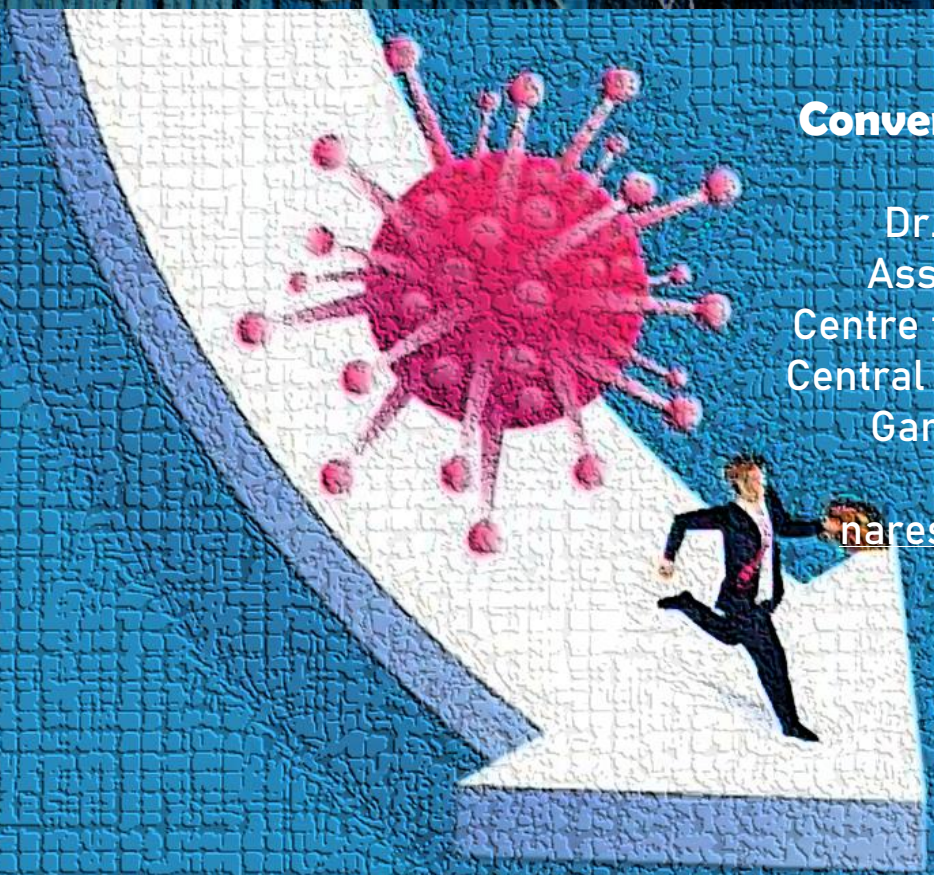


Image Source: Google Image

Convener & Coordinator

Dr. Naresh Kumar
Assistant Professor
Centre for Diaspora Studies
Central University of Gujarat
Gandhinagar (India)
Email:
nareshcug@gmail.com

CENTRE FOR DIASPORA STUDIES
CENTRAL UNIVERSITY OF GUJARAT, GANDHINAGAR (INDIA)

Contents

2ND INTERNATIONAL WEBINAR
POSITIONING MIGRATION STUDIES TO UNDERSTAND THE SHORT AND LONG-TERM IMPACTS OF THE COVID-19 PANDEMIC

organized by

Centre for Diaspora Studies (Independent Centre)/CUG

in collaboration with

Department of History, Banaras Hindu University (BHU)

Centre for Studies of Regional Development, Jawahar Lal Nehru University (CSRD-JNU)

International Institute of Population Sciences (IIPS-MUMBAI)

International Geographical Union (IGU-India)

Today, the world is facing an unprecedented economic crisis induced by COVID-19 pandemic. It is evident from the immediate lockdowns, ban on international and national travels, efforts to improve health infrastructure, practice of physical or social distancing etc. by the countries across the world to curtail the effects of the pandemic and thereafter the unlocks in different phases to restart the economic activities slowly. It could be a deep and widespread issue if viewed through the lens of migration.

As per the estimated numbers, Indian international migrants or diaspora is constituted more than 31.2 million (MEA, 2017) across the world. It is mainly constituted as Persons of Indian Origin (PIOs) & Non-resident Indians (NRIs). These migrants' groups are geographically spread in more than 206 countries. Moreover, recent estimation made by the UN-DESA reports (2019) says that India has the largest diaspora or international migrants (17.5 million or 6.4 percent of the total global migrants' population) living abroad followed by Mexico, and China. On the other side, India has also large numbers of circular or seasonal or temporary internal migrants which constitute more than 10 million population. Out of the total population, 37 percent (Census of India, 2011) of the total population belong to the internal migrants which have many folds higher than the international migrants. The larger proportion of them belonged to an unskilled or semi-skilled population who are mainly engaged in the various urban informal activities in cities like

Mumbai, Delhi, Ahmedabad, Bangalore, Surat, etc. It is clear from the works of various scholars that migrants, both internal and international, have done positively a lot in destinations and places of origin in India as well as abroad.

Almost all the countries of the world (developed, developing and under developing countries) have been severely affected by the Coronavirus. The impacts of COVID-19 pandemic have much larger on the world economy and almost all the countries have a significant increase in the share of GDP to save the life & livelihood of their citizens. The Government of India has taken various steps to mitigate the difficulties emerged with COVID-19 pandemic and to assure the safety & security and livelihood of many Indians in general and particular to migrants living in India and abroad, such as Vande Bharat Mission (MEA,GoI) & Aatma Nirbhar Bharat or Self-reliant India.

The different types of migrant groups within the country and across the globe have been affected by this unforeseen worldwide pandemic and impact could be seen easily as closing the borders, declining flow of remittances, mass reverse migration, burden on health facility, closed industries & services and so on. Therefore, different migrants groups have been disproportionately affected by the COVID-19 Pandemic within national & international borders. It has many short and long-term impacts on world migrants' population and on India too because of larger number of migrants across different geographical spaces. The short- & long-term impacts of COVID-19 pandemic on different migrant groups would be varying across the countries. Keeping in view the issues of migration, policy measures and administrative framework have been initiated by the countries across the world. If this pandemic remains to continue and there is no clear-cut sign of the developing vaccine, the situation will become more uncertain.

In this above background, this International Webinar with the help of different academic panelists drawn from various reputed national & international migration/diaspora studies would share their academic expertise, existing information, causes, associated challenges, prospects and will explore the possible future strategies, plans, policy recommendations to provide safe, orderly & regular migration.

Session Sub-theme of Webinar:

- Migration & Pandemics: historical and current scenario
- The impact of COVID-19 Pandemics on global Migration, Remittances and Economy
- Brain Drain/Brian Gain and Reverse Migration during and Post COVID-19 pandemics

- Migration, urbanization, and marginalized groups during and post COVID-19: A way forward
- Migration & Diaspora Management during COVID-19: Best Practices
- Migration Policies, Sustainable Development Goals (SDGs) and Managing the future Human Mobility
- Contribution of Diasporas communities during COVID-19 pandemics at origins and destinations

❖ Advisory Committee Members:

1) Prof. Rama Shanker Dubey, Hon'ble Vice-Chancellor, Central University of Gujarat, Gandhinagar, India

2) Prof. Atanu Bhattacharya, Professor & Dean Centre for English Studies, SLL&CS, CUG

3) Dr. Arun Vishwanathan, Associate Professor & Chairperson, Centre for Security Studies, School of National Security Studies, CUG

4) Dr. Jayendrakumar N. Amin, Associate Professor- School of Education, CUG

5) Dr. Kunal Sinha, Assistant Professor: Centre for Studies in Science Technology and Innovation Policy, CUG

❖ Organizing Committee Members:

1) Dr. Atanu Mohapatra, Associate Professor & Chairperson, CDS, CUG
2) Dr. Naresh Kumar, Assistant Professor & Convenor & Coordinator, CDS, CUG
3) Dr. Siba Mohanty, Assistant Professor, CDS, CUG
4) Dr. Rajneesh Kumar Gupta, Assistant Professor, CDS, CUG
5) Dr. Shailendra Kumar, Assistant Professor, CDS, CUG
6) Mr. Sajaudeen Chapparban, Assistant Professor CDS, CUG

❖ External Advisory Members:

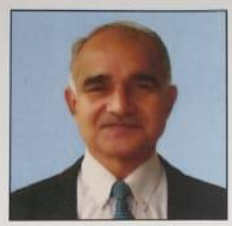
1) Prof. R.B. Singh, IGU, General Secretary & Prof. Dept of Geography, Delhi School of Economics (University of Delhi)
2) Prof. K.S. James, Senior Professor & Director, IIPS-Mumbai
3) Prof. Milap Punia, Chairperson, CSRD, JNU, New Delhi
4) Prof. Bhaswati Das, CSRD, SSS, JNU, New Delhi

5) Prof. Anuradha Banerjee, CSRD, SSS, JNU, New Delhi
6) Prof. Kesav Mishara, HoD. Dept. of History, SSS, BHU,India
7) Prof. Ghan Shyam Professor, Dept. of History, SSS, BHU,India
8) Prof. R.B. Bhagat, Dept of Migration & Urban Studies, IIPS-Mumbai
9) Prof. K.C.Das, Dept of Migration & Urban Studies, IIPS-Mumbai

Message from Honorable Vice-Chancellor

गुजरात केन्द्रीय विश्वविद्यालय
(भारत की संसद के अधिनियम सं. 25, 2009 के अंतर्गत स्थापित)
CENTRAL UNIVERSITY OF GUJARAT
(Established by an Act of Parliament of India, No 25 of 2009)
Prof. Rama Shanker Dubey
Vice Chancellor

Date: September 10, 2020



I am glad to note that Centre for Diaspora Studies, Central University of Gujarat, is organizing the 2nd International Webinar on **"Positioning Migration Studies to Understand the Short and Long-Term Impact of the COVID-19 Pandemic"** in collaboration with Banaras Hindu University (BHU), Jawaharlal Nehru University (CSRD-JNU), International Institute for Population Studies (IIPS-Mumbai), and International Geographical Union (IGU-India) on 10-11 September 2020. **I congratulate the Centre and the Convener & Coordinator Dr. Naresh Kumar** for addressing such an important and relevant topic in this crucial period of COVID-19 pandemic.

COVID-19 pandemic has affected the economy of various countries across world. This economic crisis has initiated a wide scale reverse migration which has posed the question of livelihood before many people. Unlocks in various phases to restart the economic activities have again posed the possibility of a wide scale migration. The governments have taken various steps to cope up with the situations created by COVID-19 pandemic. The effect of this unforeseen worldwide crisis on different migrants groups vary across the countries. Therefore, it is significant to look at the short- and long-term impacts of COVID-19 pandemic through the lens of migration.

I must acknowledge that this webinar is first of its kind during the crisis period where five prestigious universities/institutions of India are collaborating for a thoughtful discussion and deliberation on a topic of current relevance. I appreciate the kind gesture of these institutions for their collaboration. I am happy to know that around four thousand distinguished professors, scholars and students from the leading universities and institutions in India and abroad have shown their interest in this webinar by registering themselves. It is great pride of the CUG that The Head of International Organization for Migration (IOM), UN (Division of Migration), Expert from the Word Bank, UNICEF and other prestigious institution abroad will also be addressing this webinar. This international webinar will surely be a platform for the dialogue and deliberation on short and long term impact of COVID-19 from migration point of view which will open up a new space for the field of migration and provide insights for the policy makers and civil society organizations in India and abroad. I convey my warm greetings and best wishes to the organizers and the Convener Dr. Naresh Kumar for thoughtfully organizing this international webinar and the participants for showing interest in this knowledge enriching learning process.

10.9.2020
Rama Shanker Dubey

Sector-29, Gandhinagar- 382030, Gujarat, Phone No. 079-23977402, Fax-079-23260076
Email: vc@cug.ac.in Website: www.cug.ac.in
Former Vice Chancellor: Tilka Manjhi Bhagalpur University (Bihar) and
Guru Ghasidas University, Bilaspur (Chhattisgarh)

Message from Registrar

गुजरात केन्द्रीय विश्वविद्यालय
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CENTRAL UNIVERSITY OF GUJARAT
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Prof. Alok Kumar Gupta
Registrar (Offg.)

By Speed Post/Regd./Post/By Hand

Date: 08/09/2020

Message form Prof. Alok Gupta

We are very glad to note that Centre for Diaspora Studies, Central University of Gujarat, is organizing the 2nd International Webinar on "**Positioning Migration Studies to Understand the Short and Long-Term Impact of the COVID-19 Pandemic**" in collaboration with very renowned & prestigious academic institution(s) Banaras Hindu University (BHU), Jawaharlal Nehru University (CSRD-JNU), International Institute for Population Studies (IIPS-Mumbai), and International Geographical Union (IGU-India) on 10-11 September 2020. **I congratulate the Centre and the convener & coordinator Dr. Naresh Kumar** for addressing such an important and relevant topic in this crucial period of COVID-19 pandemic.

Nationwide lockdown amidst the Covid-19 pandemic has dislocated its migrant population. The graph of Covid-19 despite of lockdown is gradually increasing. So, it is very essential to understand the short- and long-term impacts of Covid-19 in context of migration studies. As India has started to give relaxation in lockdown restrictions, it is extremely important to address the issues pertaining to migration studies addressing the different migrants groups, exploring the social policy measures and employment opportunities that can safeguard the rights of informal and migrants workers from hunger and extreme poverty.

Today thousands of migrants are facing the plight and were forced to walk hundreds of miles back to their hometowns. Lack of job and money and shutdown of public transportation at initial stage put a setback to migrants. The graph of Covid-19 despite of lockdown is gradually increasing. So, it is very essential to understand the short- and long-term impacts of Covid-19 in context of migration studies. As India has started to give relaxation in lockdown restrictions, it is extremely important to address the issues pertaining to migration studies addressing the vulnerable groups, exploring the social policy measures and employment opportunities that can safeguard the rights of informal and migrants workers from hunger and extreme poverty.

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With Best Wishes

Alok Gupta

Prof. Alok Gupta

(Registrar(officiating)

सेक्टर-29, गांधीनगर-382030, फोन नं - 07923977407, फेक्स-07923260076
Sector-29, Gandhinagar, Phone No. 07923977407, Fax-07923260076
Email: registrar@cug.ac.in, website: www.cug.ac.in

Message from Chairperson (CDS)

गुजरात केन्द्रीय विश्वविद्यालय
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CENTRAL UNIVERSITY OF GUJARAT
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Dr. Atanu Mohapatra
Chairperson
Centre for Diaspora Studies (Independent Centre)

Dear Participants,

Greetings from Centre for Diaspora Studies (Independent Centre), Central University of Gujarat!

It is my immense pleasure to welcome you all to this Two-day International webinar on "Positioning Migration Studies to Understand the Short and Long-Term Impacts of the COVID-19 Pandemic". I am happy to note that the international webinar has received such a huge response in India and several other countries of the world.

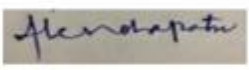
The whole world is passing through a terrible period of suffering, uncertainty and anxiety due to the Covid-19 pandemic. This dreadful and appalling pandemic has in fact brought havoc to every sphere and section of human life and society. Internal migrants, immigrants, diaspora etc. have seriously been affected by the pandemic. Like, any other country India has also been very badly affected by the menace. But Indian government's timely interventions and very proactive actions have prevented the magnitude of devastations that the pandemic could have brought in India considering its huge population and not so developed health infrastructure. Government of India (GoI) arranged free special Shramik trains and buses to take the stranded migrant labourers, students and other migrants to their respective home villages/towns, and directed the state governments to take care of the migrants in their respective states. To address the economic and employment issues of the returnee migrants the Government of India has invested in the development of rural infrastructure and Mahatma Gandhi National Rural Employment scheme. GoI is also providing free ration to poor people. In this period of crisis, GoI has not forgotten its overseas population. Through the Vande Bharat Mission lakhs of overseas Indians have been evacuated from different corners of the globe. The Indian embassies in their respective countries are playing very proactive role in helping the stranded overseas Indians.

Undoubtedly, despite the best initiatives of GoI, civil society organisations, self-help groups etc. the Covid-19 pandemic has very badly impacted on the life, lively-hood, social relationships, and psychological state of mind of the migrants. Everybody is also apprehensive that when the pandemic will end, and till how long its impact will linger on. So, the Migration Studies is posed with the challenge of effectively addressing these serious issues. The two-day international webinar will provide a platform for the academicians, researchers, policy planners and civil society organisations from India and abroad to debate and deliberate in bringing out critical insights and frameworks to address these challenging issues and concerns.

I am grateful to our Hon'ble Vice Chancellor Prof. Rama Shanker Dubey for his constant academic support, encouragement and guidance in organising the webinar and promoting diaspora studies.

I express our thankfulness to Banaras Hindu University (BHU), Varanasi, Jawaharlal Nehru University (JNU), New Delhi, International Institute for Population Sciences (IIPS), Mumbai and International Geographical Union (IGU), India for collaborating with us in organising the webinar on such a significant topic.

I wish all the success to the webinar and wish all the participants a very fruitful academic deliberation and discussion on this challenging issue.



Dr. Atanu Mohapatra

Chairperson, Centre for Diaspora Studies

काशी हिन्दू विश्वविद्यालय

BANARAS HINDU UNIVERSITY

ESTABLISHED BY PARLIAMENT BY NOTIFICATION NO. 225 OF 1916

DEPARTMENT OF HISTORY
FACULTY OF SOCIAL SCIENCE

Message of Head of the Department, History, FSS, BHU

I am happy to know that Centre for Diaspora Studies, Central University of Gujarat, is organizing the 2nd International Webinar on **"Positioning Migration Studies to Understand the Short and Long-Term Impact of the COVID-19 Pandemic"** in collaboration with Banaras Hindu University (BHU), Jawaharlal Nehru University (CSRD-JNU), International Institute for Population Studies (IIPS-Mumbai), and International Geographical Union (IGU-India) on 10-11 September 2020. **I take this opportunity to congratulate the Centre and the convener & coordinator Dr. Naresh Kumar** for addressing such an important and relevant topic in this crucial period of COVID-19 pandemic.

COVID-19 pandemic has affected the world order as well as economy of various countries across globe. Obviously it has initiated a large scale reverse migration which has posed the question of livelihood before many people.

Our department is happy to collaborate in this academic venture.I am sure the deliberations will be rewarding experience.

Prof. Keshav Mishra

BHU
crystal of knowledge

स्वच्छ भारत
एक कदम स्वच्छता की ओर

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जवाहरलाल नेहरू विश्वविद्यालय
JAWAHARLAL NEHRU UNIVERSITY
नई दिल्ली – ११००६७
NEW DELHI - 110067

प्रोफेसर म. जगदीश कुमार
कुलपति
Professor M. Jagadesh Kumar
Vice-Chancellor

Message

I am happy that the Centre for the Study of Regional Development, School of Social Sciences, Jawaharlal Nehru University has collaborated with the Centre for Diaspora Studies, Central University of Gujarat; in organizing the 2nd International Webinar on **"Positioning Migration Studies to Understand the Short and Long-Term Impact of the COVID-19 Pandemic"** on 10-11 September 2020. The other collaborating institutions are Banaras Hindu University (BHU), International Institute for Population Studies (IIPS-Mumbai), and International Geographical Union (IGU-India). I compliment Prof. Anuradha Banerjee and Dr. Bhaswati Das of CSRD, JNU for the collaboration in addressing such an important and relevant topic in this crucial period of COVID-19 pandemic.

COVID-19 pandemic is expected to leave a deep scar in our socio-economic and cultural fabric, the recovery from which would be an arduous uphill task. This large-scale reversal is pushing us to think wisely about the unprecedented scale of mobility in modern times. This economic crisis, loss of urban livelihood, wide scale reverse migration and overwhelming encroachment of information and communication technology are leaving enough scope for reshaping the theories and practices related to human migration.

I must acknowledge that five prestigious universities/institutions of India are collaborating for an insightful discussion and deliberation on an innovative and interdisciplinary topic of current relevance. I am glad to know that around four thousand distinguished professors, scholars and students from the leading universities and institutions in India and abroad have shown their interest in this webinar by registering themselves. This international webinar will surely open up a new space for academia working in the field of migration and allied areas and would certainly provide visions for the policy makers and civil society organizations in India and abroad.

I convey my warm greetings and best wishes to the organizers for a successful webinar.

M Jagadesh Kumar

Message Prof. R.B. Bhagat

We are very happy to collaborate in organising a two day webinar on "Positioning Migration Studies to Understand Short-term and Long-term Impact of COVID-19 Pandemic' on 10th-11 September 2020 with Centre for Diaspora Studies, Central University, Gujarat; CSRD, JNU; Department of History, BHU and International Geographical Union. The leading experts from India and abroad are invited to deliberate on the emerging challenges of migration studies in wake of COVID-19 pandemic.

I congratulate Dr Naresh Kumar Assistant Professor, CDS for meticulously preparing the programme and Centre for Diaspora Studies, Central University, Gujarat for this grand initiative. I am sure this webinar will provide a grand platform of sharing and learning about migration and diaspora studies. I wish the programme a grand success.

Prof R.B. Bhagat

Professor and Head
Department of Migration and Urban Studies
International Institute for Population Sciences, Mumbai

INTERNATIONAL GEOGRAPHICAL UNION (IGU)

Prof. R. B. Singh
Secretary General and Treasurer-IGU and Member- International Science Council-Scientific Committee on Urban Health Wellbeing

Professor and Head Retd.-Department of Geography
Delhi School of Economics,
University of Delhi, Delhi-110007

Tel. (Res.) 011- 27553850

Mob.: 09971950226

E-mail: rbsgeo@hotmail.com

September 4, 2020

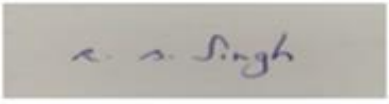
Message

I am glad to know that Centre for Diaspora Studies, Central University of Gujarat, is organizing the 2nd International Webinar on **"Positioning Migration Studies to Understand the Short and Long-Term Impact of the COVID-19 Pandemic"** in collaboration with Banaras Hindu University (BHU), Jawaharlal Nehru University (CSRD-JNU), International Institute for Population Studies (IIPS-Mumbai), and International Geographical Union (IGU-India) on 10-11 September 2020. **I congratulate the** Hon'ble Vice Chancellor **Prof. Rama Shankar Dubey ji, Centre and the convener & coordinator Dr. Naresh Kumar** for addressing such an important and relevant topic in this crucial period of COVID-19 pandemic.

COVID-19 pandemic has affected the economy of various countries across world. This economic crisis has initiated a wide scale reverse migration which has posed the question of livelihood before many people. Unlocks in various phases to restart the economic activities have again posed the possibility of a wide scale migration. The governments have taken various steps to cope up with the situations created by COVID-19 pandemic. The effect of this unforeseen worldwide crisis on different migrants groups vary across the countries. Therefore, it is significant to look at the short- and long-term impacts of COVID-19 pandemic through the lens of migration.

I should acknowledge that this webinar is first of its kind during the crisis period where five prestigious universities/institutions of India are collaborating for a thoughtful discussion and deliberation on a topic of current relevance. I appreciate the kind gesture of these institutions for their collaboration. I am happy to know that around four thousand distinguished professors, scholars and students from the leading universities and institutions in India and abroad have shown their interest in this webinar by registering themselves. It is great pride of the CUG that The Head of International Organization for Migration (IOM), UN (Division of Migration), Expert from the Word Bank, UNICEF and other prestigious institution abroad will also be addressing this webinar. This international webinar will surely be a platform for the dialogue and deliberation on short and long term impact of COVID-19 from migration point of view which will open up a new space for the field of migration and provide insights for the policy makers and civil society organizations in India and abroad. I convey my warm greetings and best wishes to the organizers and the **convener Dr. Naresh Kumar** for thoughtfully organizing this international webinar and the participants for showing interest in this knowledge enriching learning process.

On behalf of the IGU, I welcome the participants. I wish the **International Webinar** a great success.



R. B. Singh

Member-Vision India 2035, NITI Aayog, Government of India.

Message from Convener & Co-coordinator of the Webinar

Message from Dr. Naresh Kumar (Convenor & Coordinator of the International Webinar)

Date: 08/09/2020

Dear Participants and invited Guests,
Hope you all doing well during COVID-19!
Greeting from Centre for Diaspora Studies (independent Centre), CUG!
It gives me proud privilege to warmly welcome you all to this 2nd International Webinar on "Positioning Migration Studies to Understand the Short and Long-Term Impacts of the COVID-19 Pandemic" organized by the Centre for Diaspora Studies, the Central University of Gujarat in collaboration with four eminent institutions namely the Department of History (BHU), CSRD-JNU, IIPS-Mumbai, and IGU-India. We are delighted to share that this webinar has received overwhelming response from India and abroad. The webinar took place through the online platform of Microsoft Teams and live streaming on CUG Facebook Live. This garnered much interest and the Centre received around 4000 registered online.
Today, world is facing an unprecedented crisis induced by the COVID-19 pandemic and how these crises leave their short- and long-term impact on various spheres of society particularly Migrants & Diaspora. India has the largest diaspora or international migrants (17.5 million) are living abroad. On the other side, India has significant numbers of internal migrants, large numbers of circular/seasonal/temporary migrants which constituted near about 10 million population. It has evident from the various scholarly or academics works that migrants (Internal/International/Diaspora) have been significantly contributed to the destinations & origins places of India.
In this above background, this International webinar with the help of different academic panellists drawn from various reputed national & international migration/diaspora institutes, organizations, and universities shared their academic expertise, existing information, causes, associated challenges, prospects and explored the possible future strategies, plans, policy recommendations to provide safe, orderly & regular migration.
I am very grateful to our Hon'ble Vice- Chancellor Prof. Rama Sankar Dubey for his constant encouragement, support, motivate and keen academic support in the promotion of Interdisciplinary Research Diaspora at our university.
I am also thankful to all the collaborating institution/Universities (BHU, CSRD-JNU, IIPS-Mumbai, IGU-India) for their constant academic support and guidance.
I believe that of the quality of resources persons from different academic bodies will be beneficial for many participants and meet with the objectives and themes this international webinar.

Naresh Kumar

Dr. Naresh Kumar
(Assistant Professor, Convenor & Coordinator, CDS/CUG)

Brief Profile of the Distinguished Guests and Speakers

Prof. Michael E Meadows is currently president of IGU. He is Prof. Dept. of Environmental & Geographical Science, University of Cape Town, South Africa. He is a Physical Geographer Originally hailing from Liverpool, UK he obtained his BSc Honours at the University of Sussex and his PhD from University of Cambridge.

Prof. Atanu Mohapatra is an Associate Professor and Chairperson in Centre for Diaspora Studies (Independent Centre), Central University of Gujarat, Gandhinagar. He Worked as Assistant Professor & Head of Department, Faculty of Media Studies, Manav Rachna International University, Faridabad (Aug 2008 - May 2013) and in Dept. of Extension & Communication, Faculty of Family & Community Sciences, M S University of Baroda, Gov. of Gujarat (May 2013 - January 2017). Areas of Interest/Specialization: Diaspora Studies, Media Studies, International Relations, Development Studies, Research Methodology.

Prof. Kesav Mishra **is** currently Head of Department in the Dept. of history, School of Social Sciences, BHU, Uttar Pradesh. He is a member of the Indian History Congress and IAAPS. His areas of specialization include Contemporary and Modern Indian History and International Relations.

Prof. Milap Punia is the Chairperson at the Centre for the Study of Regional Development, School of Social Sciences, Jawaharlal Nehru University. He has worked as scientist in ISRO and adjunct

faculty to Centre for Space Science and technology education in Asia and the pacific (Affiliated to UN). He has awarded C.V. Raman fellowship. He is member of various committees constituted by the Govt. of India (ICSSR, UGC, DST). His areas of interest are Geographic information science and spatial analysis; with applications in Regional Development, urban studies, spatial planning, disaster research, sustainability, land use change and climate change ; to bridge the research gap between social sciences and GIS to strengthen social science research.

Prof. K.S James is the Director and Senior Professor at the International Institute for Population Sciences, Mumbai. His areas of interest include formal demography including measurement, population and development, mortality, health and ageing. He has received numerous achievements and awards. Most recently he was the visiting fellow at Population Research Centre, School of Spatial Sciences, University of Groningen, The Netherlands and at Centre for Research on Ageing, University of Southampton, UK, May 7-17, 2014. He has published various research article and His published works include Caring for Our Elders: Early Responses- India Ageing Report 2017, United National Population Fund (UNFPA), New Delhi. And an edited work *Population Ageing in India*, Cambridge University Press, New Delhi, 2014 and many others.

Prof. Aswini Kumar is professor Population Research Centre (PRC) set-up by the Ministry of Health and Family Welfare, Government of India at the Centre for Research in Rural and Industrial Development (CRRID), Chandigarh (India). He has completed his M. A. (Economics) Utkal University (UU), Odisha. M. Phil. From CSRD-JNU, MSC from, London School of Economics and Political Science (LSE), London, United Kingdom. & Ph. D, International Institute for Population Sciences (IIPS), Mumbai, India. Expertise Areas: Population health and Migration. He is visiting professor on Population, East-West Centre, University of Hawaii (U.S.A.) he has

visiting Fellow in the Maison des Sciences de l' Homme (MSH), Paris, France. *Books: Migration, Mobility and Multiple Affiliations: Punjabis in a Transnational World (ed.), Cambridge University Press, Delhi, June 2015, with Rajan, S.I. and Varghese, V.J.*

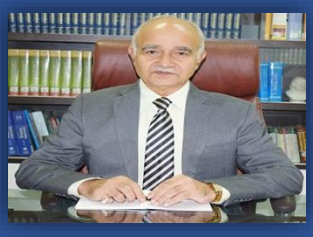
Prof. Binod Khadria has recently retired after teaching economics of education and international migration at Jawaharlal Nehru University's School of Social Sciences for over thirty years. More than thirty students have earned their PhD degrees under his guidance. He was himself the recipient of two prestigious fellowships, the Times Fellowship for post-doctoral research of national importance to India, and the Fulbright Senior post-doctoral grant in the US; and was the Director of International Migration and Diaspora Studies (IMDS) Project at JNU. He has also taught at universities in Australia, Japan, Singapore, the Netherlands, Geneva, France, UK, Ireland, and Boston and Pennsylvania in the US. In addition, in 2017-18, he held the prestigious inaugural Indian Council for Cultural Relations Chair Professor in Contemporary Indian Studies at Rutgers, the State University of New Jersey, USA. A renowned author and researcher in the field of international migration and diaspora studies, he is on the editorial boards of a number of international journals and encyclopedias, and is a member of global organisations like the International Steering Committee of the Metropolis International, the IUSSP and so on. He has worked closely with Dr. Marie McAuliffe, today's Valedictory Speaker, and the Chief Editor of the IOM publication, and been her co-editor for the World Migration Report 2020.

Sonia Plaza- Sonia Plaza madam is a Senior Economist in the Finance, Competitiveness, and Innovation Global Practice of the World Bank. **She is also the co-chair of the Diaspora Thematic working group of KNOMAD (Global Knowledge Partnership on Migration and Development).** She wrote chapter 5 of the book, **"Africa's Silk Road: China and India's New Economic Frontier",** which covers trade facilitation, technology, and skills transfer, and regional trade agreements. She advises many universities on the transfer of skills and tapping into their diasporas.

Sonia attended the University of Lima and earned a degree in Economics, after which she joined Chase Manhattan Bank, and was then invited to join the Peruvian Ministry of Trade as a manager responsible for counter trade and debt swap agreements. She also has a dual degree from Yale University and the University of Pennsylvania in International Economics and Development. **She was Professor of Economics (International Economics) at the Peruvian School of Foreign Service and at the University of Lima in Peru, and was adjunct faculty (Microeconomics and Macroeconomics) at The American University in Washington, DC**. Her research interests include international migration, labour mobility, trade, and the future of labour.

Prof. Anuradha Banerjee is currently Prof, in CSRD, School of Social Sciences, JNU New Delhi. She has guided more than Twenty-Six (26) MPhil. /Ph.D. students. She has published thirty six (36) research articles, has contributed twenty five (25) chapters in different edited books and has published four (4) books on "Population Dynamics in Contemporary South Asia: Health, Education and Migration" (Co-editor); "Contemporary Health Issues in India: Challenges and Responses (Editor); "Contemporary Urbanisation in India: Issues and Challenges in the 21st Century". She has worked an EC Member of the National Association of Geographers India (NAGI) and as President of INCA (Indian National Cartographic Association) in 2015. Besides, she has worked as Expert Committee Member UGC-UKIERI Joint Research Programme; Member of the Academic Council of the International Institute of Population Sciences (IIPS), "Nature and Forms of Discrimination Experienced By Dalit Women In Urban Labour Market In Delhi" sponsored by IIDS, New Delhi 2012-2013. She has worked various major and minor research project from the ICSSR, IIDS and other International reputed organisations.

Prof. Rama Shankar Dubey is the current honourable Vice Chancellor of Central University of Gujarat, Gandhinagar. He also served as Vice Chancellor in Tilka Manjhi Bhagalpur University, Bhagalpur, Bihar (2014-2017) and also as Vice-Chancellor in Guru Ghasidas University, Bilaspur, Chhattisgarh



(2008-2009). He served as Professor of Biochemistry at Banaras Hindu University for over 20 years. He has completed 7 major research projects funded by various extramural funding agencies. His research specialization is in Biochemistry with major emphasis on Stress Metabolism in Crop Plants, Bacterial Enterotoxins and Enzyme Technology. Prof. R.S. Dubey is recipient of several national and international awards in Plant Biochemistry and Biotechnology, which include Banaras Hindu University Medal in 1976, ISCA Young Scientist Award in Agricultural Sciences in 1982, Swedish Institute Fellowship in 1989, Japan Society for Promotion of Science Fellowships in 1998, 2005, INSA-German Academy of Science Exchange Programme Nominations in 1997, 2003, 2007; Top-10 Most Cited Author Award by Elsevier Publications for 2003-2008.

Dr. Naresh Kumar is an Assistant Professor & former Chairperson, Centre for Diaspora Studies, Central University of Gujarat, Gandhinagar, India. He has been teaching research in the centre since Sept 2011. He has studied B.A. (H) Geography BRAC, University of Delhi, M.A., M.Phil./Ph.D. from CSRD-JNU, New Delhi. He is member of the various academic administrative committees: Committee for Advanced & Scientific Research (CASR)/CUG, Centre Board of Studies, CUG, Syllabus design Committee (M.A./M.Phil.) in Centre for Diaspora Studies. He has been convenor of the three international conferences/webinar supported by the various national and international agencies like ICSSR, New Delhi, Ministry of External Affairs, Govt. of India, Registrar General & Census Commissioner(RGI) India. He has collaborated five eminent University/institutions (JNU, BHU, IIPS-Mumbai, IGU-India) of India for organising International webinar on **"Positioning Migration Studies to Understand the Short and Long-Term Impacts of the COVID-19 Pandemic"** held on sept 10-11th 2010, organized by the Centre for Diaspora Studies, the Central University of Gujarat. He has published various research and Article in national and international reputed journals. His research interest areas are: Internal and International Migration, Migration and Development, Indian Diaspora, Social-Demography, Population Geography & Studies. Countries visited: South Africa, USA, U.K., Thailand, South Korea. Member of academic bodies: APA, IUSSP, IIPS, Royal Geographical Society (RGB), Indian Society of Labour

Economics (ISLE). NAGI (National Association of Geographers India). He has supervised *M.Phil. supervised (12), and Ph.D. Awarded (2).*

Dr. Marie McAuliffe is the head of the Migration Research Division at IOM headquarters in Geneva and Editor of IOM's flagship World Migration Report. She is an international migration specialist with more than 20 years of experience in migration as a practitioner, program manager, senior official and researcher. Marie has researched, published and edited widely in academic and policy spheres on migration and is on the editorial boards of scientific journals *International Migration and Migration Studies,* and is an Associate Editor of the *Harvard Data Science Review*. She edits IOM's World Migration Report in partnership with leading migration researchers (2018 edition with Prof Martin Ruhs, 2020 edition with Prof Binod Khadria and the forthcoming 2022 edition with Prof Anna Triandafyllidou). Marie is a senior fellow at the Global Migration Centre at the Graduate Institute in Geneva and a Sir Roland Wilson Fellow at the School of Demography at the Australian National University (ANU). She is a member of MIT's Global Technology Review Panel, IUSSP's panel on international migration and curates the World Economic Forum's Migration Transformation Map. Marie has led research, analysis and policy teams in government and previously consulted to IOM, ILO as well as in the private sector, including in South Korea, Russia, Central Asia and Turkey. For three years (2012–2014), Marie directed the $6.5 million Australian irregular migration research program, from which stems an ANU Press book that she edited (with Khalid Koser). In late 2014 Marie was awarded a Sir Roland Wilson scholarship to complete doctoral research at ANU on irregular migration (approved late 2017). She is the 2018 recipient of the Charles Price Prize in demography for outstanding doctoral research in migration studies.

Raymond Kwun-Sun LAU is a lecturer at the History Department, Hong Kong Baptist University. He holds a PhD in Political Science from the University of Queensland, Australia. His research interests include Africa-China relations, International responses to genocide and mass

atrocities, Politics of Hong Kong and China. He is the author of "Africa-China Relations in the Context of Belt and Road Initiative: Realizing African-Chinese Dreams for Common Development?" (Palgrave Macmillan: Cham, 2020) and "Getting Beyond the Somalia Syndrome? Revisiting US Intervention in Liberia 15 Years Later" (Springer: Cham, 2020). His first manuscript, Responding to Mass Atrocities in Africa: Protection First and Justice Later, is expected to be published by Routledge in 2021.

Prof. Ghan Shyam teaches History at Banaras Hindu University (BHU), Varanasi. He earned his MA, M Phil & PhD from Jawaharlal Nehru University (JNU), New Delhi. He joined Banaras Hindu University (BHU), Varanasi, in 1998, is currently a professor in the department of History. Dr.Ghan Shyam had been Fulbright Fellow at New York University twice; in 2005 as a short term fellow to study US Civilization and for the academic session 2016-17 as a visiting scholar to teach and conduct research on the topic "In the Land of Opportunity: A Comparative Study of Indo-Caribbean & Indian Immigrants in New York City since 1965". Dr. Ghan Shyam has presented papers on Diaspora Studies at conferences in the U.S., U.K., Canada and Trinidad & Tobago.

Rajeshwari Chandrasekar is the Chief Field Officer, UNICEF (Maharashtra), India and she also has had experience with UNICEF Kenya and UNICEF Jakarta, Indonesia.

Prof. Binda Paranjape is Professor in Ancient Indian History at Banaras Hindu University, Varanasi, India. Fulbright-Nehru scholar in the year 2014 at George Meson University, USA. Has been teaching at the graduate and postgraduate levels for 32 years. Teaching the students from USA at Varanasi in the study abroad programs. Attended international conferences at Queen's University, Canada, University of Potsdam, Germany, attended a summer school on Gender and peace building in post genocide

scenario at Kigali, Rwanda. Guiding foreign students for independent research in Varanasi under the study abroad program. Guiding research scholars for Ph. D. program of Banaras Hindu University. Has published works in the subjects related to the Ancient Indian linguistic, literary and religious traditions, art and aesthetics, notion of 'Time' in the Buddhist and Brahmanical traditions, and gender related issues. Has been involved in the activities of support to the disabled persons.

Prof. K.C. Das is Professor in the Department of Migration and Urban Studies, IIPS- Mumbai. His areas of interest include Migration and urbanization in developing countries, International migration, Health consequences of migration and urbanization, Mega cities and growth of slums; migration, urbanization and development. He is a member of Eastern Geographical Association and the National Association of Geographers, India. He was a Mellon Foundation Visiting Research Fellow, Office of Population Research, Princeton University, USA, March 1 to June 30, 2005.

Prof. Atanu Bhattacharya is Dean of Centre for English Studies, School of Language, Literature and Culture Studies, Central University of Gujarat, Gandhinagar, India. His areas of interest are English language and culture studies and their interactions with pedagogy. He has published various reputed research articles in national and international reputed journals.

Prof. Manish is the professor and dean at the Centre for International Politics, School of International Studies, Central University of Gujarat. He has earlier (March 2001 - Dec 2005) served as fellow with the prestigious New Delhi-based defence think tank, the Institute for Defence Studies and Analyses, and also as an Officer on Special Duty (Dec 2005 - March 2012) with the Government of India. From 2012 until Oct 2017,

he was Head of the newly set -up Department of the International Relations, Sikkim University. He was also instrumental in setting up Maulana Azad Centre for North East Studies at Sikkim University, with a research focus on India's north- eastern region. The Centre published a magazine, titled Bodhi, under his editorship.

Prof. Mohan Kant Gautam is the Hon'ble President and Chancellor, European University of West and East, The Netherlands. He **received his** M.A. (Lucknow) and D. Lit (Leiden) and has taught at the universities of Lucknow (India), Oslo (Norway) and Leiden (The Netherlands). He is Chairman, Scientific Commission on International Commission on Museums & Cultural Heritage of the International Union of Anthropological Science (IUAES) and Anthropological Union (WAU)Association, Affiliated to UNESCO; President of the International South Asian Association (IISSA); European Representative of the Indian Diaspora Council (IDC), N.Y.; European Member of the Global Origin of the People of Indian Origin (GOPIO); President International Forum on the Hindu Studies (IFHS); President European Hindi Committee (EHC), etc. Awards: European and International Awards, Names mentioned in International Directories of World famous scholars, like World's Who's Who (Chicago), etc. The Hindi World Hindi Samman in New York, International Bhojpuri Samman, Mauritius, many Indian recognitions: Specialisation: Social, Cultural and Structural Anthropology, South Asian Tribal Studies, Sociology, Socio-Linguistics, Ethnicity, Indian Diaspora, Museology, Cultural Studies, Oral Cultural Studies, Religions and value systems, Languages and Literature, etc. Lectured in European, West American, Caribbean, South American, African and Asian Universities.

Professor S. Irudaya Rajan is Professor at the Centre for Development Studies (CDS), Kerala. He is Chair of the KNOMAD Thematic group on internal migration and urbanization, managed by the World Bank. With more than three decades of research experience at the CDS, he has coordinated eight major migration surveys in Kerala since 1998 (with Professor K. C. Zachariah);

conducted migration surveys in Goa (2008), Punjab (2011) and Tamil Nadu (2015); also provided technical support to the Gujarat Migration Survey (2010). He has published extensively in national and international journals on social, economic, demographic, psychological and political implications on migration. He is editor of the annual series 'India Migration Report' (Routledge) since 2010 and the editor-in-chief of the Journal, *Migration and Development*, (Taylor and Francis), since 2012. He works closely with the Ministry of External Affairs, Government of India and Department of Non-Resident Keralite Affairs, Government of Kerala.

Prof. Anand Singh is a professor of anthropology in the University of Kwazulu-Natal, South Africa. His research interests include Migration, Indian diaspora, Anthropology of development, and sustainable development. His works include *Indians in post-apartheid South Africa* 2005: Concept Publishing Company, New Delhi, India.

H.E Arun Kumar Sahu is the High Commissioner of India to Trinidad and Tobago. He joined the Indian Foreign Service in 1996. He assumed charge in High Commission of India, Port of Spain on 3rd September 2019. Previously he was the Deputy High Commissioner of India to Canada based in Ottawa. Earlier to that, in New Delhi he has served as Joint Secretary (Director General) heading the division of Development Partnership Administration, Deputy Director General, Indian Council for Cultural Relations (ICCR), Director (North-Nepal and Bhutan) and Under Secretary (China). He served as a Board Member on the US-India Educational Foundation from 2014 to 2016 and on the Canada-India Centre for Excellence in Science, Technology Trade and Policy at Carleton University, Ottawa, Canada from 2016 to 2019.He holds a Master's degree in War in Modern World (WiMW) from King's College London and a Master's degree in Linguistics from Jawaharlal Nehru University, New Delhi.He speaks Odia, English, Hindi, Chinese and writes essays, fictions and columns in both Odia and English in his spare time.

Shri Bishan Dass Bains was the former mayor of Wolverhampton, UK**.** He has published an account of his experiences and struggles in his book Pride v/s Prejudice. He has served on the council for 24 years and held a number of portfolios as such cabinet member, chair, vice chair of a number of standing committees and the Mayor for the city of Wolverhampton for the year 1986/87. It was a matter of pride for the Asians and ethnic minority communities here in UK as I was the first Asian born Mayor not only for the city but also the first in the whole country. I attended 2300 functions/ meetings during my year of Mayorality and had invitations from all over the country.

Dr Ishmeet Kaur Chaudhry (Educationist, Author and Poet) teaches at the Centre for English Studies at Central University of Gujarat, Gandhinagar. She was recognised as an Inspired Teacher for The President of India's In-residence Program at Rashtrapati Bhawan, New Delhi in June 2015. She works on areas related to literature of margins, social movements and studies of violence and trauma. Her recent work has been on violence studies engaging with discourses on women and violence and 1984 anti-Sikh carnage in Delhi. Her most recent book is *Black November: Writings on Anti-Sikh Massacres of 1984 and the Aftermath (Speaking Tiger; 2019).*

Dr. Shailendra Kumar is an Assistant professor in CDS at CUG. He did his MA, M.Phil. and PhD from Centre for the Study of Social Systems, School of Social Sciences, Jawahar Lal Nehru University New Delhi. His areas of Interest are sociological, anthropological, and Diasporic theories along with rich field experience. His other areas of interests are cultural studies, education, migration, media, literature, and cinema.

Dr. Sajaudeen Chapparban is an Assistant Professor, in the Centre for Diaspora Studies, Central University of Gujarat. He completed his Masters and M.Phil. in English from Maulana Azad National Urdu University, Hyderabad and Presently pursuing his Ph.D. from University of Hyderabad, Hyderabad, India. His Areas of Specialization are Contemporary English Literature/s, Literary Criticism and Theory, Diaspora Studies and Post 9/11 Studies, Muslim Literature, Minority studies. He has published various research and Article in national and international reputed journals.

Prof. Anisur Rehman is a Professor and Director, UGC-HRDC, Jamia Millia Islamia, New Delhi. Prof Rehman has worked at the Institute of Applied Manpower Research, Planning Commission, and Government of India. His area of interest includes Migration and Diaspora, Gulf Social Demography, Issues of Higher Education and Minorities. He has published 4 books and over 2 dozen Research Papers and has contributed 12 chapters in edited books. He has also visited France under Indo- French Social Scientist Exchange Programme thrice for research in 2010, 2013, and 2015. He has delivered over 100 invited talks at different institutions of higher learning in India and abroad. He is also a member of several academic bodies and editorial boards.

Prof. Gerise Herndon is Professor of English in the Department of International Studies and also English at Nebraska Wesleyan University, USA. She is also the Director of International Studies Program. Dr. Herndon teaches courses in literature from French speaking countries around the world, literary theory, African American literature, film and literature, and gender studies. A former Fulbright scholar to India, she now works with students who apply for prestige scholarships to study and work abroad. An editor of a collection of essays on the Caribbean literary and cultural figure, Maryse Condé, Dr. Herndon often involves students as "colleague co-researchers". Her

work has taken her to Africa on several occasions where her most recent focus has been on Rwanda. She also teaches for the Global Studies Program.

Dr. Reshmi R. is an Assistant Professor at the Department of Migration and Urban Studies, International Institute for Population Sciences- Mumbai. Her areas of interest include Internal and International migration, Women and migration, Reproductive health, Child health, Nutrition, Gender issues, Large Scale Survey Research. Education From: Ph.D. Population Studies, International Institute for Population Sciences (IIPS), Mumbai (2009); M.Phil. Population Studies, International Institute for Population Sciences (IIPS), Mumbai (2004); M.Sc. Demography, Dept. of Demography, University of Kerala, Thiruvananthapuram, Kerala. (2001); Certificate course on "Research Methods in Labour Economics" at V.V. Giri National Labour Institute (under the Ministry of Labour), NOIDA, Uttar Pradesh (2004). Countries visited: United Kingdom, United States of America, France.

Dr. Shantesh Kumar Singh is working as an Associate Professor in the Department of Political Science, Central University of Haryana. He is also an Adjunct Fellow and Associate Editor of International Association for Counterterrorism and Security Professionals-South East Asia, Kuala Lumpur, Malaysia (IACSP-SEA). He did post-doctorate from United Nations University-International Institute for Global Health (UNU-IIGH), Kuala Lumpur, Malaysia. As a visiting fellow, he has been at the School of Advanced International Affairs, Johns Hopkins University, Washington DC, USA for a short period. He has been a guest faculty in the Centre for US Studies at the School of International Studies, JNU, New Delhi. Dr. Singh obtained his research degrees M.Phil./Ph.D. from the US Studies, School of International Studies, Jawaharlal Nehru University, New Delhi. Research Interest areas are: International Relations, Foreign Policy, Diplomacy, Geopolitics, Nonconventional security, human security, health security, global health Policy, governance and diplomacy.

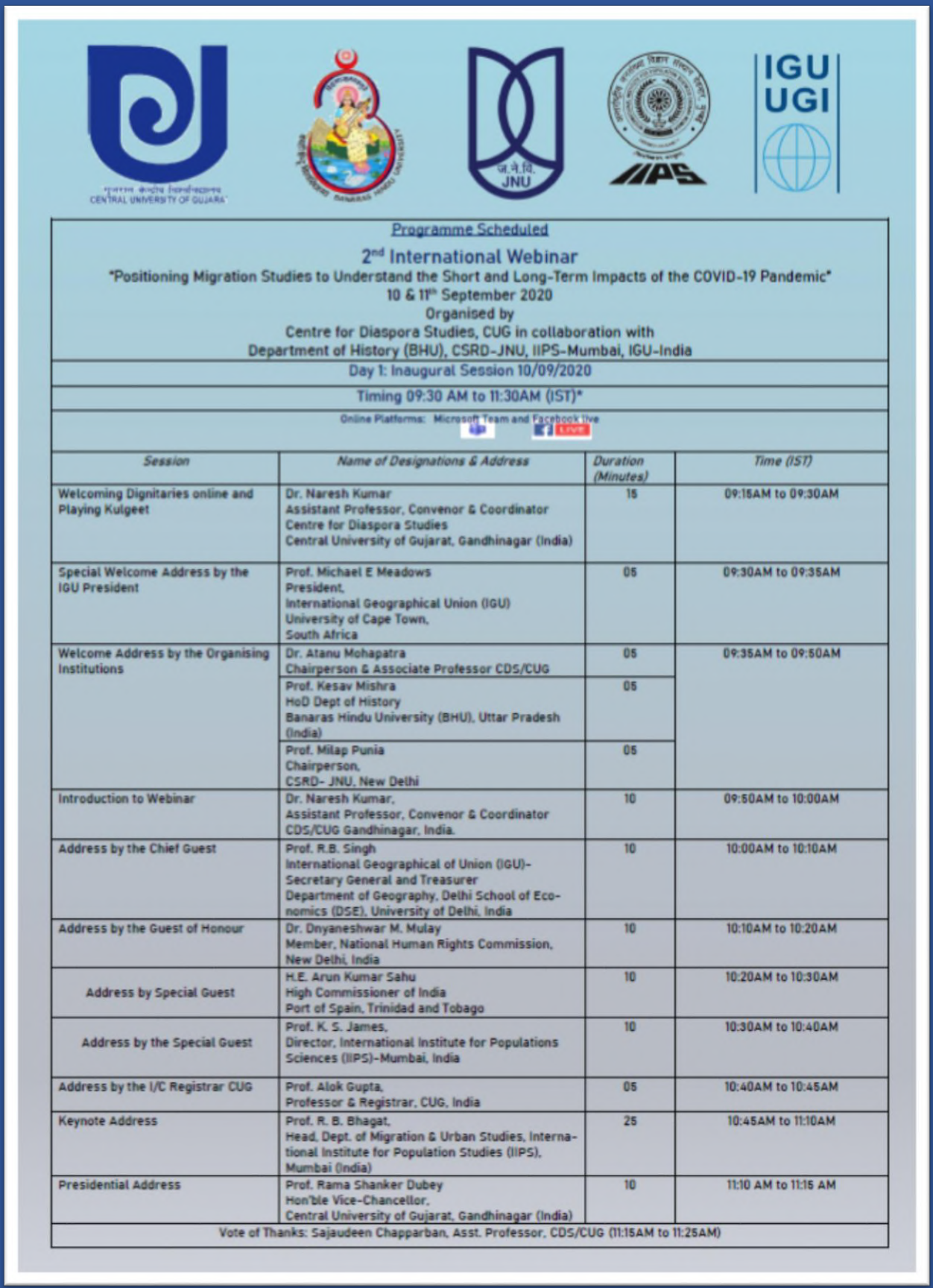
Prof. Archana K. Roy is a Professor at the Department of Migration and Urban Studies, International Institute for Population Sciences-Mumbai. Her areas of interest include Migration and Development, 'Left behind' families of migrants, Urbanization, Regional Studies (Middle Ganga Plain and Bhojpuri Speaking Region) and Application of RS & GIS in Population Studies. Education: PhD in Population Studies, 2004, IIPS, Mumbai on "Impact of Male Out-Migration on Left Behind Families: A Case Study of Bihar" Master in Population Studies (MPS), 1998: IIPS, Mumbai; MA in Geography with specialization in Remote Sensing and Cartography, 1997 Banaras Hindu University (BHU), Varanasi;Her ongoing research projects include as a Coordinator in an ongoing WHO project on 'Study on Global Ageing and Adult Health (SAGE), Wave 2 and Wave 3, India 2015 onwards and as a Coordinator in IIPS funded Project on 'Causes and Consequences of Out Migration from Middle Ganga Plain, India since February 2016.

Dr. Paiman Ahmed is an academic with research interest in oil price politics, energy governance, rentier economies and sustainable development in developing economies. She holds a master's degree in International Affairs and Public Policy Making (Bilkent University-Ankara) and a PhD in public administration from National University of Public Service-Budapest-Hungary. Her research works have been published by reputable journals such as International Environmental Agreements: Politics, Law and Economics, Public Money & Management, Journal of Public Affairs and top-tier academic publishers: Palgrave Macmillan, Springer, Routledge, Wiley and many others. Her Academic Affiliations are: University of Raparin, Lecturer in Law and Administration Departments.

Prof. Bhaswati Das is Faculty in Population Studies at Centre for Studies Regional Development (CSRD) Jawaharlal Nehru University, New Delhi India. Before joining to this JNU, she worked as a research consultant in international agencies like UNICEF, UN-WFP. Research

Interest Areas: Population & Development, demographic behavior in different development regime. M.Phil/Ph.D. Supervision: 19 students have been awarded Ph.D. degrees with the various aspects of Internal and international migrants. Current ongoing Major Project: Consequences of Male Selective out Migration from Rural West Bengal, Sponsored by ICSSR.

Schedule for the Programme



Programme Scheduled

2nd International Webinar

"Positioning Migration Studies to Understand the Short and Long-Term Impacts of the COVID-19 Pandemic"

10 & 11th September 2020

Organised by

Centre for Diaspora Studies, CUG in collaboration with

Department of History (BHU), CSRD-JNU, IIPS-Mumbai, IGU-India

Day 1: Inaugural Session 10/09/2020

Timing 09:30 AM to 11:30AM (IST)*

Online Platforms: Microsoft Team and Facebook live

Session	*Name of Designations & Address*	*Duration (Minutes)*	*Time (IST)*
Welcoming Dignitaries online and Playing Kulgeet	Dr. Naresh Kumar Assistant Professor, Convenor & Coordinator Centre for Diaspora Studies Central University of Gujarat, Gandhinagar (India)	15	09:15AM to 09:30AM
Special Welcome Address by the IGU President	Prof. Michael E Meadows President, International Geographical Union (IGU) University of Cape Town, South Africa	05	09:30AM to 09:35AM
Welcome Address by the Organising Institutions	Dr. Atanu Mohapatra Chairperson & Associate Professor CDS/CUG	05	09:35AM to 09:50AM
	Prof. Kesav Mishra HoD Dept of History Banaras Hindu University (BHU), Uttar Pradesh (India)	05	
	Prof. Milap Punia Chairperson, CSRD- JNU, New Delhi	05	
Introduction to Webinar	Dr. Naresh Kumar, Assistant Professor, Convenor & Coordinator CDS/CUG Gandhinagar, India.	10	09:50AM to 10:00AM
Address by the Chief Guest	Prof. R.B. Singh International Geographical of Union (IGU)-Secretary General and Treasurer Department of Geography, Delhi School of Economics (DSE), University of Delhi, India	10	10:00AM to 10:10AM
Address by the Guest of Honour	Dr. Dnyaneshwar M. Mulay Member, National Human Rights Commission, New Delhi, India	10	10:10AM to 10:20AM
Address by Special Guest	H.E. Arun Kumar Sahu High Commissioner of India Port of Spain, Trinidad and Tobago	10	10:20AM to 10:30AM
Address by the Special Guest	Prof. K. S. James, Director, International Institute for Populations Sciences (IIPS)-Mumbai, India	10	10:30AM to 10:40AM
Address by the I/C Registrar CUG	Prof. Alok Gupta, Professor & Registrar, CUG, India	05	10:40AM to 10:45AM
Keynote Address	Prof. R. B. Bhagat, Head, Dept. of Migration & Urban Studies, International Institute for Population Studies (IIPS), Mumbai (India)	25	10:45AM to 11:10AM
Presidential Address	Prof. Rama Shanker Dubey Hon'ble Vice-Chancellor, Central University of Gujarat, Gandhinagar (India)	10	11:10 AM to 11:15 AM
Vote of Thanks: Sajaudeen Chapparban, Asst. Professor, CDS/CUG (11:15AM to 11:25AM)			

Day 1 (10/09/2020)				
Plenary Session: I				
Theme: Implication of COVID-19 on Migration, Diaspora, Remittances and Economy (11:30AM to 01:30AM) IST*				
Sr. No	Name of the Speakers	Duration (Minutes)	Timing	Chair & Moderator
1	Prof. Binod Khadria, Zakir Husain Centre for Educational Studies, SSS/JNU-New Delhi	30	11:30AM-12:00Noon	Prof. K.S. James, Director, IIPS-Mumbai, India & Prof. Aswini Kumar Nanda, Population Research Centre (PRC), CRRID-Chandigarh (India)
2	Sonia Plaza Senior Economist, World Bank /KNOMAD	30	12:00 to 12:30PM	
3	Prof. Anuradha Banerjee CSRD/SSS, JNU, New Delhi	30	12:30PM to 01:00PM	
Discussion & Q/A 01:00PM: 01:25PM				

Day 1 (10/09/2020)				
Open Discussion Session: I				
Migration, Diaspora, and Pandemics: Historical and Current Scenario (02 :00 PM to 03:30PM) IST*				
Sr. No	*Name of the Speakers*	*Duration (Minutes)*	*Time (IST)*	*Chair(s)*
1	Rajeshwari Chandrasekar Chief Field Officer UNICEF (Maharashtra) India	20	02:00 PM to 02:20PM	Prof. Raymond Kwun-Sun LAU History Department, Hong Kong Baptist University, Hong Kong & Prof. Ghanshyam, Dept of History, BHU
2	Prof. Binda Paranjape, Dept of History, BHU, Uttar Pradesh, India	20	02:20PM to 02:40PM	
3	Prof. K. C. Das Dept. of Migration & Urban International Institute for Population Studies (IIPS), Mumbai (India)	20	02:40PM to 03:00PM	
Discussion & Q/A 03:00PM: 03:25PM				

Day 1: (10/09/2020)				
Plenary Session: II				
Theme: Migration and Diaspora Engagement During COVID-19: Best Practices (03:30 to 05:15PM) IST*				
Sr. No.	*Name of the Speakers*	*Duration (Minutes)*	*Time (IST)*	*Chair (s)*
1	Prof. Mohan Kant Gautam *Hon. President and Chancellor*, European University of West and East, The Netherlands	20	03:30:03:50PM	Prof. Atanu Bhattacharya Dean SLL & CS/CUG (India) & Prof. Manish, Professor & Dean SIS /CUG & Shri Bishan Dass Bains Former Mayor of Wolverhampton, U.K.
2	Prof. Irudaya Rajan. S Centre for Development Studies, Thiruvananthapuram, Kerala, India	20	03:50PM-04:10PM	
3	Prof. Anand Singh *Discipline of Anthropology* University of Kwazulu- Natal, South Africa (S.A)	20	04:10-04:30PM	
4	H.E. Arun Kumar Sahu High Commissioner of India Port of Spain Trinidad and Tobago	20	04:30-04:50PM	
Discussion& Q A (04:50 PM -05:15 PM)				

Programme Scheduled

2nd International Webinar
"Positioning Migration Studies to Understand the Short and Long-Term Impacts of the COVID-19 Pandemic"
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Day 2 Friday (11/09/2020)

Open Discussion Session: II

Theme: Migration, Urbanisation and Marginalization: An Impact of During and Post COVID 19 Pandemic (09:45AM to 11:30AM) IST*

Sr. No	Name of the Speakers	Duration	Timing (IST)	Chair(s)
1	Dr. Sajaudeen Chapparban Assistant Professor CDS/CUG, Gandhinagar (India)	20	10:00 AM to 10:20AM	Dr. Ishmeet Kaur, Assistant Professor, CES, CUG, Gandhinagar (India) & Dr. Shailendra Kumar Assistant Professor, CDS/CUG, Gandhinagar (India)
2	Prof. Anisur Rehman, Director-HRDC/JMI- New Delhi (India)	20	10:20 AM to 10:40AM	
3	Prof. Gerise Herndon Professor of English & International Studies Program Director, Nebraska Wesleyan University, USA	20	10:40AM to 11:00AM	
Discussion & Q/A 11:00PM to 11:25PM				

Day:2 (11/09/2020)

Open Session: III

Theme: Migration Policies, Sustainable Development Goals (SDGs) and Managing the Future Mobility (11:30 to 01:00 PM) IST*

Sr. No	*Name of the Speakers*	*Duration (Minutes)*	*Time (IST)*	*Chair(s)*
1	Prof. Archana K. Roy Dept. of Migration & Urban Studies, IIPS-Mumbai	20	11:30AM to 11:50AM	Dr. Reshmi R. Asst. Professor Dept. of Migration & Urban Studies, IIPS-Mumbai & Dr. Shantesh Singh, Associate Prof. Central University of Haryana (India)
2	Dr. Paiman Ahmed Law and Administration Department University of Raiparin, Iraq	20	11:50AM to 12:10PM	
3	Prof. Bhaswati Das, CSRD-JNU, New Delhi	20	12:10PM to 12:30PM	
Discussion & Q/A (12:30PM-12:55PM)				

Day 2 (11/09/2020)			
Special Valedictory Session			
Timing: 02:30 PM to 04:00PM (IST)*			
Session	*Designations & Address*	*Duration (Minutes)*	*Time (IST)*
Welcoming All the Dignitaries	Dr. Naresh Kumar, Asst. Professor, Convenor and Coordinator, CDS/CUG		
Welcome & Introduction of Invited Guest Speaker	Dr. Naresh Kumar, Assistant professor & Convenor and Coordinator, CDS/CUG Gandhinagar, Gujarat (India)	10	02:30PM to 02:40PM
Chair	Prof. Rama Shanker Dubey Hon'ble Vice Chancellor, Central University of Gujarat, Gandhinagar, Gujarat (India)		
Session Moderator	Prof. Binod Khadria, Professor (Retd.), Zakir Husain Centre for Educational Studies, School of Social Sciences, JNU, New Delhi (India)		
Special Valedictory Address	Dr Marie McAuliffe Head, Migration Research Division Chief Editor, World Migration Report International Organization for Migration (IOM), UN Migration Geneva, Switzerland	40 Minutes	03:00PM to 03:40PM
Open Discussion Q/A: 10 Minutes (03:40PM to 03:50PM) IST			
Special Remarks (Collaborating Organisations' Representatives)		5 Minutes	03: 50PM to 03:55 PM
CSRD-JNU, New Delhi (India) - Prof. Bhaswati Das			
IIPS-Mumbai (India) - Prof. K. C. Das			
BHU-Uttar Pradesh (India) - Prof. Ghan Shyam			
CDS/CUG, Gandhinagar (India) - Prof. Atanu Mohapatra			
Vote of Thanks & Closing Remarks (Dr. Naresh Kumar), Assistant Professor Convenor & Coordinator, CDS/CUG (India)			03:55PM- 04:00PM

All sessions will be live screened on the Facebook Page of Central University of Gujarat, Gandhinagar, India. https://www.facebook.com/cugadmin LIVE

**IST- Indian Standard Time*

2nd International Webinar

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Inaugural Session

(09:30 AM to 11:30AM IST*)

Prof. Rama Shanker Dubey
Hon'ble Vice-Chancellor,
CUG, Gandhinagar (India)

Prof. Michael E Meadows
President, IGU
University of Cape Town, SA

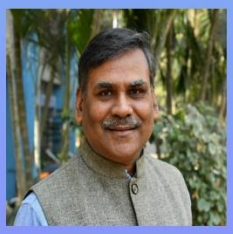
Dr. Naresh Kumar
Convenor & Coordinator CDS/CUG

Prof. Alok Gupta,
Professor & Registrar,
CUG, India

Prof. R.B. Singh
Secretary General and Treasurer, IGU
University of Delhi, India

Dr. Dnyaneshwar M. Muley
Member, National Human Rights Commission,
New Delhi, India

Prof. K. S. James,
Director, IIPS,
Mumbai, India



Prof. R. B. Bhagat,
Head, Dept. of Migration & Urban Studies,
IIPS, Mumbai (India)

Dr. Atanu Mohapatra
Chairperson & Associate Professor CDS/CUG

Prof. Kesav Mishra
HoD Dept of History
BHU, India

Prof. Milap Punia
Chairperson, CSRD-JNU, New Delhi

Sajaudeen C. Shuja
Asst. Professor,
CDS/CUG

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Day 1 (10/09/2020)

Plenary Session: I

Implication of COVID-19 on Migration, Diaspora, Remittances and Economy

(11:30AM to 01:30AM) IST*

Chairs

Prof. R.S. Dubey,
Hon'ble Vice Chancellor,
CUG, Gandhinagar (India)

Prof. K.S. James,
Director, IIPS-
Mumbai, India

Speakers

Prof. Binod Khadria,
Zakir Husain Centre for Educational Studies,
SSS/JNU-New Delhi

Sonia Plaza
Senior Economist,
World Bank /KNOMAD

Prof. Anuradha Banerjee
CSRD/SSS,
JNU, New Delhi

All sessions will be live screened on the Facebook Page of Central University of Gujarat, Gandhinagar, India. https://www.facebook.com/cugadmin

Day 1 (10/09/2020)
Open Discussion Session: I
Migration, Diaspora, and Pandemics: Historical and Current Scenario
(02 :00 PM to 03:30PM) IST*

Speakers

Rajeshwari Chandrasekar
Chief Field Officer
UNICEF (Maharashtra) India

Prof. Binda Paranjape
Department of History,
BHU, Uttar Pradesh, India

Prof. K. C. Das
Dept. of Migration & Urban IIPS, Mumbai

Chairs

Prof. Raymond Kwun-Sun LAU
History Department, **Hong Kong Baptist University, Hong Kong**

Prof. Ghan Shyam,
Dept of History, BHU,
Uttar Pradesh, India

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Day 1: (10/09/2020)

Plenary Session: II

Migration and Diaspora Engagement During COVID-19: Best Practices

(03:30 to 05:15PM) IST*

Speakers

Prof. Mohan Kant Gautam
Hon. President and Chancellor,
European University of West and East, The Netherlands

Prof. Irudaya Rajan. S
Centre for Development Studies,
Thiruvananthapuram, **Kerala, India**

Prof. Anand Singh
Discipline of Anthropology
University of Kwazulu- Natal, SA

H.E. Arun Kumar Sahu
High Commissioner of India
Port of Spain

Chairs

Prof. Atanu Bhattacharya
Dean SLL & CS, **CUG**

Prof. Manish,
Professor & Dean
SIS /CUG

Shri Bishan Dass Bains
Former Mayor of
Wolverhampton, **U.K**

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Day 2 Friday (11/09/2020)

Open Discussion Session: II

Migration, Urbanisation and Marginalization: An Impact of During and Post COVID 19 Pandemic (09:45AM to 11:30AM) IST*

Speakers

Mr. Sajaudeen Chapparban
Assistant Professor CDS/CUG,
Gandhinagar (India)

Prof. Anisur Rehman,
Director-HRDC/JMI-
New Delhi (India)

Prof. Gerise Herndon
Professor of English & International Studies
Program Director, **Nebraska Wesleyan University, USA**

Chairs

Dr. Ishmeet Kaur,
Assistant Professor, CES,
CUG, Gandhinagar (India)

Dr. Shailendra Kumar
Assistant Professor,
CDS/CUG, Gandhinagar (India)

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Day:2 (11/09/2020)

Open Session: III

Theme: Migration Policies, Sustainable Development Goals (SDGs) and Managing the Future Mobility (11:30 to 01:00 PM) IST*

Speakers

Prof. Archana K. Roy
Dept. of Migration & Urban Studies,
IIPS-Mumbai

Paiman Ahmed (PhD)
University of Raiparin, Iraq

Prof. Bhaswati Das,
CSRD-JNU, New Delhi

Chairs

Dr. Reshmi R.
Asst. Professor Dept. of Migration & Urban Studies,
IIPS-Mumbai

Dr. Shantesh Singh
Associate Prof.
Central University of Haryana (India)

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2nd International Webinar

"Positioning Migration Studies to Understand the Short and Long-Term Impacts of the COVID-19 Pandemic"

10 & 11th September 2020

Organised by

Centre for Diaspora Studies, CUG in collaboration with
Department of History (BHU), CSRD-JNU, IIPS-Mumbai, IGU-India

Special Valedictory Session

02:30 PM to 04:00PM (IST)*

Chair

Prof. Rama Shanker Dubey
Hon'ble Vice-Chancellor,
CUG, Gandhinagar (India)

Dr Marie McAuliffe
Head, Migration Research Division
Chief Editor, World Migration Report
International Organization for Migration (IOM),
UN Migration, Geneva, Switzerland

Dr. Naresh Kumar
Convenor &
Coordinator **CDS/CUG**

Moderator

Prof. Binod Khadria, Professor (Retd.),
Zakir Husain Centre for Educational
Studies, SSS, JNU, New Delhi (India)

Prof. Aswini Kumar Nanda,
Population Research Centre (PRC),
CRRID, **Chandigarh (India)**

Prof. Bhaswati Das
CSRD-JNU,
New Delhi (India)

Prof. K. C. Das
IIPS-Mumbai (India)

Prof. Ghanshyam
BHU, India

Dr. Atanu Mohapatra
CDS/CUG

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2nd International Webinar

"Positioning Migration Studies to Understand the Short and Long-Term Impacts of the COVID-19 Pandemic"

Brief Summary or Report

The 2nd International Webinar on "Positioning Migration Studies to Understand the Short and Long-Term Impacts of the COVID-19 Pandemic" was organized by the Centre for Diaspora Studies, the Central University of Gujarat in collaboration with five eminent institutions namely the Department of History (BHU), CSRD-JNU, IIPS-Mumbai, and IGU-India. It was held on 10th and 11th September 2020. **The Convener & Coordinator of the International webinar was Dr. Naresh Kumar, Assistant Professor, CDS, CUG.** The webinar took place through the online platform of Microsoft Teams and on live streaming on CUG Facebook Live. This garnered much interest and the Centre received around 4000 registered participants online from across India & different parts of the world. It is important to say that participants registered themselves from across India and more than 45 countries especially the USA, Canada, Europe, U.K. Singapore, South Korea, Iran, Iraq, Singapore, Bangladesh, and so on. The webinar has been streaming live on CUG Facebook live only which has more than 10000 online viewers and itself shows the webinar become grand successful. The webinar was structured with an Inaugural session, two Plenary Sessions, three Open Discussion sessions, and the Special Valedictory session.

The Inaugural sessions began with university song and welcoming dignitaries guests, speakers, registered participants, and also the partner organizing universities/institutions online by **Dr. Naresh Kumar (Convenor & Coordinator)** Assistant Professor, Centre for Diaspora Studies, Central University of Gujarat, Gandhinagar (India).

A formal welcome address was given by the representative of all the organizing institutions. **Dr. Atanu Mohapatra, Chairperson, CDS-CUG**, gave a special welcome address. He touched on the various dimensions of the COVID-19 pandemic and the many socio-economic effects it has had on the migrants and diasporas. He also recounted the many government policies and program initiated for the benefit of the people that were especially affected in and outside India.

Prof. Keshav Mishra, HoD of Department of History, Banaras Hindu University, Uttar Pradesh in his address, he emphasized on the importance of history and its involvement in migration studies and particularly during the pandemics like COVID-19.

Prof. & Chairperson Milap Punia, CSRD-JNU, New Delhi drew the attention of all present towards a lack of proper data and its analysis when it comes to the study of disasters and pandemics in India and also the different ways in which COVID-19 has affected migrants, be it economic, livelihood, food security, and other physical and mental difficulties.

The concept note of the webinar was introduced by Dr. Naresh Kumar (Convenor), Assistant Professor, CDS, CUG. He underlines the significance of the theme of the webinar entitled **"Positioning Migration Studies to Understand the Short and Long-Term Impacts of the COVID-19 Pandemic**" as the world is facing an unprecedented crisis induced by the COVID-19 pandemic today and how these crises leave their short and long term impact on various spheres of society particularly internal, international migrants or Diaspora. India has the largest diaspora or international migrants (17.5 million or 6.4 percent) are living abroad followed by Mexico, China. On the other side, India has significant numbers of internal migrants, large numbers of circular/seasonal/temporary migrants which constituted near about 10 million population. It has evident from the various scholarly or academics works that migrants (Internal/International/Diaspora) have been significantly contributed to the destinations & origins

places of India. In this above background, this International Webinar with the help of different academic panelists drawn from various reputed national & international migration/diaspora institutes, organizations, and universities shared their academic expertise, existing information, causes, associated challenges, prospects and explored the possible future strategies, plans, policy recommendations to provide safe, orderly & regular migration.

The **Chief Guest** of the Webinar was **Prof. R.B. Singh**, International Geographical Union-Secretary-General and Treasurer, Department of Geography, Delhi School of Economics, University of Delhi. He recounted the various pandemics that India had previously dealt with and how difficult it is for India to deal with COVID-19 as it was much more widespread and far-reaching. He says, Covid-19 adversely affected and challenged India's economy and medical infrastructure. He also looks at the opportunities that can be created from this pandemic in the fields of manufacturing and reforms in labor and migration and the importance of focusing on these avenues for the government.

The Guest of Honor, Dr. Dnyaneshwar M. Mulay, focused on the difficulties that led to the migrant exodus and the need for policymaking and government infrastructures to meet sustainable development goals. To make good policies it is important to get proper data and migrant studies become very important in this scenario where internal migrants moved in a large number.

The **Special Guest H.E. Arun Kumar Sahu**, High Commissioner of India to Trinidad and Tobago, touched upon the various difficulties that COVID-19 put in front of nations all over the world and challenged the existing strides made. He also remarked upon the faults that were exposed by it and the various issues of discrimination faced by international and internal migrants in a globalized world.

The Special Guest **Prof. James, Director** and Senior Professor, International Institute for Population Sciences-Mumbai stated that generally during the outbreak of pandemics, attention is given to mortality studies or

health issues. However, COVID-19 has been emerged as a point of discussion on migrants. One of the policies which we need to suggest to Govt. of India that it is important to start counting migrants which is quite possible as there are a lot of technological improvement.

The message from **Prof. Alok Gupta, Professor,** and I/C Registrar, CUG who appreciated the timely required topic for discussion and congratulated Dr. Naresh, Convenor & Coordinator, CDS, and other organizing institutes.

The keynote address in the inaugural session of the webinar was given by **Prof. R.B. Bhagat**, Head of Dept. of Migration and Urban Studies, IIPS-Mumbai. He highlighted the academic issues and challenges that have been raised by the COVID-19 pandemic. Further, he focused on the issues of governance and policymaking about the pandemic. He has focused that migrants connect between two places (origin & destination) and play a crucial role in developing both the places. He stressed how space and place matter in the process of migration and how space and place are changing through human intervention which can be inclusive or exclusive or people friendly. Economic and social opportunities with space and time are shaped by the migrants. COVID-19 pandemic has been affecting more largely the short-term migrants (circular, sessional, or temporary migrants), those who are working in the urban informal sector and are not the vote banks of the destinations areas. He has also stressed the various programs that have been initiated by the government of India (ex: PURA & MGNERGA) to provide the basic amenities and create employment opportunities for many people in urban and rural areas.

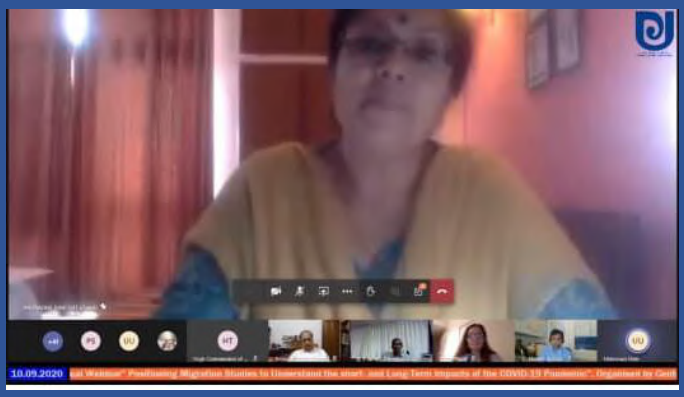
The Presidential Address was given by the Honorable Vice-Chancellor of CUG, **Prof. Rama Shanker Dubey has** stressed on the history of migration in India and Gujarat. He brings attention to the issues of family reunification, students stranded abroad, and other problems due to the economic slackening as a result of the pandemic. He also stressed upon the Government of India's various steps to mitigate the difficulties emerged with the COVID-19 pandemic and to assure the safety & security and livelihood of many Indians in general and particular to migrants living in India and abroad, through the missions like Vande Bharat Mission (MEA, GoI) & Aatma Nirbhar Bharat or Self-reliant India. Honorable Prime Minister Narendra Modi announced the Atma Nirbhar Bharat Abhiyaan (Self-reliant India) relief and recovery scheme as well as information about the new iteration of India's lockdown plan called "lockdown 4.0". Under the Atma Nirbhar Bharat Abhiyaan scheme, Honourable Prime minister Narendra Modi has announced the rollout

of a 20lakh crore INR (265 billion USD) economic reform package, he also asked people to support Indian business to kick-start the economy. Vote of Thanks was given by Sajaudeen Chapparban, Assistant Professor, CDS-CUG.

The first plenary session on **"Implication of COVID-19 on Migration, Diaspora, Remittances, and Economy"** The first eminent speaker was Prof. Binod Khadria, Zakir Hussain Centre for Educational Studies, SSS/JNU New Delhi spoke on "Understanding Impact of COVID-19 on South Asian Economics through the Lens of Migration" provided the overall views on the South Asian economy and impact of COVID-19. He explained some of South Asian Countries like Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka, their stringency levels and lock down measures and their travel restrictions. He also looked at their health systems including Government health expenditure, Hospital beds, Nurses and Midwives, Physicians.

The second eminent speaker was Prof. Sonia Plaza (Senior Economist, World Bank) spoke on the "COVID 19 Crisis through a migration lens" She also focused on the COVID-19 crisis by looking at the migration. She focused on the flow of remittances reduced and how they are drastically affected by COVID-19 and the migrant stock.

The third eminent speaker was **Prof. Anuradha Banerjee, CSRD/SSS (JNU) on 'The Exodus in Times of Pandemic: Mobility, Migration, and Livelihood of Informal Migrant Workers during COVID 19 Crisis in India** spoke on Her presentation stressed on internal migrants and their sufferings due to the pandemic and the heightened mobility as a result of the sudden lockdown.



The First Open Discussion session, **"Migration, Diaspora, and Pandemics: Historical and Current Scenario",** was chaired by Prof. Raymond KWU-SUN LAU, History Department, Hong Kong Baptist University, and Prof. Ghanshyam, Department of History, BHU. The first speaker was Rajeshwari Chandrasekar, Chief Field Officer, UNICEF (Maharashtra) India. She drew attention to the condition of children of migrants and the Pravasi versus Desi migrants. The second speaker was Prof. Binda Paranjape, Department of History, BHU. She spoke on the importance of studying human experience and discrimination as a result of the pandemic. She stressed the

importance of studying multiple voices and narratives to know the full story of the pandemic. The third speaker was Prof. K.C. Das, IIPS-Mumbai. He focused on the lack of proper data in India and especially in the case of COVID-19 and Migration and Diaspora.

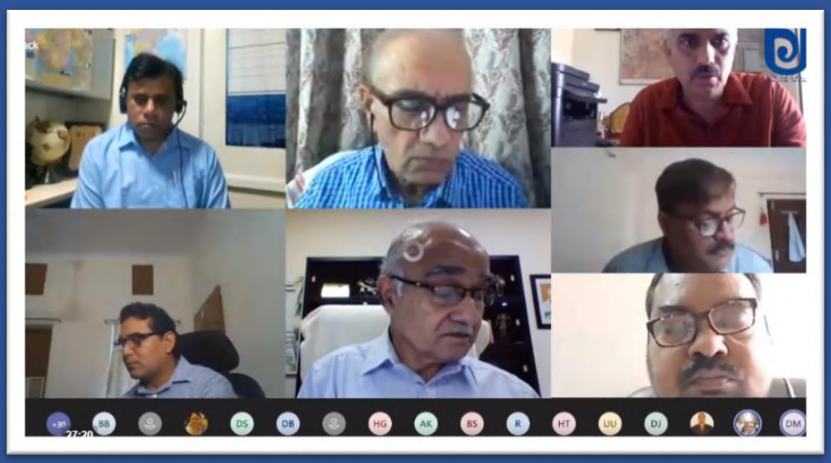
The second Plenary Discussion was on **"Migration and Diaspora Engagement During COVID-19: Best Practices"**. The first speaker was Prof. M.K. Gautam, Hon. President and Chancellor, European University of West and East, The Netherlands. He drew attention towards the many different diasporas in India and their relationship with India that varies from generation to generation. He also pointed out the paradigmatic shift that is needed and will be needed to study diaspora and migration, especially after the COVID-19 pandemic. The second speaker was Prof. S. Irudaya Rajan, Centre for Development Studies, Thiruvananthapuram, Kerala. He drew attention to migrant engagement by the Indian government and how it failed its migrants. He also highlighted the importance of return migrant rehabilitation. The third speaker was Prof. Anand Singh, Discipline of Anthropology, University of Kwazulu-Natal, South Africa. He described the condition of migrants and diaspora in South Africa. He focused on the Indian Diaspora in South Africa during the Pandemic. The fourth speaker of the session was H.E. Arun Kumar Sahu, High Commissioner of India to Trinidad and Tobago. He spoke about the condition of Indian migrants in Trinidad and Tobago. He also spoke about the actions taken by him and the government of India to repatriate Indian migrants back to India and also the issues of inter and intra-governmental organizations.

The second day of the webinar had two Open Discussion sessions. The Second Open Discussion Session on "Migration, Urbanisation, and Marginalization: An Impact During and Post COVID-19 Pandemic". The first speaker was Sajaudeen Chapparban, Assistant Professor, CDS/CUG. His presentation highlighted the issues faced by internal migrants and refugees in India during the Covid-19 Pandemic. The second speaker was Prof. Anisur Rehman, Director-HRDC/JMI. His

presentation focused on the weaker section of the international migrants, the Gulf migrants. They benefitted both socially and economically through the migration process and they were the most drastically affected by job losses as a result of the pandemic. The third speaker was Prof. Gerise Herndon, Professor of English and International Studies, Nebraska Wesleyan University, USA. Her presentation highlighted the existing inequalities and xenophobia in the US and its treatment of refugees and migrants that were exposed during the pandemic.

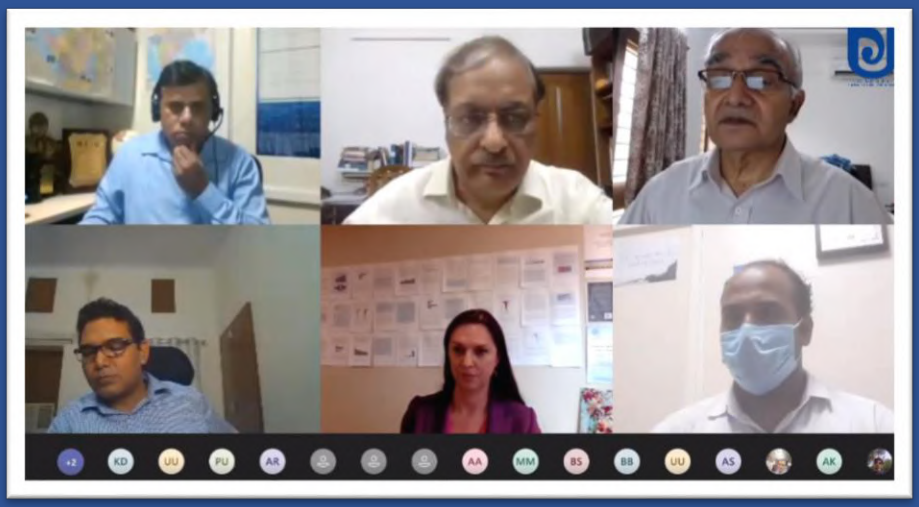
The third Open Discussion Session was on "Migration Policies, Sustainable Development Goals (SDGs) and Managing the Future Mobility". The first speaker in this session was Prof. Archana K. Roy, IIPS-Mumbai. Her presentation focused on the challenges to migrant labor in the pandemic and future actions and possibilities. The second speaker was Dr. Paiman Ahmed, Assistant Professor, Law and Administration Department, University of Raiparin, Iraq. Her presentation focused on the Sustainable Development Goals (SDGs) by the UN and migration and poverty and how it is and will be affected by the COVID-19 pandemic. The third speaker of the session was Prof. Bhaswati Das, CSRD-JNU. Her presentation focused on the movement of migration and labor and the challenges faced in the lockdown.

The special Valedictory session began with the welcoming and brief introduction of dignitaries and invited speakers by **Dr. Naresh Kumar and conveyed gratitude to collaborating partner institutes/universities**. Honourable Vice-Chancellor **of CUG, Prof. Rama Shankar Dubey** chaired this session and introduced Special valedictory Speaker **Dr. Marie McAuliffe,** Head, Migration Research Division, Chief Editor of World Migration Report, IOM, UN Migration, Geneva, Switzerland. **Prof. Binod Khadria** well known eminent scholar had moderated the session. **Dr. Marie McAuliffe** spoke given her valedictory address on **"COVID-19 and Global Transformations of Migration and Mobility: Initial Reflections and Priority Areas of Research and Analysis".** She said that pandemic is a systematic



geopolitical event that has transformed migration and mobility systems globally. Initial research and analysis show that the most vulnerable in society are most affected by COVID-19 – this includes migrants (including refugees) in different settings. She has broadly categorized COVID-19 impacts on Migrants into 3 broad categories: **1) Immediate Impacts;** by the end of May, the majority of countries globally continued to have some form of COVID-19-related travel

restrictions such as partial international border restrictions, then total restrictions, and internal restrictions (now slightly easing). In many countries, migrant workers perform the so-called '3D' jobs essential to society; the dirty, dangerous, and demeaning jobs before and during COVID-19 which have been affected because of the large-scale migration. **2) Medium-term Impacts:** International remittances are projected to fall by 20% in 2020. COVID-19 has been devastating for millions of migrant workers, many of whom are unable to work due to lockdowns, movement restrictions, or job losses. Some of the medium-term impacts of COVID-19 are – significant increases in racism and discrimination – especially toward Asians, increased risk of human trafficking and migrant smuggling, etc. **3) Long Term Impacts:** migration as an important security issue**,** "mobility protectionism" vs mobility-led recovery Impacts will be highly uneven, with countries heavily reliant on remittances most affected. Long-term impacts of COVID-19 include – reduced access to education in developing countries, urbanization, and city-to-city migration will be intensified making cities the center for global migration and mobility systems, etc.



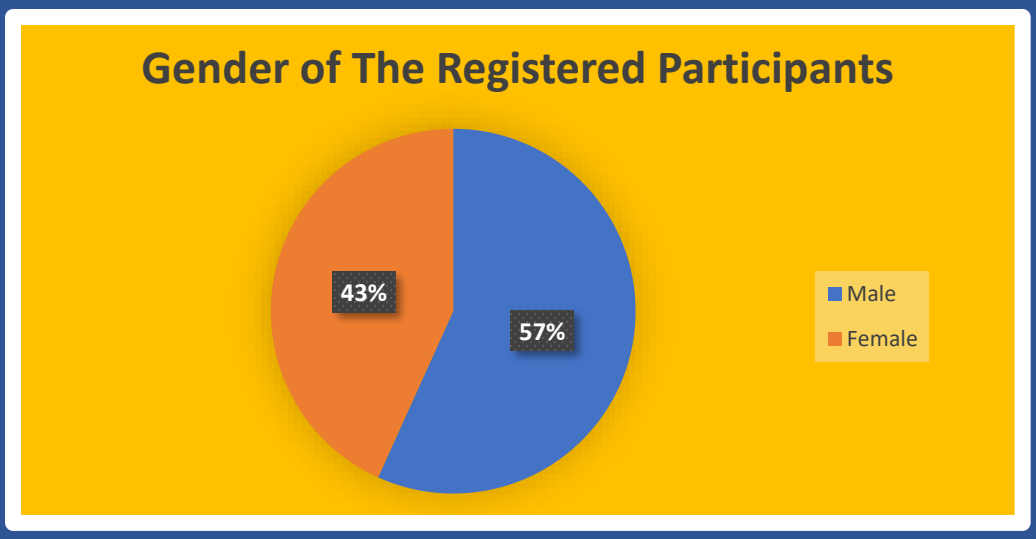
She also focused on the issue of Global governance of migration and the future possibilities of study and research in this area. Currently, IOM has 54 Analytical Snapshots published on migration and mobility impacts of COVID-19 available in English, Spanish, French, Arabic with Chinese and Russian coming soon. She has also focused on Cross-cutting issues of human rights of migrants and migrants' contributions to socio-economic recovery and global inequalities. She has stressed the Top 3 COVID-19 migration research priorities for 2-5 years. These are 1) International and internal Remittances: 2Mobility restrictions: 3) Protection of migrants.

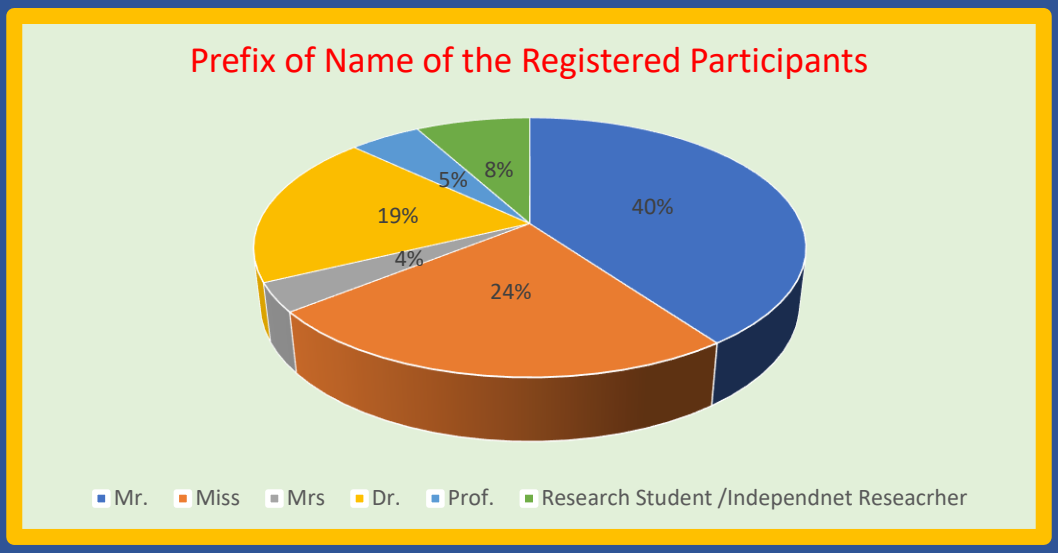
In the end, special remarks were given by representatives (Prof. Ghan Shyam, Prof. K.C. Das, Prof. Atanu Mahopatra) of the collaborating Universities/Institutions (BHU, JNU, IIPS-Mumbai, CDS/CUG). Closing remarks and vote of thanks was given by the coordinator & convenor of the webinar.

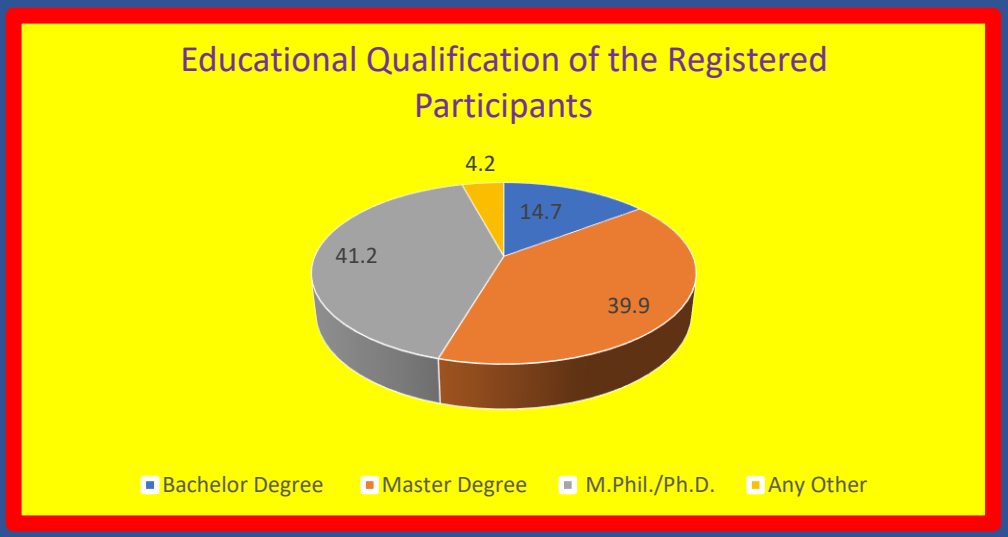
Contact for any related Information: Dr. Naresh Kumar Assistant Professor, Convenor & Coordinator, Centre for Diaspora Studies, Central University of Gujarat, Gandhinagar, India. Email: nareshcug@gmail.com

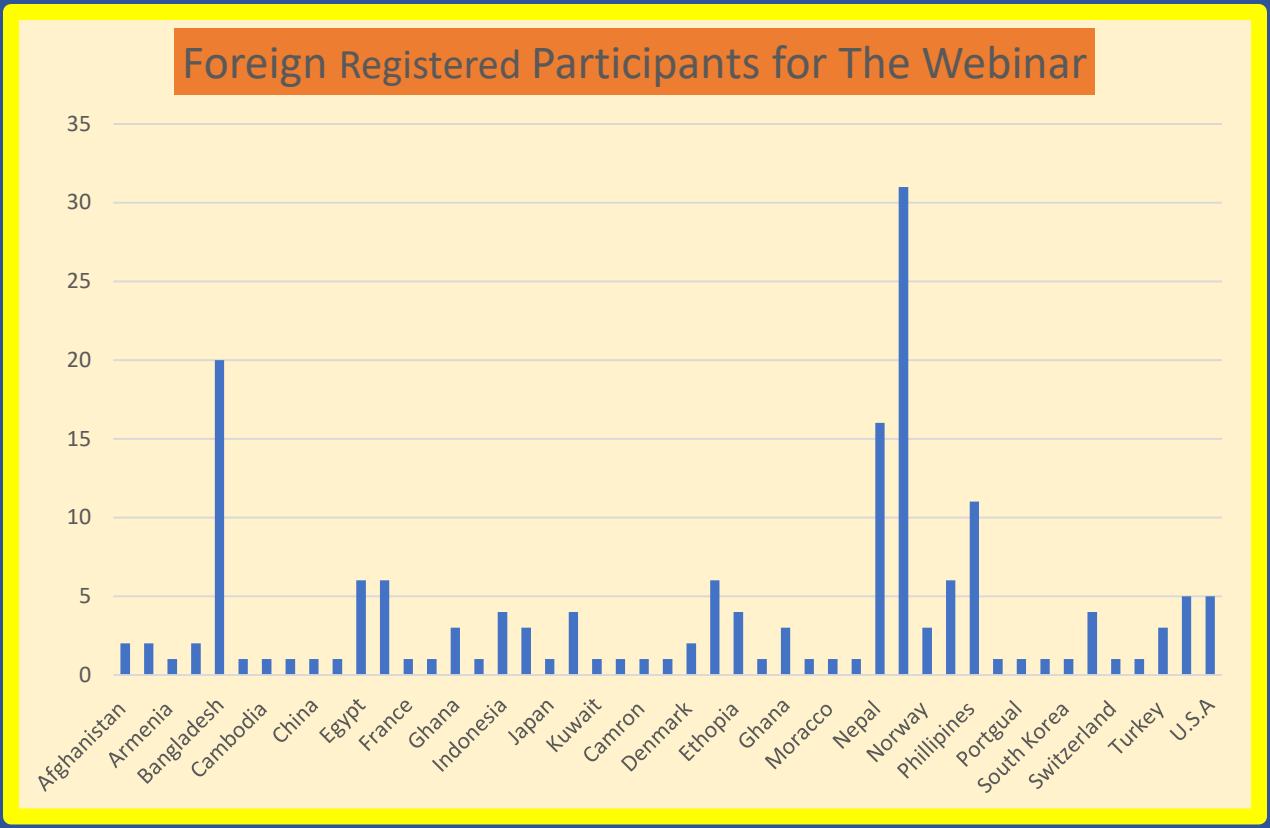
Press Coverage – https://bit.ly/2IgYYQ3

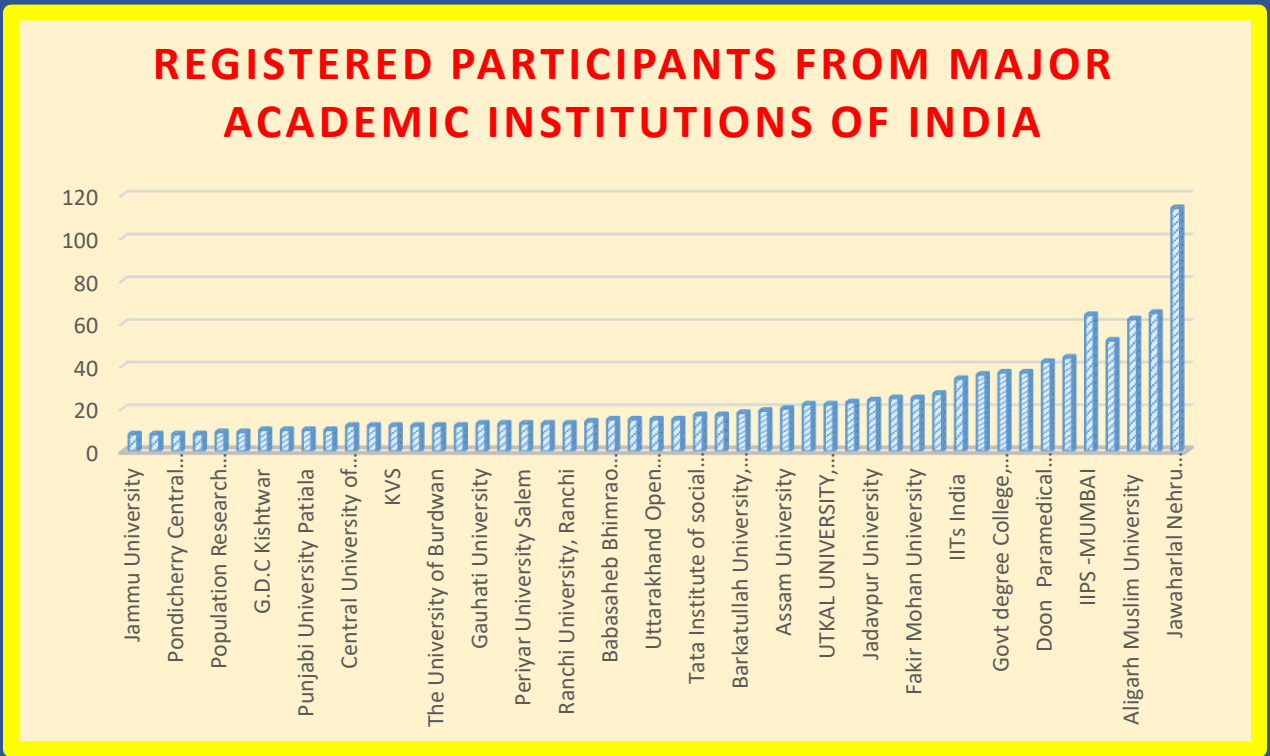
Basic Profile of the Registered Participants








Foreign Registered Participants for The Webinar
35
30
25
20
15
10
5
0
Afghanistan
Armenia
Bangladesh
Cambodia
China
Egypt
France
Ghana
Indonesia
Japan
Kuwait
Camron
Denmark
Ethopia
Ghana
Moracco
Nepal
Norway
Phillipines
Portgual
South Korea
Switzerland
Turkey
U.S.A


REGISTERED PARTICIPANTS FROM MAJOR ACADEMIC INSTITUTIONS OF INDIA
120
100
80
60
40
20
0
Jammu University
Pondicherry Central...
Population Research...
G.D.C Kishtwar
Punjabi University Patiala
Central University of...
KVS
The University of Burdwan
Gauhati University
Periyar University Salem
Ranchi University, Ranchi
Babasaheb Bhimrao...
Uttarakhand Open...
Tata Institute of social...
Barkatullah University,...
Assam University
UTKAL UNIVERSITY,...
Jadavpur University
Fakir Mohan University
IITs India
Govt degree College,...
Doon Paramedical...
IIPS -MUMBAI
Aligarh Muslim University
Jawaharlal Nehru...

The Centre for Diaspora Studies (Independent Centre)
Central University of Gujarat, Gandhinagar

Centre for Diaspora Studies (CDS) was established in 2011 at the Central University of Gujarat, Gandhinagar, India. It offers M.Phil./Ph.D. Programme. CDS is an Independent Centre in the University, and as a unique inter-disciplinary Centre in India, it studies with its multidisciplinary framework various aspects and issues of migration and diaspora and their spatial geographical distribution, cultural, literary, social, demographic, political and economic impact on both the home and host countries with a focus on the Indian diaspora. It is an established fact that the contribution of overseas Indians to the social, cultural, economic, philanthropic, etc. spheres of India is very substantial. A sizeable body of literature now exists both in the forms of novels, biographies, autobiographies, diaries, short stories, dramas, poems (not to mention films) and scholarly writings on issues related to the historical, anthropological, sociological, political and economic aspects of the process of migration of people. Diaspora Studies has opened plethora of new research areas, which need to be studied and researched upon. The Centre with a multidisciplinary framework studies and addresses the mutual relations and converging contours of migration & diaspora. The Centre provides an excellent academic environment with a focus on participatory teaching and learning, use of ICT in teaching, periodical revision and updating of syllabus, field work exposures for students etc. Students of the Centre are from multi-disciplinary backgrounds (Social Sciences & Humanities). The faculty members of the Centre are from different disciplines from Social Sciences & Humanities and have specialization in different aspects of migration and diaspora.

Center for Study of Regional Development (CSRD)
Jawaharlal Nehru University (JNU)

The Centre for the Study of Regional Development was established in 1971 with a mandate to focus on interdisciplinary programme of studies for teaching and research, placed in an overall framework of regional development in India. Over the years, an interdisciplinary team of scholars has been engaged in realizing this dream.

The Centre offers M. A. (Geography) and M. Phil/Ph.D programmes in three major fields: Geography Economics, and Population Studies. In keeping with the interdisciplinary tenor and focus of the Centre, these programmes interface socio- economic, human, institutional, technological, infrastructural, and environmental factors with issues of regional development in multi-various and pluralistic manner. In doing so, research and teaching in the Centre over the years have evolved appropriate paradigms and tools of analyses including remote sensing and GIS. During 2018-19, 40 M. A., 34 Ph. D. and 53 M. Phil degrees were awarded. The research and post-graduate students in the Centre form an important academic hub of the Centre.

In terms of students and faculty strength, the Centre for the Study of Regional Development is one of the largest centres in the School of Social Sciences in the University. The Centre presently has 12 Professors, 7 Associate Professors, 7 Assistant Professors, 1 Professors Emeritus. According to the Annual Report of 2018-2019, faculty members have 73 publications in refereed journals; 3 books; 24 book chapters; 10 media article; 42 ongoing projects to their credit.

The Centre for the Study of Regional Development was granted the status of _Centre of Advanced Studies' (CAS) under the Special Assistance Program (SAP) of the UGC in April 2003. With this, the Centre became the first department in Geography in India to get this status. In view of the Centre having successfully completed the first phase, the support as CAS was renewed in April 2009 for a period of five years (2009-March 2014).

Department of History, Faculty of Social Sciences, Banaras Hindu University (BHU)

The Department of History came into existence with the establishment of the Banaras Hindu University by Pandit Madan Mohan Malviya in 1918. It is one of the oldest Departments of the University. All three branches of Indian History i.e. Ancient, Medieval and Modern history are taught there. The Department has eminent faculties for under-graduate and post-graduate programs, preparing and equipping the students to acquire enough knowledge and skills to transform themselves to be avid researchers. At present there are approximately hundred research scholars pursuing their Ph.D. degree under the able guidance of their respective supervisors. Besides the core conventional and foundational courses such as cultural, socio-economic, political, and religious aspects of various epochs of Indian History, the department also offers a diverse array of courses on European, American and Asian History. Courses on Contemporary World, Intellectual History of China and Japan, History of Nepal and Sri Lanka, History of South-East Asia are blended along with thematic courses on Diaspora Studies, Tribal History, Gender, and History of Dalit Studies. The department also offers courses on Maritime History, History of Science & Technology, Medicine and History of Environment and Ecology. These new areas allow the blending of sociological and anthropological perspectives, opening possibilities of the realization of interdisciplinary research in a rigorous manner.

International Geographical Union (IGU)-India

The International Geographical Union (IGU) is an international, non-governmental, professional organization devoted to the development of the discipline of Geography. IGU Office bearers include 1 President, 1 Secretary General & Treasurer, and 7 Vice Presidents.

The purposes of the IGU are primarily to promote Geography through initiating and coordinating geographical research and teaching in all countries of the world. Its work is conducted through the instruments of its National Committees, Commissions and Task Forces.

The IGU hosts the International Geographical Congress in every four years and also promotes regional conferences and other meetings that fulfill the objectives of the Union. The IGU also facilitates the participation of geographers in the global community of scientists through its formal affiliation as a Member Union within both the International Council for Science (ICSU) and the International Social Science Council (ISSC).

Commissions and Task Forces are research bodies of the IGU that cover a very wide range of research topics within the discipline of Geography. IGU consists of 40 Commissions and 3 Task Forces.

Prepared & Designed by – Nitesh Narnolia

Detailed Report

Centre for Diaspora Studies
Central University of Gujarat

In Association with

Centre for Policy Research in Education,
PMMMNMTT, School of Education, CUG

Organises
Two-day Workshop
on

"Diaspora Studies in the Curriculum and Pedagogy of Indian Education System with Special Focus on NEP 2020"

Date: 13-14 March 2021
Venue: Seminar Hall, Sector – 29, Central University of Gujarat

Report

Two-day Workshop on "Diaspora Studies in the Curriculum and Pedagogy of Indian Education System with Special Focus on NEP 2020" organized by Centre for Diaspora Studies in association with Centre for Policy Research in Education, PMMMNMTT, School of Education, CUG, 13-14 March 2021

Centre for Diaspora Studies (Independent Centre), in association with Centre for Policy Research in Education, PMMMNMTT, School of Education, organized Two-day Workshop on "Diaspora Studies in the Curriculum and Pedagogy of Indian Education System with Special Focus on NEP 2020" during 13-14 March 2021. In India, Diaspora Studies is a new growing interdisciplinary subject that has emerged in Humanities and Social Sciences dealing with the study of diaspora and its varied issues like, cultural, literary, social, demographic, anthropology, political, economic impact, international relations etc. So, it was pertinent to introduce Diaspora Studies in the Curriculum and Pedagogy of Indian Education System. The Workshop provided an academic platform to scholars of diaspora studies to discuss different dimensions of Diaspora Studies in the Curriculum and Pedagogy of Indian Education System with a special focus on NEP 2020. The Workshop was held in physical mode and total numbers of participants were about one hundred including the faculty members and research scholars of the Centre for Diaspora Studies. The Workshop was held in the premises of the Sector 29 campus of Central University of Gujarat.

The **Inaugural Session** of the workshop was presided over by Prof. Rama Shanker Dubey, Hon'ble Vice-Chancellor, Central University of Gujarat. The Inaugural Session of the workshop had Prof. Neerja Gupta, Hon'ble Vice Chancellor of Sanchi University of Buddhist - Indic Studies, Raisen, M.P. as the Chief Guest and Prof. Saroj Sharma, Chairperson, National Institute of Open Schooling, NOIDA, UP as the Guest of Honour. Prof. Ashwini Mohapatra, Dean, School of International Studies, JNU delivered the Keynote Address (through Online Mode).

The session began with the introduction of the workshop delivered by the Convener **Dr. Siba Sankar Mohanty**, Assistant Professor, Centre for Diaspora Studies, CUG. He accentuated some important points on the importance of introducing Diaspora Studies in school and higher education. He said that Diaspora Studies has prospered in various disciplines such as humanities, social sciences and various other disciplines.

Prof. Atanu Mohapatra, Chairperson, Centre for Diaspora Studies, CUG delivered the Welcome Address. He emphasized on some significant elements of diasporic individuals that they go through various struggles in the diasporic space such as nostalgia, forlorn, discrimination etc. He also said that it is important for students and research scholars of different disciplines to understand the significance of diaspora because it is multidisciplinary and includes all disciplines such as media, literature, social sciences, international relations etc. He gave an example that students of political science and international relations read about policies which let them understand the importance of diaspora.

Prof. H.B. Patel, Director, PMMMNMTT, & Dean, School of Education, CUG delivered special address. He emphasized on the varied mechanisms of introducing Diaspora Studies in school and higher education. He also spoke about devising ways of introducing Diaspora Studies in the discipline of Education. He cited many examples of Gujarati diaspora. He also spoke about Romania and highlighted the situation of Roma community that they are struggling due to their minority identity in Europe.

Prof. Saroj Sharma emphasized that eminent universities such as Stanford University is working on Shikshak-Shiksha thus it will be of great use and important to introduce the concept of diaspora in shikshak-shiksha. She also said that including diaspora in teacher education is important and that influence of diaspora can be seen in everything such as our cuisines, attires, the way of living etc. because India is a country of diversity which has migrants from different places who share different culture and tradition since ages which can be seen in Indian history. She further said that Indian people have never forced any country, community or group of people to learn our Indian culture but many countries have acquired and followed many things from our culture and tradition through Indian diaspora.

Prof. Neerja Gupta stressed on the importance of Indian diaspora that it has given the base of the culture to many countries who have followed the Indian culture. She said that India has the largest sender of migrants to other countries who have expanded the Indian culture all over the world. She also highlighted the current changes made by the Government of India with OCI Card that Indian diaspora now cannot use the OCI card as visa. The move by the Indian government has created an environment of panic among the Indian diaspora. She also underlined the important point that how Diaspora Studies can be brought with NEP. She said that each department has immense possibility to introduce Diaspora Studies. She also stressed on the issue of concern that most of the data provided by people in different areas are less

authentic. Agencies such as FICCI (The Federation of Indian Chambers of Commerce & Industry) provide authentic data.

Prof. Ashwini Mohapatra, Dean, School of International Studies, JNU delivered the Keynote Address through Online Mode. Prof. Mohapatra spoke about the concept of diaspora and its importance in social sciences. He said that diaspora is the part of social anthropology and sociology. He discussed the NEP 2020 and said that Diaspora Studies has emerged itself as interdisciplinary and it shows multidisciplinary character. He has also said that Diaspora as a concept defies the conventional understanding of nation-state and nation-state has to be redefined due to transnationalism. He also highlighted the importance of diasporic literature and said that it has to be examined. He suggested that young research scholars should take interest in researching on diaspora in education. He also suggested that research scholars in Diaspora Studies focus on textual analysis whether it is literature or narrative. Further, he discussed some of the contributions made by Indian diaspora to home and host land such as remittances, knowledge etc.

Prof. Rama Shanker Dubey, Hon'ble Vice-Chancellor, Central University of Gujarat delivered the Presidential Address. Prof. Dubey accentuated the struggle of Indian diaspora during the British rule and discussed the struggle of Pt. Madan Mohan Malaviya during the collection of data of Indians who were enslaved and killed by Britishers. He also focused that we should know our Indian culture and it is important to infuse Indian nationalism right from the beginning as envisioned under the NEP 2020. He emphasized on the contributions of Indian diaspora to the development of India. Underlining the interdisciplinary nature of Diaspora Studies, he wished that the Workshop will deliberate on various methods of introducing Diaspora Studies in school and higher education under NEP 2020.

The Inaugural session ended with the vote of thanks offered by **Dr. Rajneesh Gupta**, Assistant professor, Centre for Diaspora Studies, CUG.

The second session of the workshop was titled **'Diaspora Studies in Humanities Curriculum'**. The session was chaired by Prof. Jyotirmaya Tripathy, Professor and Head, Department of Humanities and Social Sciences, IIT Madras and the session had three eminent resource persons Prof. Kamal Mehta, Professor, Department of English, Saurashtra University, Rajkot, Gujarat, Prof. Usha Upadhyay, Professor, Department of Gujarati, Gujarat Vidyapith and Prof. D. P. Jadeja, Department of Hindi & Dean of Sports, The M. S. University of Baroda.

Prof. Jyotirmaya Tripathy discussed about the importance of introducing new streams to students under the NEP 2020. He said that it is important to orient our students and implement NEP to make them self-reliable. **Prof. Kamal Mehta** stressed on the issue that diaspora literature is less considered comparing to the history of diaspora. He also said that NEP 2020 should be implemented with a concern that how it can make students a good citizen. **Prof. Usha Upadhyay** spoke about diaspora writers that most of the diaspora writers write about the struggle of diasporas such as coping with host land's culture, nostalgia etc. She also pointed out the need and importance of Diaspora literature because diasporic writers write on their experiences of home and host land. She also stressed on the importance of mother tongue in the diasporic space. **Prof. D. P. Jadeja** stressed on the Hindi perspective of diaspora literature that Bhartiya Pravasi Literature in Hindi language has never been considered as the main writing of Hindi Literature. Pravasi literature and language is purer than we are writing in India. He divided the diaspora literature in Hindi into two parts: Girmitya literature (has writings on the pain of leaving the country) and Non-Girmitya literature (is more about the preserving of culture and their position). The session ended with the vote of thanks offered by **Dr. Chapparban Sajaudeen Nijamodeen**, Assistant Professor, Centre for Diaspora Studies, CUG.

The third session of the workshop was titled **'Diaspora Studies in Social Sciences Curriculum I'** and was chaired by Prof. Sangit K. Ragi, Department of Political Science, University of Delhi, and the session had three eminent resource persons such as Prof. Alok Kumar Chakrawal, Professor, Department of Commerce and Business Administration, Saurashtra University, Rajkot, Prof. Jyotirmaya Tripathy, Professor and Head, Department of Humanities and Social Sciences, IIT Madras, and Prof. Manoj Kumar Mishra, Coordinator, Malviya Centre for Peace Research, Faculty of Social Sciences, New Building, BHU, Varanasi.

Prof. Sangit K. Ragi emphasized on the Hindu Diaspora in US and UK. He also said that Indians have multiple identities due to India's diversity. He stressed on some themes such as the formation of identity, distant nationalism etc. which according to him should be thought and discussed about. **Prof. Alok Kumar Chakrawal** highlighted on the history of diaspora that slavery is the background of diaspora (Girmityas). He co-related diaspora and humanities. He spoke about the remittances received from the top Indian businesspersons or entrepreneurs around the globe such as Hinduja Business Empire (Hinduja Brothers), UK, Shapoor Pallonji Mistry, Ireland, Laxmi Mittal, UK, Yusuff Ali, UAE and several other

entrepreneurs who have settled abroad and established company. They are contributing to the economic development of India. He further stated that Indian diaspora or diaspora studies should be introduced in the field of education in every stream such as commerce and economics because Indian diaspora is contributing to the economic development of the country through their business and remittances. He emphasized that diaspora studies in education should be introduced from undergraduate level. **Prof. Manoj Kumar Mishra** said that global Indian diaspora can play a major role in peace building. He said that in the era of globalisation diaspora has played an important role in foreign policies, international relations etc. He further said that diaspora can play a vital role in conflict resolution. He also suggested some themes for future researches: 1. Diaspora's contribution in peace building, 2. Diaspora's contribution in international politics and 3. Diaspora in peace processing. He said that diaspora as a soft power can contribute to peace building in the country of origin. He also highlighted some unique role of diaspora i.e., 1. Promoting development, 2. Human capital exchange and 3. Remittances. **Prof. Jyotirmaya Tripathy** discussed the centri-fugal and centri-petal force of diaspora. He suggested that instead of providing study material in the curriculum practicing the diaspora will help the students to gain practical knowledge and understand the true concept and importance of diaspora. The session ended with the vote of thanks offered by **Dr. Naresh Kumar**, Assistant Professor, Centre for Diaspora Studies, CUG.

The fourth session of the workshop was titled **'Diaspora Studies in Social Sciences Curriculum-II'** and was chaired by Prof. Manoj Kumar Mishra, Coordinator, Malviya Centre for Peace Research, Faculty of Social Sciences, BHU, Varanasi and the session had two eminent resource persons Prof. T.T. Sreekumar, Department of Communication, The English and Foreign Languages University, Hyderabad and Prof. Manish, Dean, School of International Studies, Central University of Gujarat.

Prof. T T Sreekumar stressed that transnationalism is one of the important aspects in the diaspora studies. He said that it is important to study transnationalism, media, globalisation and culture in diaspora studies. He also stressed on the issues of Chinese community in Singapore that Singapore is a diasporic space but China and Singapore have weak political relationship, the public sphere is more antagonistic towards the government than the diasporic community in Singapore. The Chinese community in Singapore has gone against the government and stood with Indian diaspora community. He said that culture studies also supports transnational studies. The transnational term has impacted the future studies in

globalisation and diaspora. He said that if we want to understand diaspora in pedagogy then we need to first understand privileging the nation. Diaspora is a transnational community thus while reading globalisation and diaspora, we have to read it through the perspective of transnationalism. He spoke about the comparative and holistic perspectives of media, transnationalism, globalisation, culture and the changing nature of the nation. **Prof. Manish** spoke about Indian diasporic literature and how the literature has dealt with all the characteristics and aspects of diaspora. He also spoke about Brand India, the origin of diaspora, the scope of diaspora and its use in education. He said that the Indian diasporic studies program and the centres of diaspora studies in different universities such as HCU, CUG etc. focus on the global migration. He also said that during the very short span the Centre for Diaspora Studies, CUG has organised various programs and has focused on to describe the concept of diaspora from various disciplines such as literature, media, humanities, social sciences etc., and this is the most prominent example that diaspora studies has prospered and the true meaning of diaspora is delivered. He spoke about teaching methodologies that it creates more space for change of ideas and provide broader and flexible perspectives to do the research. **Prof. Manoj Kumar Mishra** stressed on the changes which has taken place during COVID-19 Pandemic and said that it took diaspora to the place the way it was looked before 30 years. He also said that new aspects of diaspora should be researched. And diaspora should be looked through multidimensional perspectives. He said that in the coming ages India is going to be the powerful country, thus, it is important that Indian policy makers should implement policies in the favour of diasporas because they are the important community of India who have always stood behind the development of the country. He also highlighted that the role of the universities has taken bold steps to make diaspora studies more vibrant. The session ended with the vote of thanks offered by **Dr. Shailendra Kumar**, Assistant Professor, Centre for Diaspora Studies, CUG.

Apart from these sessions, there were two parallel **Interaction Sessions** – one was on 'Diaspora Studies in Social Sciences Curriculum' and the other was on 'Diaspora Studies in Humanities Curriculum' in which distinguished faculty participants offered their suggestions and remarks on various aspects of diaspora studies and its introduction in school and higher education curriculum in view of NEP 2020.

The Interaction Session titled **'Diaspora Studies in Social Sciences Curriculum'** was chaired by Prof. Alok Kumar Chakrawal, Professor, Dept. of Commerce and Business Administration, Saurashtra University, Rajkot and was moderated by Dr. Sailendra Kumar

Swain, Assistant Professor, Delhi Institute of Heritage Research and Management, New Delhi. The session had discussion on numerous topics such as diaspora and gender, issues of NRC, diaspora in communication studies, forced migration, introducing diploma course in diaspora, human rights and diaspora, to include diaspora studies in UGC NET, understanding the importance of the role of diaspora in making decision on foreign policies and so on.

The Interaction Session titled **'Diaspora Studies in Humanities Curriculum'** was chaired by Prof. Kamal Mehta, Dept. of English, Saurashtra University, Rajkot and was moderated by Dr. Parul Shantilal Popat, Dept. of English, Sardar Patel University, Vallabh Vidyanagar. The session had discussion on various topics such as problems and prospects of translation, diaspora and incorporation, incorporation of cross-genre text etc. It also had discussions on the need of transdisciplinary approach to diaspora, the necessity of practical participation of students and scholars in the diaspora through cross-cultural analysis of text and film, the need to include diaspora in curriculum of all disciplines.

The **Valedictory Session** was presided by Prof. H.B. Patel, Director, PMMMNMTT, & Dean, School of Education, CUG. The Valedictory Session had Prof. Balwant Jani, Hon'ble Chancellor, Dr. Harisingh Gour University, Sagar, M.P. as the Chief Guest and Prof. Sangit K. Ragi, Department of Political Science, University of Delhi as the Special Guest. In this session, Prof. Atanu Mohapatra delivered the Welcome Address, Prof. Ajay Dubey, Professor, Centre for African Studies, SIS & Director, IQAC, JNU delivered Valedictory Address (through Online Mode) and the Vote of Thanks was offered by Dr. Siba Sankar Mohanty.

Prof. Balwant Jani said that there is a vast scope in introducing diaspora in various disciplines and every discipline should have at least one subject on diaspora studies. He said that diaspora is a multidisciplinary subject and plenty of work can be done on diaspora in every discipline. He particularly stressed on the Gujarati diaspora and said that earlier he has not seen a subject of diaspora studies in Gujarati literature, thus he insisted to introduce Gujarati diasporic literature. He also said that people of other countries have always been influenced by the way and living style of Gujarati diaspora. Overall, he stressed on the importance of Gujarati diasporic literature and suggested to introduce diaspora studies in every discipline.

Prof. Sangit K. Ragi spoke about the Chinese diaspora that it has played a significant role in building China. He also said that Chinese products especially machinery equipments, auto-

mobiles, electronic gadgets etc. have played a vital role in developing economy of China because almost every country has purchased several products from China before COVID-19. He also mentioned that several apps such as WeChat, Tik-Tok etc. which is banned due to national security have also contributed to the development of the economy of China.

Prof. Ajay Kumar Dubey spoke about globalisation and diaspora that many countries have developed socially and economically due to diasporic individuals because many individuals have contributed to their host land through their knowledge and work. He also spoke about the business or trading between countries and said that globalisation has benefitted in increasing the level of trading between countries. Stressing about globalisation, diaspora and business he spoke about China's business relationship with other countries that China has grown due to globalisation and business.

The Workshop ended with the vote of thanks by the convener, who thanked everybody for their contributions in successfully organizing the Workshop.

On the whole, the two-day workshop on 'Diaspora Studies in the Curriculum and Pedagogy of Indian Education System with Special Focus on NEP 2020' highlighted on the importance of including Diaspora Studies in various disciplines, curriculum and pedagogy. The Workshop brought many scholars of diaspora studies from different disciplines on one platform, who shared their insights, illuminations and mechanisms on introducing Diaspora Studies in school and higher education keeping the focus on NEP 2020.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Two-day Workshop on

Diaspora Studies in the Curriculum and Pedagogy of Indian Education System with Special Focus on NEP 2020

Date: 13-14 March 2021

The civilization of India, like the banyan tree, has shed its beneficent shade away from its own birthplace... India can live and grow by spreading abroad - not the political India, but the ideal India.
Rabindranath Tagore (

Venue: Central University of Gujarat, Sector – 29, Gandhinagar, Gujarat, India

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Diaspora Studies in the Curriculum and Pedagogy of Indian Education System with Special Focus on NEP 2020

Date: 13-14 March 2021

Programme Schedule

Day 1: 13 March 2021

Inaugural Session (10 A.M. to 11:45 A.M.)

S. No.	Name	Designation and Affiliation	Time
Invocation of Kulgeet, Lighting of Lamp, and Felicitation of Dignitaries			10A.M. - 10:07 A.M.
1	Dr. Siba Sankar Mohanty (Introduction of the Workshop)	Convener of the Workshop and Assistant Professor, Centre for Diaspora Studies, CUG, Gandhinagar	10:07 A.M. – 10:14 A.M.
2	Prof. Atanu Mohapatra (Welcome Address)	Chairperson, Centre for Diaspora Studies, CUG, Gandhinagar	10:14 A.M. - 10:22 A.M.
3	Prof. H.B. Patel (Special Remarks)	Director, PMMMNMTT, & Dean, School of Education, CUG, Gandhinagar	10:22 A.M. – 10:30 A.M.
4	Prof. Saroj Sharma (Guest of Honour)	Chairperson, National Institute of Open Schooling, NOIDA, UP, India	10:30 A.M. - 10:50 A.M.
5	Prof. Neerja Gupta (Chief Guest)	Hon'ble Vice Chancellor of Sanchi University of Buddhist - Indic Studies, Distt. Raisen (M.P.).	10:50 A.M. – 11:10 A.M.

6	Prof. Ashwini Mohapatra (Keynote Address - Online Mode)	Dean, School of International Studies, Jawaharlal Nehru University, New Delhi	11:10 A.M. – 11:35 A.M.
7	Prof. Rama Shanker Dubey (Presidential Address)	Hon'ble Vice-Chancellor, Central University of Gujarat, Gandhinagar, India	11:35 A.M. – 11:45 A.M.
8	Dr. Rajneesh Gupta (Vote of Thanks)	Assistant Professor, Centre for Diaspora Studies, CUG, Gandhinagar	11:45 A.M. – 11:50 A.M.

Tea – 11:50 A.M. to 12:15 P.M.

1st Session – 12:15 P.M. to 2:00 P.M. – Diaspora Studies in Humanities Curriculum

Resource Persons of the Session	Chair of the Session	Vote of Thanks
1. Prof. Kamal Mehta Department of English, Saurashtra University, Rajkot, Gujarat 2**. Prof. Usha Upadhyay** Professor, Department of Gujarati,Gujarat Vidyapith 3. **Prof. D. P. Jadeja** Department of Hindi & Dean of Sports, The M. S. University of Baroda	**Prof. Jyotirmaya Tripathy** Professor and Head, Department of Humanities and Social Sciences, IIT Madras	**Dr. Chapparban Sajaudeen Nijamodeen**, Assistant Professor, Centre for Diaspora Studies, CUG, Gandhinagar

Lunch: 2:00 P.M. – 3:00 P.M.

2nd Session – 3:00 P.M. to 5:00 P.M. – Diaspora Studies in Social Sciences Curriculum I

Resource Persons of the Session	Chair of the Session	Vote of Thanks
1. **Prof. Alok Kumar Chakrawal** Dept. of Commerce and Business Administration, Saurashtra University, Rajkot – 360005 2. **Prof. Jyotirmaya Tripathy** Professor and Head, Department of Humanities and Social Sciences, IIT Madras 3. **Prof. Manoj Kumar Mishra** Coordinator, Malviya Centre for Peace Research Faculty of Social Sciences New Building, BHU, Varanasi	**Prof. Sangit K. Ragi** Department of Political Science, University of Delhi, Delhi, India	**Dr. Naresh Kumar**, Assistant Professor, Centre for Diaspora Studies, CUG, Gandhinagar

Day 2: 14th March 2021

3rd Session- 9:45 A.M. to 11:45 A.M. – Diaspora Studies in Social Sciences Curriculum - II

Resource Persons of the Session	Chair of the Session	Vote of Thanks
1. **Prof. T.T. Sreekumar** Dep. of Communication, The English and Foreign Languages University, Hyderabad 2. **Prof. Adhya Saxena** Dean, Faculty of Arts, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat 3. **Prof. Manish** Dean, School of International Studies, Central University of Gujarat, Gandhinagar	**Prof. Sarita Agrawal**, Dean, School of Social Sciences, Central University of Gujarat, Gandhinagar	**Dr. Shailendra Kumar,** Assistant Professor, Centre for Diaspora Studies, CUG, Gandhinagar

Tea: 11:45 A.M. to 12 P.M.

Interaction and Feedback Session 12:00 P.M. to 02:00 P.M. – Parallel Session I & II

Parallel Session I

Title of the Session	Speakers of the Session	Chair of the Session	Moderator	Venue
Diaspora Studies in Social Sciences Curriculum	All the Participants from Social Sciences Discipline	**Prof. Alok Kumar Chakrawal**, Dept. of Commerce and Business Administration, Saurashtra University, Rajkot	**Dr. Mahesh Ranjan Debata**, School of International Studies, JNU, New Delhi	Seminar Hall, CUG, Sector – 29, Gandhinagar

Parallel Session II

Title of the Session	Speakers of the Session	Chair of the Session	Moderator	Venue
Diaspora Studies in Humanities Curriculum	All the Participants from Humanities Discipline	**Prof. Kamal Mehta,** Department of English, Saurashtra University, Rajkot, Gujarat	**Dr. Parul Shantilal Popat**, P.G. Dept. of English, S.P. University, Vallabh Vidyanagar	VLRC, CUG, Sector – 29, Gandhinagar

Lunch: 2:00 P.M. – 03:00 P.M.

Valedictory Session (03:00 P.M. to 05:00 P.M.)

S. No.	Name	Designation and Affiliation	Time
Invocation of Kulgeet, Lighting of Lamp, and Felicitation of Dignitaries			3 P.M. – 3:07 P.M.
1	Prof. Atanu Mohapatra (Welcome Address)	Chairperson, Centre for Diaspora Studies, CUG, Gandhinagar	3:07 P.M. - 3:13 P.M.
2	Prof. H.B. Patel (Special Address)	Director, PMMMNMTT, & Dean, School of Education, CUG, Gandhinagar	3:13 P.M. – 3:20 P.M.
2	Presentation of Rapporteur's Report	Research Scholars of Centre for Diaspora Studies, Central University of Gujarat	3:20 P.M. – 3:30 P.M.
3	Prof. Sangit K. Ragi (Special Guest)	Professor, Department of Political Science, University of Delhi	3:30 P.M. – 3:55 P.M.
4	Prof. Balwant Jani (Chief Guest)	Honourable Chancellor, Dr. Harisingh Gour University, Sagar, M.P.	03:55 P.M. – 4:20 P.M.
5	Prof. Ajay Dubey (Valedictory Address– Online Mode)	Professor, Centre for African Studies, SIS Director, IQAC, Jawaharlal Nehru University New Delhi – 110067	4:20 P.M. – 4:45 P.M.
6	Prof. Rama Shanker Dubey (Presidential Address)	Hon'ble Vice-Chancellor, Central University of Gujarat, Gandhinagar, India	04:45 P.M. - 04:55 P.M.
7	Dr. Siba Sankar Mohanty (Vote of Thanks)	Assistant Professor, Centre for Diaspora Studies, CUG, Gandhinagar	04:55 P.M.- 5:00 P.M.

High Tea: 5 P.M.

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(भारत की संसद के अधिनियमसं 25, 2009 के तहत स्थापित)
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In Collaboration with

Centre for Migration, Refugees and Belonging, University of East London, U.K.

(30 June 2020 – 2 July 2020)

Inaugural Session 10:00 am – 11:30 am **(IST)**

Welcome Address

Dr. Atanu Mohapatra,
Chairperson, CDS-CUG

Introduction to Workshop

Sajaudeen Nijamodeen Chapparban,
CDS-CUG, Convener and Coordinator

Presidential Address

Prof. Rama Shanker Dubey,
Hon'ble V.C. Central University of Gujarat, India

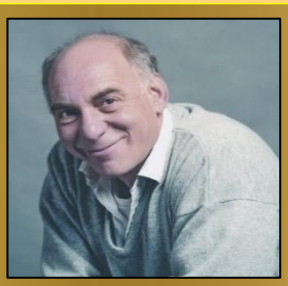
Chief Guest

Prof. Giorgia Dona,
Co-Director, Centre for Migration, Refugees and Belonging, University of East London, U.K.

Invited Guest's remark

Prof. Alok Gupta
Registrar, Central University of Gujarat, India

Keynote Speaker



Prof. Robin Cohen,
Emeritus Professor and Former Director of the International Migration Institute, University of Oxford. Senior Research Fellow at Kellogg College. U.K.

Vote of Thanks: Dr. Naresh Kumar, CDS, CUG LIVE

Streaming live all session on Central University of Gujarat Facebook Page https://www.facebook.com/cugadmin/

1st International Workshop

on

Research Methods and Approaches to Migration and Diaspora Studies

(ONLINE)

Organized by

Central University of Gujarat, Gandhinagar, India.

In Collaboration with

Centre for Migration, Refugees and Belonging, University of East London, U.K.

DAY – 1

30 June 2020

Timing: 11:30am - 12:20 pm

Session I: Inaugural Lectures

Interdisciplinary and Multidisciplinary Approaches Migration and Diaspora

SPEAKERS

Dr. Georgie Wemyss

Co-Director Centre for research on Migration, Refugees and Belonging, University of East London, U.K.

Prof. Daniel Naujoks

Interim Director International Organization and UN Studies Specialization, School of International and Public Affairs | Columbia University

Chair & Moderator

Prof. Atanu Bhattacharya

Dean, School of Language, Literature & Culture Studies, Central University of Gujarat, Gandhinagar, India.

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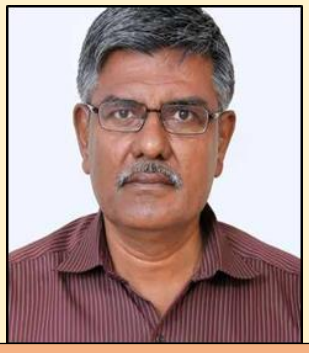
DAY – 1

30 June 2020

Timing: **12:20 pm -02:15 pm IST**

Session – II: Contemporary Methodological Issues in Migration and Diaspora Research

SPEAKERS



Prof. S. Irudya Rajan,

Centre for Development Studies, Trivandrum, India

Prof. Amit Kumar Mishra

School of Global Affairs, Dr. B R Ambedkar. University, Delhi

Chairs & Moderators

Dr. Shailendra Kumar

Central University of Gujarat, Gandhinagar, India

Dr. Sayantan Mondal

GITAM University, Hyderabad, India.

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गुजरात केन्द्रीय विश्वविद्यालय
(भारत की संसद के अधिनियमसं 25, 2009 के तहत स्थापित)
CENTRAL UNIVERSITY OF GUJARAT
(Established by an Act of Parliament of India, No 25 of 2009)

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The Centre for Research on Migration, Refugees and Belonging

University of East London
Pioneering Futures Since 1898

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DAY – 2
01 July 2020
Timing 10:00am -12:10 pm IST

Session III: Research Methods and Approaches to Migration

SPEAKERS

Prof. R.B. Bhagat

International Institute for Population Sciences, Mumbai, India

Dr. Naresh Kumar

CDS, Central University of Gujarat, Gandhinagar, India.

Chairs & Moderators

Dr. Ruchi Singh

Prin. Welingkar Institute of Management Development & research, Mumbai.

Dr Siba Mohanty

Central University of Gujarat, Gandhinagar, India

LIVE

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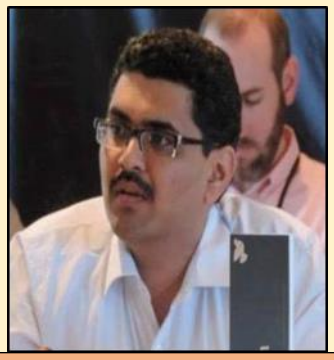
DAY – 2

01 July 2020

12:15-02:15 PM

Session IV: Research Methods and Academic Writing

SPEAKERS



Dr. Arun Vishwanathan

Central University of Gujarat, Gandhinagar, India

Dr. Madhu Lika,

VIT, AP, India

Chairs & Moderators

Dr. Rajneesh Gupta
Central University of Gujarat, Gandhinagar, India

Dr. Mosarrap Hossain Khan

O.P. Jindal Global University, India

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Session V: (10:00 AM-12:15 PM)

Research Methods and Approaches to Diaspora

SPEAKERS

Prof. Anisur Rahman

Director, UGC-HRDC
Jamia Millia Islamia University,
NewDelhi

Prof. Aparna Rayaprol

University of Hyderabad,
Hyderabad, India

Chairs & moderators

Dr Sadanand Sahoo

Indira Gandhi National Open University, New Delhi

Ms Eva Loreng

Central University of Gujarat, Gandhinagar, Gujarat

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DAY – 3

02 July 2020 TIME 12:15 -1:45 PM IST

SESSION-VI

OPEN PANEL DISCUSSION ON MIGRATION, DIASPORA, AND BEYOND

SPEAKERS

Prof. Elahe Haschemi
Yekani, Humboldt-Universität zu Berlin, Germany

Prof. Binod Khadria,
Jawaharlal Nehru University, New Delhi, India

Dr. Paiman Ahmad
University of Raparin, and Tishk International University-Iraq

Prof. Gargi Bhattacharya
University of East London, U.K.

Dr Rahul K Gairola
The Krishna Somers Lecturer and Fellow of the Asia Research Centre, Murdoch University, Perth, Western Australia.

CHAIRS

Prof. Giorgia Dona
Co-Director, Centre for Migration, Refugees and Belonging, University of East London, U.K.

Dr. M. Mahalingam
President, Global Research Forum on Diaspora and Transnationalism, New Delhi, India.

Closing Remarks

Sajaudeen Chapparban
Assistant Professor & Convener of the Workshop
CDS, CUG

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Centre for Migration, Refugees and Belonging, University of East London, U.K.

DAY – 3

02 Julv 2020

Special valedictory Lecture (5:30 pm- 6:10pm IST)

On

Migration, Adaptation, and Hybridity: The Diasporic Transformation of a Gujarati Community

Prof. Karim H. Karim
Carleton Univesity, Canada

SPEAKER

Dr Atanu Mohapatra
CDS, Central University of Gujarat, Gandhinagar

CHAIR

Sajaudeen Chapparban
Assistant Professor & Convener of the Workshop

MODERATOR &CLOSING REMAKS

Streaming live on Central University of Gujarat Facebook Page https://www.facebook.com/cugadmin/

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INVITATION

1st International Workshop

on

RESEARCH METHODS AND APPROACHES TO MIGRATION AND DIASPORA STUDIES (ONLINE)

Organized by

Centre for Diaspora Studies
Central University of Gujarat, Gandhinagar, India.

In Collaboration with

Centre for Migration, Refugees and Belonging, University of East London, U.K.
(30 June 2020 – 2 July 2020)

Valedictory Session: *1:50*-2:30 PM **(IST)**

Valedictory Address

Prof. Eftihia Voutira
Anthropology of Forced Migration, University of Macedonia, Thessaloniki, Greece

Vote of thanks

Prof. Giorgia Dona,
University of East London, UK

Vote of thanks

Sajaudeen N. Chapparban,
CDS-CUG, Convener and Coordinator of the workshop

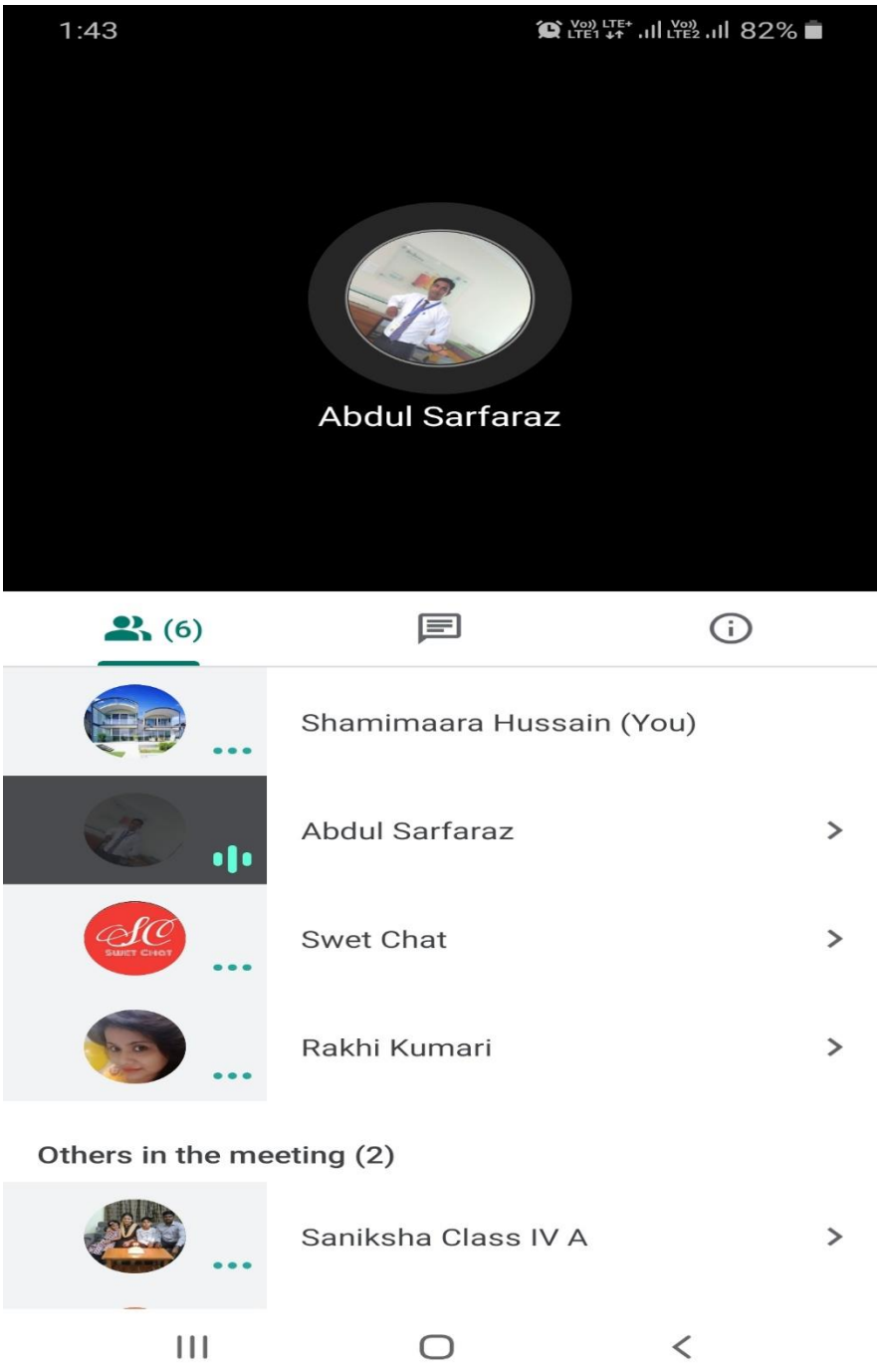
REPORT OF GUEST LECTURE

School of Education has organized an online guest lecture for our M.Ed.III semester studends on website designing on the content of the course ESS01B unit 4. In this guest lecture all the students of M.Ed.III semester were actively present.

Date of the lecture: 27/08/2020

Name of Expert was : Mr.Abdul Sarfaraz
Visiting faculty of IMS,DAVV, Indore(M.P.)
Ex project assistant SAP-DRS,School of Education,davv, Indore(M.P.)
Admin and technical head of Pakiza educational Group,Indore (M.P.)

Lecture was ended with the thanks presented by Dr.Shamim Aara Hussain.SE,CUG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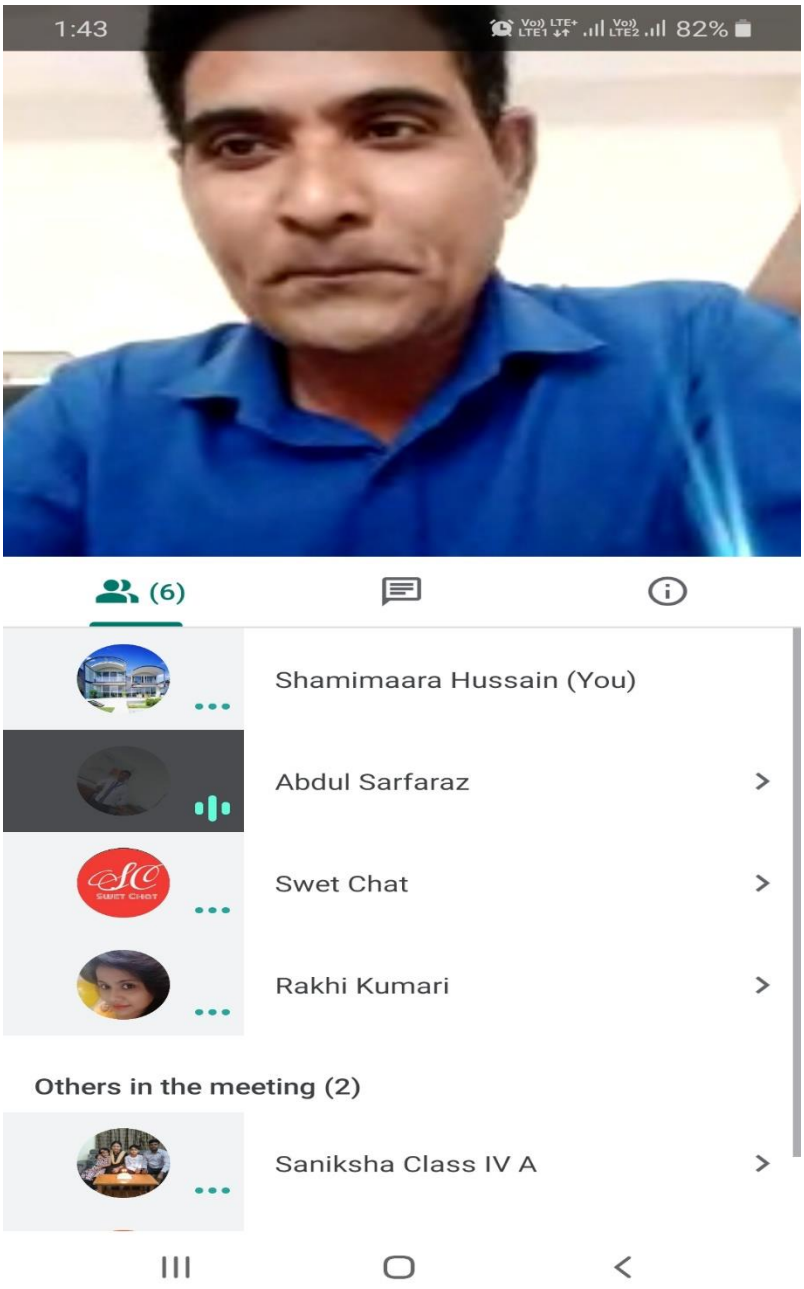
Shamimaara Hussain (You)
Abdul Sarfaraz
Swet Chat
Rakhi Kumari
Others in the meeting (2)
Saniksha Class IV A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Shamimaara Hussain (You)
Abdul Sarfaraz
Swet Chat
Rakhi Kumari
Others in the meeting (2)
Saniksha Class IV A

Two Days Webinar on Building Society through Pedagogy and Curriculum Innovations with Reference to National Education Policy 2020

Organized by

School of Social Sciences

&

School of Education

In Collaboration with

Akhil Bhartiya Rashtriya Shaikshik Mahasang (ABRSM) – Delhi

गुजरात केन्द्रीय विश्वविद्यालय
CENTRAL UNIVERSITY OF GUJARAT

15th - 16th September, 2020

School of Social Sciences
&
School of Education,
Central University of Gujarat, Gandhinagar
in collaboration with
Akhil Bhartiya Rashtriya Shaikshik Mahasangh (ABRSM) - Delhi
Jointly organizing

Two Days Webinar
on

Building Knowledge Society through Pedagogy and Curriculum Innovations with Reference to National Education Policy 2020

from 4.30 pm on 15th Sep20 & from 11.30 am on 16th Sep20 Platform: Microsoft Teams
Join the webinar on Face Book Live https://www.facebook.com/cugadmin/

Prof. D. P. Singh, Hon'ble Chairman, UGC, India

Prof. J.P. Singhal
President
Akhil Bhartiya Rashtriya Shaikshik Mahasangh

Prof. Rama Shanker Dubey
Hon'ble Vice Chancellor
Central University of Gujarat

Prof. Alok Kumar Gupta
Registrar
Central University of Gujarat

Webinar Conveners

Prof. Pragnesh Shah

Prof. Sarita Agrawal

Prof. H. B. Patel

Guest Speakers

Prof. R. B. Kothari | Prof. Sujata Srivastav | Prof. Pankaj Arora | Prof Sushma Yadav | Dr. Indumati Katdhare | Prof. Bhagwati Prakash Sharma

(Broucher of two day's webinar)

Day 1

On 15th September 2020, the Programme started at 4.30 pm.

Session: Inaugural

The session began with the invocation of University *"Kulgeet"* of Central University of Gujarat written by honorable Vice-Chancellor of Central University of Gujarat Prof. Rama Shankar Dubey.

Prof. HB Patel, Dean, School of Education, Central University of Gujarat welcomed all the dignitary guests and speaker of the two days webinar organized by School of Social Science, School of Education, Central University of Gujarat and Akhil Bhartiya Rashtriya Shaikshik Mahasangh (ABRSM).

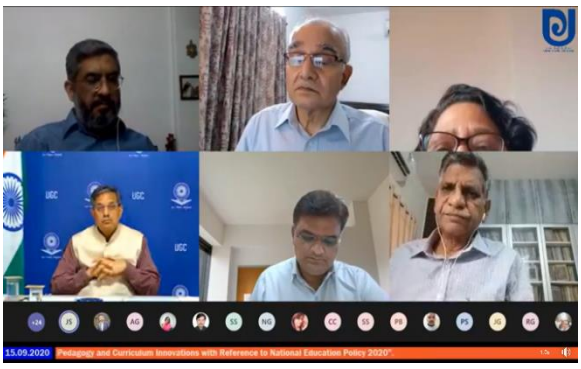
(Prof. H. B. Patel welcoming all the dignitaries)

The inaugural address formally began with a welcome address by Prof. Rama Shankar Dubey, Vice Chancellor, Central University of Gujarat. After welcoming all the dignitary guests, he signified National Educational Policy, 2020 as a much-needed radical change in the current scenario of Indian education system which aims at producing highly competent professional in our country. It aims at developing students as global citizen by being deeply connected to their ancient roots. After highlighting the significance of NEP 2020, he wished all the organizers and dignitary guest for conceptualizing and successfully organizing such an important webinar

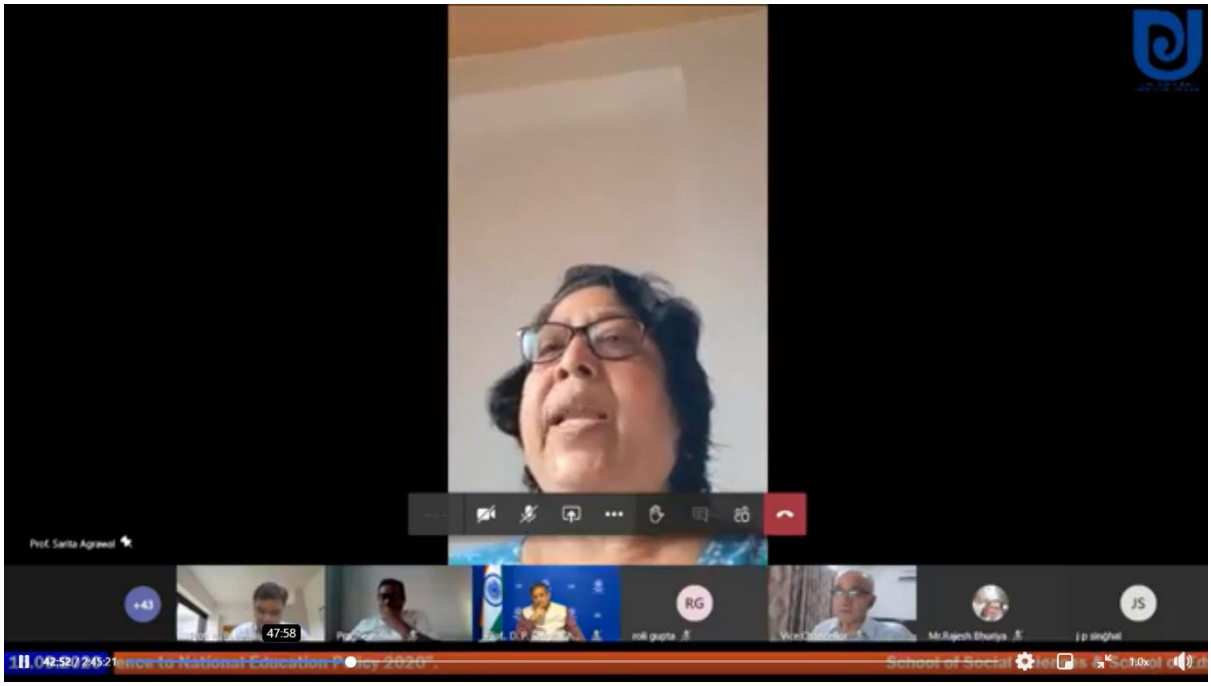
themed on building society through pedagogy and curriculum innovations with reference to National Education Policy (NEP), 2020.

This session was followed by the opening remark by Dr. J.P Singhal, President of Akhil Bhartiya Rashtriya Shaikshik Mahasangh (ABRSM). He began his speech by considering National Education Policy, 2020 as one of the historical and comprehensive documents. It provides vision to make India a superpower. He quoted the vision of Dr. APJ Abdul Kalam who emphasized on building knowledge- based society. Therefore, the focus lies mainly on improving pedagogy and curriculum at various level. At the foundational level, the NEP 2020 focusses on flexible, play and activity-based learning and curriculum of pedagogy and curriculum. The middle stage emphasizes on experiential learning in each subject. The Secondary level talks about multidisciplinary study and higher education talks significantly on developing the culture of research and innovation. So, the curriculum and pedagogy discussed in NEP, 2020 helps us to move away from the system of rote-learning to focusing on the holistic development of students.

He quoted Swami Vivekanand's word who said that education is the manifestation of the perfection already in man. Therefore, the focus should be on building knowledge and critical thinking and the means to attain such education should be joyful, called as *"anandmayi shiksha"*. That is why the National Education Policy 2020 talks about integrating art and indigenous sports with the education. Also, the choice provided to students for selecting subjects of their choice, multiple entry and exit system, medium of instruction in the mother tongue, preparing content in the local language and three language formula are stated in NEP 2020 with the purpose of making education enjoyable and meaningful to students. Dr. Singhal ended his speech by saying that the kind of education envisioned in the National Education Policy would help in making India that is, *Bharat as Vishwaguru.*



The session then proceeded by Prof. Sarita Agrawal, Dean, School of Social Sciences, Central University of Gujarat by highlighting the major points of higher Education stated in National Educational Education Policy, 2020 and about two days webinar which was focused on building society through curriculum and pedagogy envisioned in National Education Policy, 2020 .



The session was then followed by Prof. Pragnesh B. Shah, professor MSU, Baroda and Vice-president of Akhil Bhartiya Shaikshik Mahasangh by introducing the chief guest of the webinar Prof. D.P Singh, honorable chairman of University Grant Commission (UGC), India, one of the great scholarly and literary figure who holds 34 years of professional experience and has served as head of different institutions such as, Director of NAAC and Vice Chancellor of three Universities- Banaras Hindu University, Dr. Hari Singh Gour University, Devi Ahilya Vishwavidyalaya and known for his great contributions in promoting quality in the field of Higher Education. Prof. Shah referred him as man of international repute well connected to the Indian roots. He then invited him to address the audience by sharing his valuable thoughts.

Prof D.P Singh began his speech by welcoming everyone present in the two days webinar on building society through pedagogy and curriculum innovations with reference to National Education Policy 2020. He referred 29th July 2020 as historic day for Indian education as a new education policy came in the picture after 34 years. It should also be considered as a first education policy of 21st century. This policy highlights many new dimensions and opens many avenues for younger generation. The National Education Policy (NEP), 2020 is holistic, futuristic, flexible, and promotes quality higher education. The NEP 2020 focusses on developing a good, all-rounder, creative, curious, spiritual, and value-bound individual who becomes global citizen by having pride in Indian culture and values. It is multi-disciplinary aims at revamping curriculum, pedagogy, and assessment. It provides the scope of multiple entry and exit, different types and duration of bachelor's program and credit-based transfer system.

The curriculum and pedagogy must develop a deep sense regarding fundamental duties, and constitutional duties by having deep understanding of Indian values and culture. He quotes the words of the Indian Prime Minister Narendra Modi from the conclave of NEP 2020 where he asked every Indians to move from the idea of what to think to how to think. Therefore, the curriculum should become the basis of any educational reform. The NEP 2020 emphasize on less content and more on critical thinking. The three areas- holistic, learner based, and multi-disciplinarily aspects of subjects are the basis of curricular reforms discussed in NEP 2020. This would further fulfill all aspect of learner centered education by abolishing the hierarchy of subjects and signifying the integrity of all the subjects. He quoted the words of Indian Education Minister Dr. Ramesh Singh 'Pokhariyal' who said, "Character first and nation must". Therefore, the major principle should be the respect for diversity and local content. The NEP 2020 also highlights the flexibility of the curriculum that should meet learning outcome and promotes holistic education. The students should be well versed with roles and responsibilities as citizen of India.

There was a great need of revisiting curriculum. The streaming of education of education should not there which means there will not be any specific category of curricular, co-curricular or extracurricular activities in education. In fact, all activities should become an integral part of curriculum and pedagogy. The NEP 2020 talks extensively on vocational and skill-based education which will start from class 6th onward rather than from class 12th which is in current practice. To make our students employment worthy, knowledgeable, proficient and skill based so that they achieve gainful employment.

The aims and objective of NEP 2020 is based on Sustainable development goal (SDG's) that is, to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" which would require effort from every ends to improve the entire education system. To increase access or Gross Enrollment Ratio (GER) in higher education, NEP 2020 emphasize the need to expand the distance, open and blended learning mode of providing higher education. It aims at increasing Gross Enrollment Ratio (GER) from 26.7% to 50%. The Funds for education would increase from 4.5% of GDP to 6% of GDP. Every district would have one Multi-disciplinary institute. The best performing institute would become autonomous. Therefore, considering our glorious past we need to build a strong future in India. The Indian values of "satya" (truth) and "ahimsa" (non-violence) for which Indians are known all over the world would regain its lost glory. As our Prime Minister has also said that to make the provisions of National Education Policy (NEP) 2020 implementable it is not only the duty of government, but it is the duty of entire nation to make it successful.

Prof. D.P Singh concluded his speech on a positive mode by acknowledging the effort of several other departments who are coming forward to join the cause of making the implementation of NEP, 2020 successful.

After the speech of Prof. D.P Singh, Chairman, UGC India, Prof. Alok Gupta, Registrar of Central University of Gujarat presented the vote of thanks by expressing his gratitude towards Prof. D. P Singh, and Prof. J.P Singhal for sharing their valuable thoughts and insights related to the role of National Educational Policy 2020 towards building a constructive society through

curriculum and pedagogy visualized in NEP 2020. He also thanked all the distinguished guests, speakers, and organizers for being part of the webinar.

END OF THE INAGURAL SESSION

Session: Inaugural address

Speaker: Prof. Sushma Yadav.

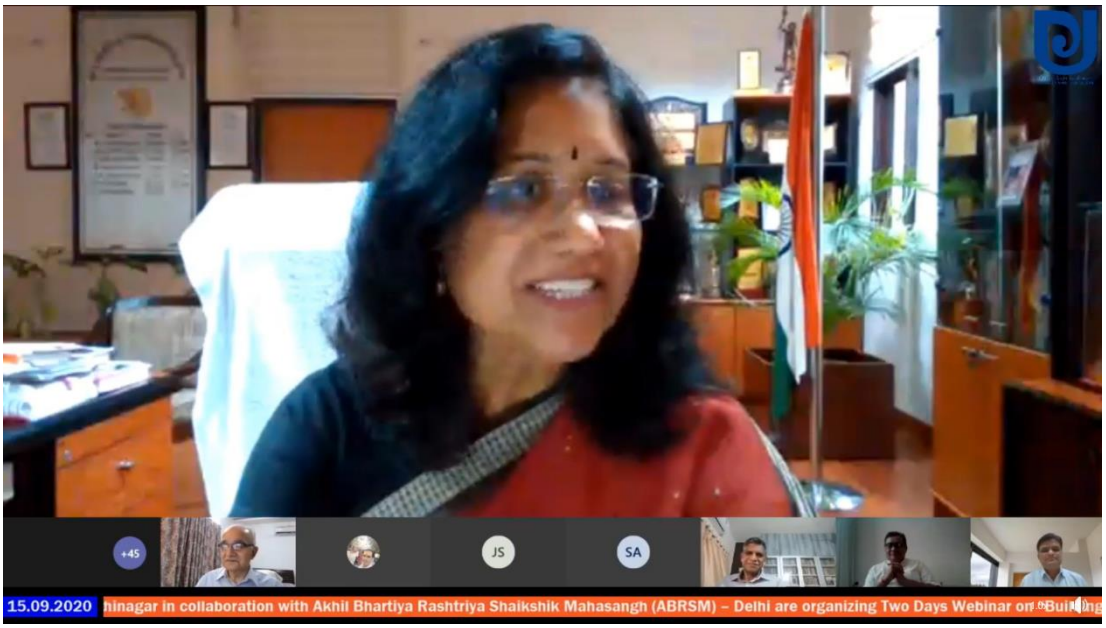
Prof. H. B Patel, Dean, School of Education introduced Prof. Sushma Yadav who is currently working as a Vice Chancellor at B P S Mahila Vishwavidyalaya and has also been ex- member of University Grant Commission (UGC). She is having 40 years of experience and got many national and international recognition.

Prof. Yadav began his speech by stating that our society is knowledge based and NEP 2020 acknowledges this fact by restructuring the old system of the entire education by giving a much required attention to the Early years of education that would serve as a base for education in later years. The first chapter of NEP 2020 focusses on early childhood care and education (ECCE). The focus also lies on foundational literacy and numeracy. The education should be Joyful. To make it possible a pedagogical intervention is required for which there is a need to reform the system of teacher's professional development. Education of equity and excellence will help in building a knowledgeable society.

In Higher Education the aim of NEP 2020 is to move towards a visionary and qualitative higher education. Therefore, this policy talks about Institutional restructuring and consolidation to move towards a holistic society. Optimal learning environment for students. Learning to learn is still missing in our education. Prof. Yadav referred Banbhatt who wrote Kadambiri where he mentions about 14 arts. To bring such great ancient visions into practice there is a need for teachers and faculty to be motivated. There is a need to respect teachers and towards teaching profession. Teachers should be visionary and invest themselves in building character of students. Moving from the colonial mindset of Macaulay now, NEP 2020 emphasize largely on vocational education. Education system that collaborates vocational and skill-based education is important. Earlier focus was more on degree and less on skill. Therefore, there is a need to break that mindset so that our students who are future citizens would become proficient in 64 kala or art.

Prof. Yadav also brought up NEP 2020 focus on experience-based learning. Adult education is also very much important as education ultimately helps us in becoming a fearless person. She again emphasized education to be joyful. This National Education Policy 2020 tries to bring the sense of nation in it. It gives knowledge of discipline and different vocations. The focus should be on preparing teachers who helps children to become inquisitive and creative.

She concluded her speech by saying that when education would help us to get connected to roots and to bring humane character, then this would serve as a major parameter of success of any policy. Therefore, there is a need to create dialogue by linking education to the society first, nation second and third to the world which would then serve the real purpose of education.



Session: Keynote Address

Speaker: Prof Pankaj Arora

Prof. Pankaj Arora was introduced by Prof. H.B Patel. Prof. Arora is currently working as faculty of Education at CIE, Delhi University, Delhi. He is also known for his eminent work in the field of education and has published his work at various National and International journal.

Prof. Arora began his speech by stating that the government has already initiated the plan of implementing the provision of National Education Policy 2020. He said that he would talk about greater innovations in higher education along with the component of teacher education. How Indianization and modernization can go along? Focusing on Indianness is dealt extensively in NEP 2020. This is a period of robotic science. There are network of social media influencing people on larger level. This policy will be a game changer for the nation as around 2 50,000 feedback came as suggestion. This policy is a visionary document which addresses the need of current times. Policy is a biggest source for having innovation. This policy is a first document which highlights the different strategy to prepare students to take up a social, political, and economic role. It helps us to become free from Macaulayan "chakravyu" or web.

The NEP 2020 highlights on the multi-discipline aspects of education. Drop out at higher education is rampant. Around 25% students are not able to reach till 3rd year. This policy suggests that even after completing one year in education, students are eligible to get acknowledgement certificate. After 2 years they would get a diploma certificate and after completing 3 years they would receive a bachelor's degree. Completion of 4 years would help in achieving honors degree. Post-graduation would also be one year that would be counted as professional degree. MPhil will not be there. The Policy has also suggested the system of Digi-locker which would allow the multiple exit and entries, and therefore would make higher education as flexible one. It is a new model which will allow students to join back the degree where they last left their education due to various reasons.

The NEP, 2020 would bring the holistic and multidisciplinary perspective. IIT's have already started to upgrade their programs. Multidisciplinary education system would break the hierarchy among disciplines. Vocational education is getting due importance. In India, only 5% youths are professionally trained and rest 95% are not. In America, it is 52 % and South Korea is having 96% people who are trained professionally. Policy challenges blue collar and white-collar hierarchy. Multi-disciplinary will come into place by 2030. This policy is holistic

and provides autonomy. Autonomy to students, teachers, and institution. It provides autonomy to students by allowing them to pursue music with physics. It provides autonomy to teachers by having their say in curriculum and pedagogy. Many University allowing teachers to come up with a course based on their specialization. This policy allows ample scope for that. Prof. Arora gave his own example where he successfully introduced adolescent education at the master's level and a paper on Democratic education at MPhil level.

University are autonomous even today. Minimizing the number of affiliated colleges is an innovative step highlighted in NEP 2020 towards institutional autonomy which also brings up responsibility. Policy talks about making GER from 26% to 50 % by 2030. Prof. Arora highlighted the need of thinking on the execution part of it. He asks us to think on the question as how will we attain the 50% target of GER by open, distance, and digital education? Right to technology can be one option that can be given to students by providing required equipment for it. Mahatma Gandhi also emphasize on hands on experience along with strengthening numeracy and literacy. Teacher Education prog which attained its status and considered as part of education after the coming of Kothari Commission in 1965-66. NCTE, 2014 gave different guidelines on program duration but did not talk much about improving quality. The NEP 2020 talks greatly about different durations of teacher education. Multidisciplinary education would also be included in the field of teacher education. It should be treated as professional degree. Higher Education is governed mainly UGC and NCTE is mainly working as a regulatory body.

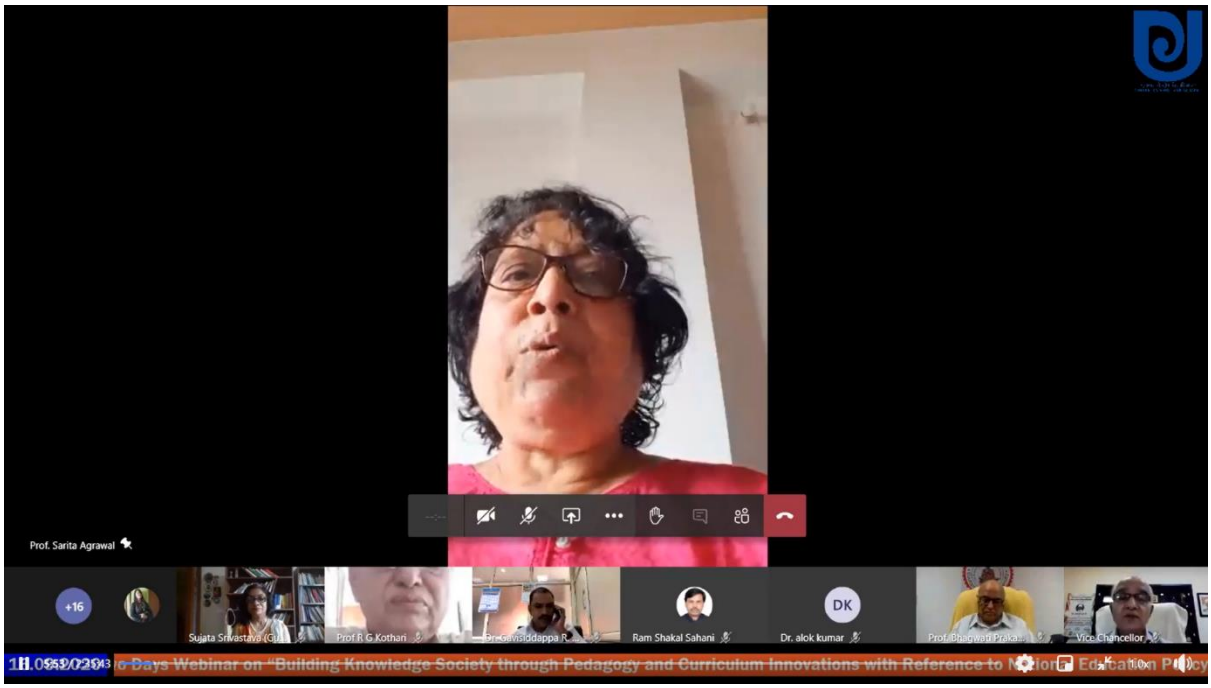
Lastly, Prof. Arora concluded his speech by saying that teacher education unlike liberal courses have different requirements, therefore, 8 credit courses on pedagogy should be must for people who are entering to teach at the University of Education.

After the last session of the first day, Prof. H.B Patel, Dean School of Education, Central University of Gujarat summarize the underlining points of all the speakers by expressing his sincere gratitude towards them and to everyone who helped in making the first day of the webinar successful.

END OF THE FIRST DAY 1

DAY 2

Prof. Sarita Agarwal, Dean, School of Social Sciences welcomes one and all for the second day of the webinar. The program was started with the Invocation of Kulgeet.



After invocation of Kulgeet, Dr. Gavisiddappa R. Angadi introduces the topic of the webinar and welcomes all the dignitaries for the second day of the webinar.

Dr. G. R. Angadi introduces all the guests for the today.

1. Prof. Rama Shankar Dubey, Hon'ble Vice Chancellor, Central University of Gujarat.

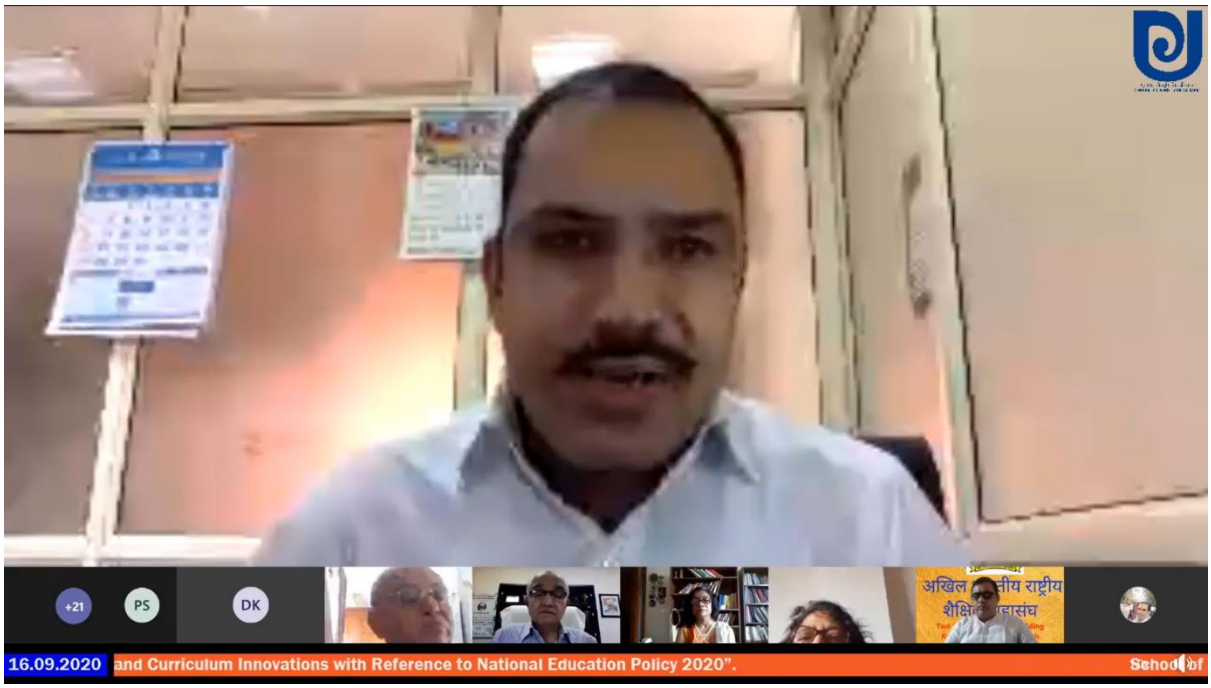
2. Prof. R.G. Kothari, former Vice Chancellor, Veer Narmada South Gujarat University

3. Prof. Pragnesh B Shah, MSU and Vice President, Akhil Bhartiya Shaikshik Mahasangh

4.Prof. Bhagwati Prakash Sharma, hon'ble Vice Chancellor, Gautam Buddha University, Noida, UP.

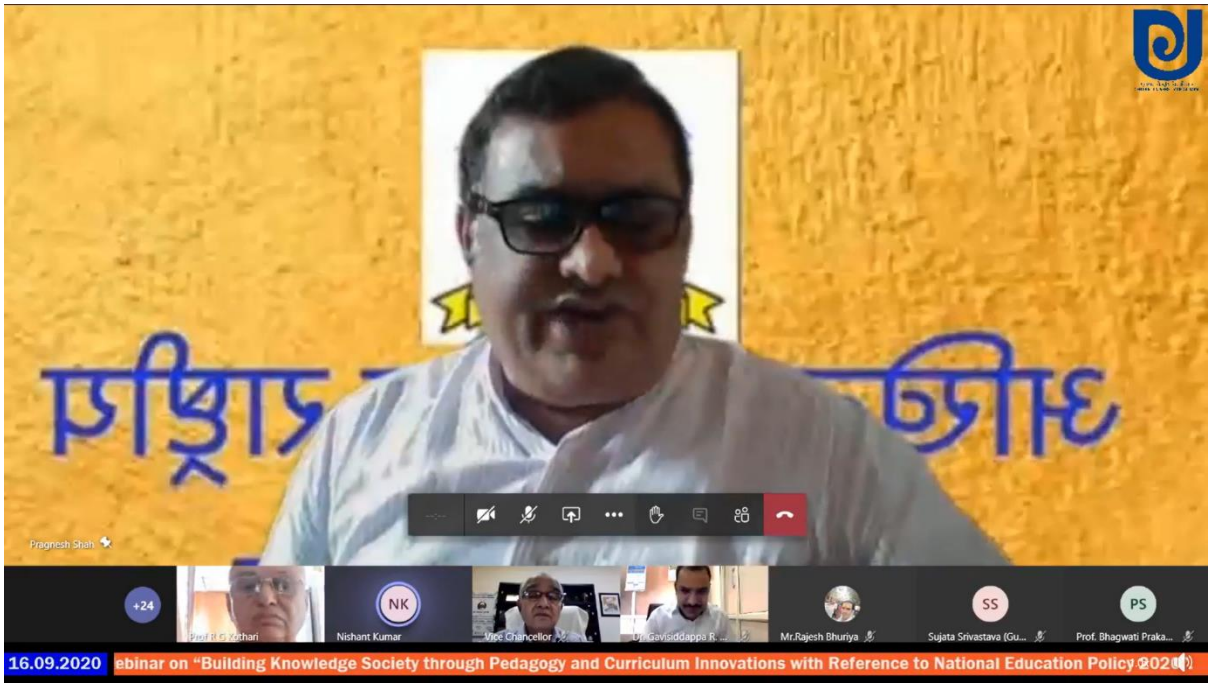
5.Dr. Indumati Katdare, Hon'ble Chancellor, Vidyapeeth, Ahmedabad.

6. Prof. Sujata Srivastava, CASE, Faculty of Education and Psychology.



Dr. G. R. Angadi invited Prof. Bhagwati Prakash Sharma for the lecture and sir started his lecture with artificial intelligence with machine learning and the bringing back of the ancient wisdom into the curriculum through the value imbibition. He further stressed on pedagogical and knowledge tradition including adult education, peer to peer learning, self-directed learning, and the approaches of teaching-learning. Family relationship plays a vital role in the developing an educational backbone for a child. National heredity must be safeguarded by a learner for the advancement of the country's wellbeing. He also stressed on project- based learning, predictive analysis, and andragogy with vivid examples of ancient knowledge and how it has an impact on the all- round development of the learner.

After this session session, Dr. G. R. Angadi invited Prof. Pragnesh B Shah, MSU and Vice President, Akhil Bhartiya Shaikshik Mahasangh invited for the lecture. Sir spoke about the teacher association foundation and how ten lakh teachers work for the betterment of education through an affiliated institution. He further added that a teacher is a true leader of the society. The society is working and thinking for the teachers and teacher education should be taught by a teacher. The mahasangh has published 18 books till date and the National Education Policy is a great way towards the advancement of the educational system.

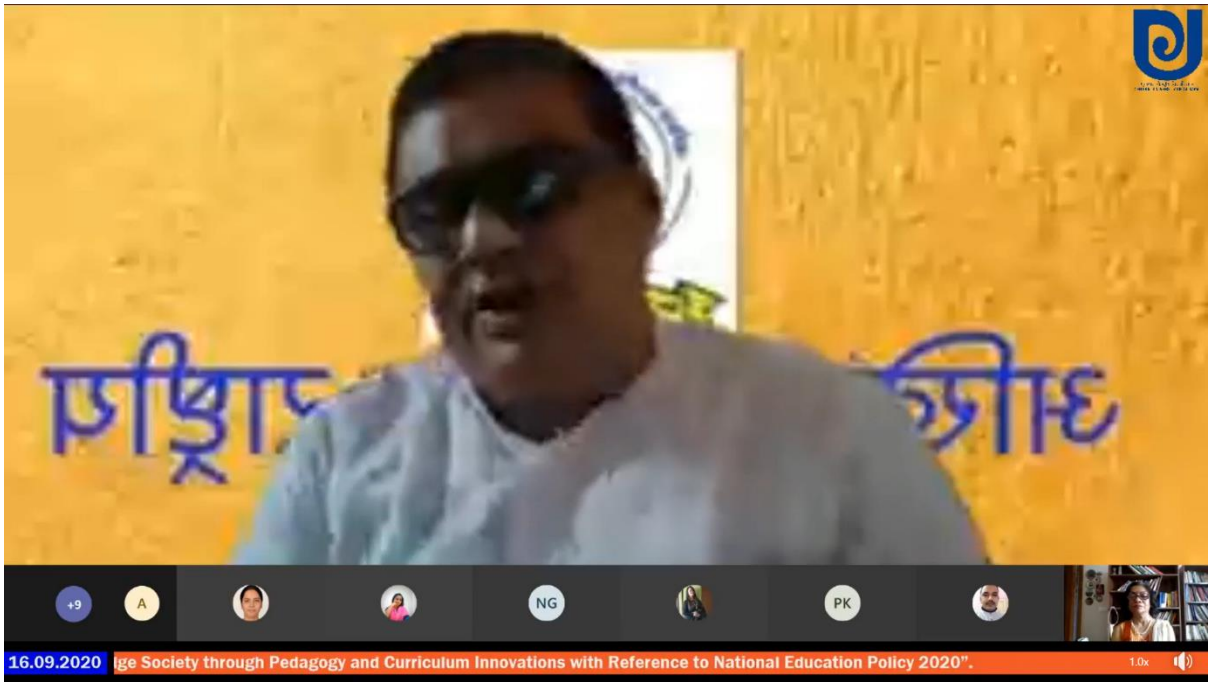


After this address, it was the time for Presidential address by Prof. Rama Shankar Dubey, Hon'ble Vice Chancellor, Central University of Gujarat. He congratulated all the dignitaries present and spoke about the National Education Policy 2020 being an important pillar for character building of a learner by traditional values ethos and culture and stressing on the upliftment of health sectors. He stressed on the use of local means to reach globally. He stressed on India one day taking over globally the number one spot in every field and every sector and termed India as the golden bird.

After Presidential address by Prof. Rama Shankar Dubey, Prof. R.G. Kothari started his lecture by saying that teachers truly shape the nation and its a proud moment for teacher education being considered in the policy for higher education. In NCTE 2014 at least 15 courses were suggested for teachers, integrated programmes for B.Ed. and M.Ed. was suggested which was good. Commerce teachers are necessary which should be taken into consideration later in the policy. Multi faculty education, multidisciplinary education and collaborated research, learning outcome based curriculum in teaching and curbing out the commercialization of education are some of the insights based on the National Education Policy 2020.

After this lecture, Prof. Sujata Srivastava started his lecture by saying that the policy has laid a great emphasis on the pre-primary education calling it the foundational stage. The training is required for the transaction of the curriculum. Pre- primary teacher education should be expanded. 5+3+3+4 system will not bring a very big change as she felt the structural change is an elongated procedure. Vocationalisation of education is nothing new so as critical thinking which is stressed. Drama and art should be included which is missing in the curriculum. For language education and the emphasis on language development, competent teachers should be recruited. Liberal education is a great initiative of the policy. Gender inclusion funds should be brought in the policy along with the sufficient stress on inclusive education and on transgender education. Continuous professional development programmes should be conducted for innovative changes on pedagogy and curriculum.

Prof. Pragnesh B Shah renders a vote of thanks to all the guest of honors, UGC Chairman and hon'ble vice chancellors and officially closes the webinar.



A Report on

Online Conference on "Translation in the Modern World and the Modern World in Translation"

Organized

By

Centre for Professional Development of Teacher Educators

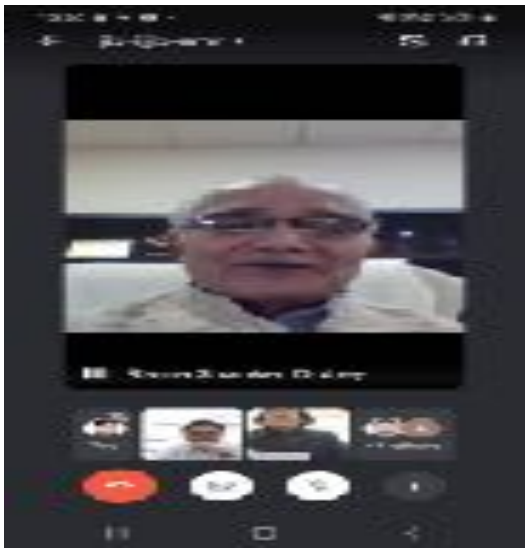
Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching

School of Education, Central University of Gujarat, India -382030

Date: 29th Dec. 2020

Timing: 13.30pm

School of Education, Central University of Gujarat, Gandhinagr, India and Faculty of History and Philosophy, Borys Grinchenko Kyiv University, Ukraine were jointly organized online conference on "Translation in the Modern World and the Modern World in Translation" on 29th December-2020 at 13:30pm through Microsoft Team platform. The Conference inaugurated by university Kulgeet after Kulgeet, Prof. H.B. Patel, Dean, School of Education, Central University of Gujarat address to all gust and wish to all speakers and participants of the conference.



Presidential Address: Prof. Rama Shankar Dubey, Hon'ble Vice Chancellor, Central University of Gujarat, address to all gust, speakers and participants of the conference. He told that in this conference we are going to discuss about great thought of our country, religious, festivals and education system of India. He wishes to all participants.

Guest Speakers: Prof. Balaji Ranganathan, Chairperson Centre for Comparative Literature and Translation Studies, Central University of Gujarat. Delivered nice speech on “Translation is a Bridge between the Worlds: Problems of Translation of Culturally Marked Vocabulary” and Asso.Prof. Lesia Soldatova, Borys Grinchenko Kyiv University, Ukraine also delivered excellent speech on “One of the Technologies to Avoid Misunderstanding in Linguistic of the World for Interlingual Translation.

Guest Speakers of the Conference

Presentation by Students: Team Members: Jaya Mrinalini, Ishita Jhala, Roli Gupta, Nibedita Bhowmick, Deeya Mukherjie and Ishfaq Majid research scholar’s school of education presented a video on Geographical Diversity of India. In this video they had shown that India is one of the ancient civilizations in the world. It has achieved multi-faceted socio-economic progress during the last five decades. It has moved forward displaying remarkable progress in the field of agriculture, industry, technology and overall economic development. India has also contributed significantly to the making of world history. Many Hindus believe that the water from the Ganges River can cleanse a person's soul of all past sins, and that it can also cure the ill, and is the most important river in India. Situated on the banks of the river Ganges, Varanasi and Haridwar are considered by all Hindus to be the holiest cities in Hinduism. Rivers flow through India making the land fertile for robust crop growth. India is basically a peninsula, with the Arabian Sea on the west, the Bay of Bengal on the east, and the Indian Ocean to the south. The Himalayan Mountains separate India from much of the rest of Asia and China. India has the second largest population on earth with just over 15% of the world’s population, located on 1.2 million square miles.

The next presentation on Enlightening on major Indian Cultural Festivals presented by Anjali, Akhatar, Bablu, Chitra, Jitendranath, Suranjan and Varindar. In this video they had shown that India is the beautiful land of Mahatma Gandhi it is reach and peace spirituality and humanity. The country believes 'Vasudhaiva Kutumbakam' it means all the world is one family and all the people of the world our relatives. It is the lens of our country to look the people of others country. Our land is calls mother land and devoted to our mothers with victory sound call Bharat Mata. Our country is also calls Hindustan being a Hindustan all other religious are happily and equally leaving together. All religious have their unique and beautiful festivals like Dewali, Eid, Chritmas etc. in these days the different religious people celebrate this with colors, lighting and sweets. It's symbolizing victory and brotherhood. All Indian celebrate different festivals together.

Then after presentation on Indian Educational system, presented by Anjali, Nancy, Tripti, Onima and shazia. In this video they had shown that education system in India is of dates back where the children's were taught in Gurukuls and the Guru-Shishya system was the means of education. Indian education system was improved when universities like Nalanda, Takshashila, Ujjain and Vikramashila came into existence. Education system in India is managed and controlled government well, providing education to all without any discrimination had become the priority of the government.

After that Khokhlov Denys presented on Phytons and phytosymbols as an imaginary and sense center in the Slavic world, Shabranska Viktoriia presented on Proverbs as the linguistic picture of the world, Mykolenko Mykhaylo presented on Animals in phraseology, Postoluk Pavlo presented on Language unites and divides people, Kovalets Olga presented on Somatisms (names of human body parts) in Ukrainian phraseology, Bilodid Yevheniia presented on Cross-cultural communication and Sobchuk Anastasia presented on Christmas traditions and rites of Ukrainians. All presentation was best performance by the students.

Vote of thanks: after all speakers and students presentation Dr. Jayendra Amin Asso. Prof. School of Education, CUG, Gandhinagar, Gujarat, had given vote of thanks of all speachers and participants for them excellent performance.

Conclusion: School of Education, Central University of Gujarat, Gandhinagr, India and Faculty of History and Philosophy, Borys Grinchenko Kyiv University, Ukraine was jointly organized online conference on "Translation in the Modern World and the Modern World in Translation" in this conference Prof. Balaji Ranganathan and Asso.Prof. Lesia Soldatova given excellence sessions then after research scholars and students presented on deferments topic through videos. Students present that India is the beautiful land of Mahatma Gandhi it is reach and peace spirituality and humanity. The country believes 'Vashudev Kutumbakam' it means all the world is one family and all the people of the world our relatives. It is the lens of our country to look the people of others country. Our land is calls mother land and devoted to our mothers with victory sound call Bharat Mata.

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REPORT ON ONE DAY NATIONAL SEMINAR

ON

"Madan Mohan Malaviya and Atal Bihari Vajpayee, Nationalism and National Education Policy 2020"

held on 30th December, 2020

ORGANIZED BY

SCHOOL OF EDUCATION

Under the

CENTRE FOR POLICY RESEARCH IN EDUCATION (CPRE), PMMMNMTT

CENTRAL UNIVERSITY OF GUJARAT

Sector-29, Gandhinagar, Gujarat-382030

India

National Seminar on Madan Mohan Malaviya and Atal Bihari Vajpayee, Nationalism and National Education Policy 2020

The one-day seminar started with the invocation of college anthem or "Kulgeet". The eminent guests were then invited to take their respective seats on the dais. Dr Shamim Aara Hussain, Assistant Professor, School of Education, Central University of Gujarat welcomed all the distinguished guest on the dais and off the dais. She then invited Prof. HB Patel, Dean, School of Education for the welcome address.

Welcome Address by Prof. HB Patel, Dean School of Education

Prof. HB Patel, Dean School of Education welcomed everyone present in the hall. He introduced all the distinguished guests present on the dais. He first introduced Prof. Atul Kothari ji who is currently serving on a post of Secretary at "*Shiksha Sanskriti Utthan Nyas"* in New Delhi. He headed various renowned committee at various places. He is a great educationist who is committed towards bringing positive changes in the Indian education system through his continuous effort. He is also the editor of a journal called "*Shisksha Utthan*" through which he tries to raise the status of Indian languages. He has published various article related to education. Prof. Patel referred him as an epitome of simplicity and austerity whose presence at the seminar holds immense value. Prof. Patel then introduced Prof. Shahilesh Zala, who has contributed through his noted work at various institutions and has served as Vice Chancellor at Maharaja Krishnakumar Singhji Bhavnagar University, Bhavnagar, Gujarat. He is an executive council member at Central University of South Bihar, Bodh Gaya, and an executive member at Central University of Gujarat. He has contributed greatly through his eminent work as Vice Chancellor. After his introduction, Prof. Patel introduced Prof. Rama Shankar Dubey, Vice Chancellor of Central University of Gujarat, and Prof. Alok Kumar Gupta, Registrar, Central University of Gujarat who have always been very much supportive in organizing every event of School of Education, Central University of Gujarat.

The welcome speech was followed by welcoming guest through “Angavastram and “Annadaan” that was to be distributed among poor.

Occasion Speech by Prof. Alok Gupta, Registrar, Central University of Gujarat

Prof. Alok Gupta, Registrar, Central University of Gujarat started the session by welcoming all the esteemed guests, faculty members and everyone present in the hall. He continued by expressing his greatness towards Dean, School of Education, Central University of Gujarat, Prof. H. B Patel for

organizing such seminar amidst corona pandemic by taking due safety measures and precautions. He explained further by representing the importance of this seminar, by talking about the devotion of Atal Bihari Vajpayee and Pandit Madan Mohan Malviya towards nation as well as education. He continued further by explaining the works of both great leaders in the field of nation and in the field of education. They were indifferent towards caste, religion, and other social barriers. He continued by praising Atal Bihari Vajpayee for making Hindi language as an important language for the mode of communication and other efforts taken in the field of education. Atal Bihari Vajpayee was very much focused upon making India a democratic one in each aspect and to lead towards development of our nation.

Dr. Shahilesh Zala, Former Vice Chancellor, Maharaja Krishnakantsinhji Bhavnagar University

Prof. Shahilesh Zala started his speech by thanking Vice chancellor, Registrar, and organizers of the university for this seminar. He focussed on points such as what kind of new points are there in the National Education Policy (NEP) 2020, views of respected Pandit Madan Mohan Malviya and Atal Bihari Vajpayee. The common points in the ideas, thoughts, and vision of Malviya ji, Atal ji and NEP 2020. He continued by expressing the qualities of both the eminent personalities, the common methodologies accepted by both in the field of Indian education and development. Literary talent of Atal Bihari Vajpayee was accepted and taken by other academicians for learning and translation purposes. Both were of the views that knowledge should always be gained first. It should be the sole purpose of every human being. He added by explaining the importance of Indian universities like- Takshila, and Nalanda University, etc. and the importance of education since ancient period till today. Character development, moral values, ethical development should be the aim and objective of education, to build such human beings who are empathetic, sympathetic towards others. Today, these values are lacking behind in the contemporary generation. Children and young generation should feel proud about Indian culture, traditions, language, etc. Mother tongue should be the medium of

instruction for children for good learning. It should be a responsibility of every University to inculcate values in students, to make them aware about their rights and duties, to sensitize and orient them towards service for nation and nation building. The feeling to remain grounded, close to our domestic grounds, and to develop holistically is one of the aims of National Education Policy 2020, Pandit Madan Mohan Malviya and Atal Bihari Vajpayee.

Guest of Honor speech by Shri Atul Kothari

Shri Atul Kothari ji started his speech by asking participant to enchant Omkar three times. After this activity he asked two-three participant to share their experience. The participant shared their experience that they felt peaceful, concentrated and stress-relieving. He said that we are surrounded by so many problems, however, we fail to find out the solution of such problems within us. He explained the meaning of mantra- "asato maa sadgamya, tamso maa jyotirgamaya, mrityor maa amritam gamaya" which aims at generating the light of knowledge among students. We need cultured, value-oriented, and knowledgeable students, however, today's education system failed to achieve that.

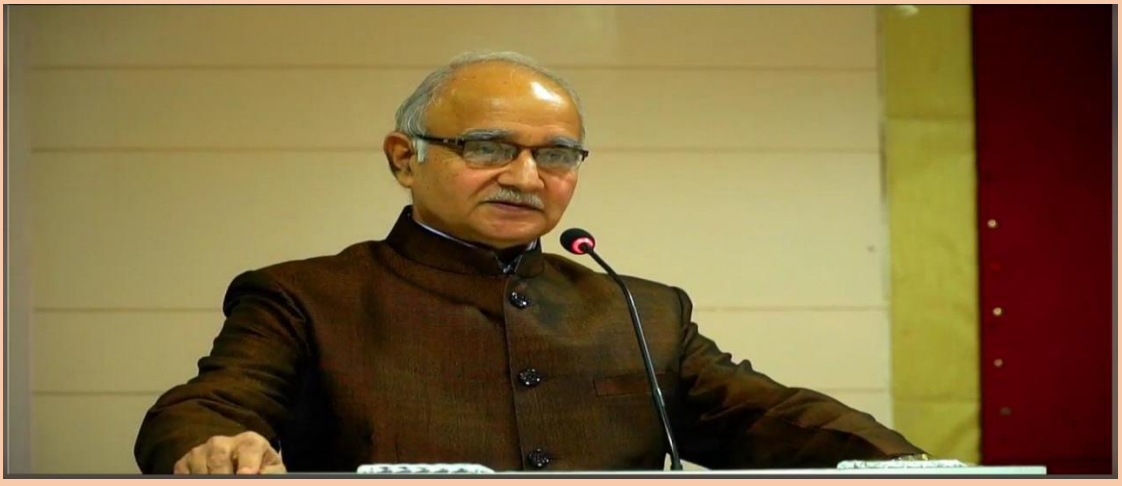
There are lot of similarities between two of the great personalities. He shared about Atal Bihari Vajpayee that he wanted to become a professor after pursuing PhD from Lucknow University however, he went on to serve the country by becoming one of the great leaders of the nation. Pandit Madan Mohan Malviya leaving his profession of lawyer went on to build a Banaras Hindu University to serve nation and society. However, he did not leave his profession as lawyer and went on to fight the case for the revolutionaries of Chauri-Chaura. Both were great freedom fighters, journalist, poet, and a great orator. We are living in a globalized world, but our thoughts have become narrow minded. Mahatma Gandhi considered Mahamana Malviya ji as his elder brother. He shared one of the instances that a program was organized in Banaras Hindu University.

Their views on education has a sense of Indianness. UNESCO Delors Commission report stated that Education system of any nation should be based on its nature, culture, and development. Case studies are taught in the discipline of Management studies. However, even after 73 year, we could not prepare any formal case study related to management system in India. He further shared example of "Dabba Wala" and "Kumbh mela" which are some of the great example of management system in India. Therefore, our education system should connect children from Indian roots. The curriculum should include those great ancient knowledges of India's past that would help students to get connected to their roots. The NEP is a comprehensive and holistic policy. Both Mahamana Malviya ji and Atal ji were in favor of holistic development of children. Prof. Kothari ji prepared a curriculum for the holistic development of the students which aimed at developing character of a student from school to university. In this regard, a thin book was introduced which included the character-building, holistic development, skill development, spiritual education, and environment education. He also shared the success story of "Swami Vivekanand University, Sagor, Madhya Pradesh (MP)" which successfully implemented the application-based learning where a chapter on Disaster Management was introduced. To understand the application part of the subject a number was shared where students had to help the member of community in solving the occurred disaster. Swami Vivekanand said that having a selfless life is the main goal of spiritual life and that's why India is a spiritual nation. Mahamana Malviya ji talked about dharma which means duty boundedness. Character-building should be the main aim of education more than just a mere cognitive development. Character building is the need of time. Atal ji while addressing the professors at Lucknow University said that nationalism and character building should be the main goal of education. Vinoba Bhave in his book, "Acharya Kul" defined acharya as those who help students learn through their behavior and character. Both wanted education to be imparted in the mother- tongue and promoted Hindi language. Atal Ji was the first minister who gave his speech in Hindi language at United Nation Organization (UNO). The first sentence that Max Muller recorded as part of his speech in gramophone was "Agni Meele Purohitam"- a Vedic shloka. New Education Policy (NEP) is an effort towards preparing students to get rooted. This shows how our Indian culture is respected all around the world. Both Atal ji and Mahamana Malviya ji talked about the way student and teachers should be and NEP, 2020 also includes every aspect of it. The provisions of NEP 2020 have already been getting implemented as Prime Minister said that this should be understood as social policy and not the government one. That is why so many webinars and seminars are getting organized. We need to create awareness on large scale for better implementation of NEP 2020 that would help in realizing the vision of both Atal ji and Malviya ji. He summed up his speech with the poem of Atal Bihari Vajpayee,

"मेरी कविता जंग का ऐलान है, पराजय की प्रस्तावना नहीं.
वह हारे हुए सिपाही का नैराश्य-निनाद नहीं, जूझते योद्धा का जय-संकल्प है.
वह निराशा का स्वर नहीं, आत्मविश्वास का जयघोष है!"

Presidential Address by Prof. Rama Shankar Dubey, Vice Chancellor Central University of Gujarat

The presidential address by Prof. Rama Shankar Dubey. He said that more than 70 webinars are organized. In 1916, Mahamana Pandit Madan Mohan Malviya started Kashi Hindu Vishwavidyalaya to instill faith of students in Indian culture by providing education in Indian language. India has a rich history, culture, and tradition. Madan Mohan Malviya told his students to practice truth, celibacy, and love towards motherland. He also referred about the similar views Mahamana Malviya Ji and Vajpayee ji who talked about the holistic development of students that is, cognitive, physical, and spiritual development. Spiritual education is essential for character building. If we become great engineers and doctor and not become a good human being then the purpose of education is defied in various manner. He referred New Education Policy (NEP) 2020 as the first education policy that would help us to get rid of the 150 years of Macaulay education system. It will help in connecting students with Indian roots, culture, and tradition. He concluded his speech by sharing the vision of Mahamana Malviya Ji's with his self-written poem where Mahamana Malviya Ji is encouraging youth of today to awake and contribute towards the nation-building. In 1916, Mahamana talked about



multidisciplinary education system which we are talking today. He talked about India's ancient scientific knowledge that Indian youth should feel proud about it.

Vote of Thanks: By Prof. H.B. Patel, Dean, School of Education, Central University of Gujarat

Prof. H.B Patel, extended his vote of thanks to the respected Vice Chancellor, Registrar of Central University of Gujarat. He extended his gratitude and special thanks towards the respected chief guest, Shri Atul Kothari ji and respected guest of honour, DR. Shahilesh Zala ji for their eminent presence and devoting their quality time to the one-day National seminar on "Madan Mohan Malviya, Atal Bihari Vajpayee, Nationalism and National Education Policy 2020'. He thanked the participants also for their active participation.

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REPORT ON ROUND TABLE DISCUSSION

ON

Making of New India: Prospects and Perspectives on Implementation National Education Policy 2020

held on 08th January, 2021

ORGANIZED BY

IQAC, CUG in Association with Bharathiya Shikshan Mandal and PMMMNMTT (School of Education)

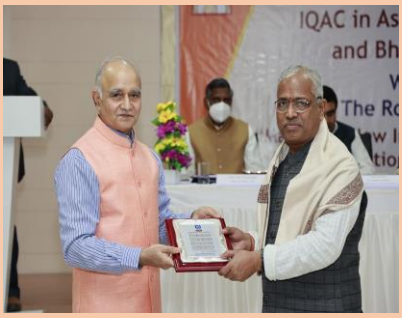
CENTRAL UNIVERSITY OF GUJARAT

Sector-29, Gandhinagar, Gujarat-382030

India

The one-day round table discussion was organised by IQAC, CUG in association with Bharathiya Shikshan Mandal (BSM) and Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNMTT) School of Education, Central University of Gujarat on 8th January 2021. The programme was started with introductory remarks by Prof. Atanu Mohapatra, Director, IQAC, CUG and welcomed all distinguished guest on the dais followed by the invocation of university "Kulgeet". Then guests were invited to take their respective seats. All invited guests were felicited by offering Angvastram and flower bouquet by the Honorable Vice-chancellor Prof. Rama Shankar Dubey after the felicitation the dais was handed over to the moderator of the programme Mr. Jitendrasingh Parmar, State Secretary BSM Gujarat and he welcomed all the distinguished guest on the dais once again. He then invited Prof. Alok Kumar Gupta, Registrar, CUG for the formal welcome address. Prof. Alok Kumar Gupta, Registrar, welcomed everyone who is present on the dais and off the dais in the seminar hall.



Address by Guest of Honor Prof. Navin Sheth, honourable Vice-chancellor, GTU and President, BSM Gujarat

Prof. Navin Sheth, honourable Vice-chancellor, GTU and President, BSM Gujarat has spoken about the process of evolution of NEP (Draft) to NEP 2020. He stressed on the time for effective implementation of NEP 2020. The role of Vice-chancellor is very crucial in the implementation in the universities and their further strengthening and steps to improve the quality of higher education in the state. He talked about the Bharathiya Shiksha Mandal (BSM) it was founded for the cause of national resurgence in the field of education. It aims at

evolving the National Education Policy and its effective implementation in the form of curriculum, system and methodology based on integral Bharathiya vision, rooted in its eternal ethos and centred at over all development of the nation, for this sake BSM is conducted and conducting number of educational and Intellectual discussions on effective implementation of NEP 2020 and to actualise the noble mission of re-establishing the Bharathiya education system in the country.

Prof. Navin Sheth also talked about the essential to revamp the present research ecosystem to make the academic research more purposeful, applicable and Bharat centric. A synergy of efforts and resources of various agencies engaged in research is an urgent need of the hour. The Bharat Shikshan Mandal is active in bringing about a holistic change in research methodology and its philosophy in the academics of Bharat. Number of workshops on 'Research for Resurgence' was conducted in various universities and research institutions for research scholars and supervisors towards the attainment of the vision Bharat through 'Research For Resurgence Foundation' (RFRR). The objective of RFRF is to promote research tools, skills and methodology in the Bharatiya context and also, to develop a critical researchers to reawaken this resurgence.

Followed by the Memorandum of Understanding (MoU) signed between various institutions of Gujarat with the BSM-RFRF.

Address by Guest of Honor Dr.Vallabhbhai Kathiria, Former Minister of State for HRD, GoI and Chairman, Rashtriya Kamdhenu Aayog, GoG.

Dr. Vallabhbhai Kathiria has appealed all the Vice-chancellor and Directors for starting "Kamdhenu Chair' in every Universities and Institutions of Higher education. Dr. Kathiria said we need to educate

the youth about agriculture, health, social, economic and environmental importance of indigenous cows.

He stress on need to bring forth the science related to indigenous cows and our education system should provide platform as well as push in research on benefits mentioned about cows with modern scientific and process oriented approach in education.

Address by Sri Ramachandra Karade, Akhil Bharatiy Vanvasi Kalyan Ashram

Sri Ramachandra Karade has spoken on the need to empowerment of tribal communities in India. The communities often have a sense of alienation from present day India which is being rapidly urbanising and modernising. To bring tribal communities into the mainstream with economic development but their cultural moorings intact is an extremely important task. He stresses on by Atmnirbhar Bharat the Akhil Bhartiya Vanvasi Kalyan Ashram is dedicated to empowering these communities.

Address by Chief Guest Shri Mukul Kanitkarji, National Organising Secretary, BSM

Shri Mukul Kanitkarji, who was the chief guest, he began his deliberations on 'Making of New India: Prospects and Perspectives on Implementation National Education Policy 2020', it's a very revolutionary policy in Indian education system. However, there are good numbers of opportunity in its implementation, because some drastic changes have been made in the education system of the country. He further by making quote 'Teachers should feel NEP is my policy' his main focus was on three important aspects of NEP 2020 which are introduced first time and clearly distinguishes from the previous policies. The three aspects were Graded academic autonomy, flexibility and Baharat centric approach in NEP 2020. He said that graded autonomy is a remarkable step in NEP as it proposes to make all affiliated colleges to become autonomy by 2032 by attaining gradual enhancement in quality. He emphasized the importance of role of Vice-chancellors, head of the institutions and teachers in every step of effective implementation of NEP and asked them to own their responsibility.

Change in regulatory system is a much needed step in this policy. Flexibility is another revolutionary step of this policy. According to him, multidisciplinary approach and multiple entry and exit features of this policy are the key features. Top brains of India are not joining teaching profession, especially in school education, only residuals are joining this noble profession. Bharat centric approach in the curriculum framework and content development in Indian Languages especially in professional courses such as Medical, Engineering etc. is another revolutionary feature. He told that only 12% people, in the current Census, claimed that they know English language after the 200 years of colonial domination.

For many years the education sector has been demanded the management and conduct of education should be in the hands of teachers and academics. The commission has been recommended in this format. Flexibility is very important in the structure of education. The composition of 5 + 3 + 3 + 4 is presented in the format of education policy. Pre-primary education has also been added. Flexible options have been provided at this stage in the subject election. Science, commerce, the option of mixed subject selection has also been kept after removing the distinction of art branches. The nature of education itself will change. In higher education, there is a provision for undergraduate and graduate education. There is a provision for multiple entry and exit. For example, if the learner wants to leave his studies after completing his first year education, he could get a certificate. On completion of second year of education, the degree ie diploma and on completion of 3 years, the degree is obtained. Honours Degree (Research Degree) after 4

years of study. One who has attained general status is given a 2-year Masters (Post graduation).

'National Education It is more appropriate to be called 'policy'. The government used the term National Education Policy. The format of this education policy is national. According to the fundamental ideology of India, many things are visible to us in the form of education policy. Through this policy we can clearly see the foundation of building an India-centric, nation-building education system by completely replacing the old foreign education policy. In this sense the education policy is national.

It also stress that higher education be available in Indian languages. This can be a revolutionary reform, the first language or mother tongue would be the medium of education. Sanskrit is not only one of many languages, but its importance in the pure study of all languages is well known.

The subject of autonomy introduced from the National Education Policy has been extended to education institutions. The recommendation is to provide full autonomy to all colleges in higher education. Even in school education, revolutionary idea like giving right to their schools to private schools is in the form of education policy. Colleges are educational, Administrative and economic autonomy has been given. The colleges have also been given the right to determine their own courses.

RFRF it starts work on higher education, particularly to start on Bharat centric higher education, encountered severe lack of peer-reviewed research material on every subject to prepare standard syllabus and curriculum. The RFRF has started ‘Research for Resurgence’ by conducting various interactions programs in universities, mainly focussing on research methodology. Methodology is so rigid that genuine research is not possible many times through their rigidness. Followed by this deliberations most of the vice chancellors and directors of the higher education institutions interacted and discussed with Mukul Kanitkarji with regard to advantages and limitations to higher education institutions by implementation of national education policy

Followed by the Mukul Kanitkarji deliberations most of the vice chancellors and directors of the higher education institutions interacted and discussed with Mukul Kanitkarji with regard to advantages and limitations to higher education institutions by implementation of national education policy

Presidential Address by Prof. Rama Shankar Dubey, Vice Chancellor Central University of Gujarat

The presidential address by Prof. Rama Shankar Dubey has stressed on making new India, in Indian post independent history we are getting Indian system of education through national education policy. By implementing NEP in Indian higher education, curriculum revision according to the spirit of NEP and to make it outcome based curriculum and industry, social, entrepreneurship and it may enhances employability opportunities for the learners. Through the NRF- National Research Foundation to make research relevant to the society and towards progressive development, for example wind or solar energy. The research should be problem solving, education should make the devotees of the country by offering certificate courses in Indian Values, Ethics, Skills, Traditions bringing into the education system. Prof. Dubey has also welcomed MoU for CUG instrument utilisation among the other universities in the state.

He talked about India's ancient scientific knowledge that Indian youth should feel proud about it.

Vote of Thanks by Prof. H.B. Patel, PMMMNMTT, Project Director School of Education, Central University of Gujarat

Prof. H.B Patel, extended vote of thanks on behalf of IQAC, PMMMNMTT, SoE, CUG & BSM to the respected dignitaries on the dais and of the dais. First he has extended his gratitude to Hon'ble Vice Chancellor Prof. Rama Shankar Dubey & Prof. Alok Kumar Gupta, Registrar of Central University of Gujarat. He extended his gratitude and special thanks towards the respected chief guest, Shri Mukul Kanitkarji for his valuable deliberations on NEP 2020 implementation and interactions and discussions with the participants and respected guest of honour, Prof. Navin Sheth and Dr. Vallabhbhai Kathiria for their eminent presence and addressing the participants devoting their quality time and deliberations on BSM as well as Cows and National Education Policy 2020. He extended his gratitude IQAC & BSM finally he thanked the valued participants also for their active participation and devoting their quality time with interactions and discussions with respect to National Education Policy 2020 implementation.

Reported by: Dr. G. R. Angadi, Associate Professor, SE, CUG

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A Report on

Online Workshop on "Redefining Teacher Education & Rethinking Teaching and Learning"

Date: 19th March, 2021

Organised

By

Centre for Professional Development of Teacher Educators

Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching

School of Education, Central University of Gujarat, India -382030

On 19th of March, 2021 an online workshop was conducted by Central University of Gujarat, India on "Redefining Teacher Education & Rethinking Teaching and Learning." Prof. Rama Shankar Dubey, Hon'ble Vice Chancellor, Central University of Gujarat was the patron of the workshop. Ms. Patricia Arbona, Teacher Educator from Argentina, was the imminent resource person. Workshop convenor and co- convenor were Prof. H.B. Patel, Dean, SE, Central University of Gujarat and Prof. Jubraj Khamari, Department of Education, Sambalpur University respectively. The programe started with Kulgeet, followed by the welcome speech addressed by Professor H.B. Patel, where he oriented to the participants and the brief information about the scheme of PMMMNMTT, Government of India. He also addressed resources person and welcome to all. After that a brief introduction about resource person was given. Ms. Patricia Arbona Teacher Educator from Argentina; The resources person is the founder of Ludodrama, an expert of English as a foreign language teaching and Phonetics. The resources person started her presentation with a quote "Education is not a preparation of life, but it is a life itself." She presented on "Redefining Teacher Education & Rethinking Teaching & Learning," where she had thrown light on teacher-centered vs. student-centered Education; the cone of learning; teacher performance; student performance; learning process; fundamentals of an active learning environment; essential skills and qualities; Maslow's Hiararchy of Needs and Bloom's Taxonomy.

The resources person explained that methodologies which teachers are using these days are not helping the students; lack of active interaction is there in the classroom. She asked; do teachers use innovative methods these present days? She explained students learn

better when they are involved in work corporately and students should be the center of learning. The resources person discussed about the importance to know how to learn. Feedback is also equality important for both. Teachers should take regular feedback from students for practical improvement. Students and teachers should be the good users of feedback. She said both students and teachers are necessary for active learning. She also illustrated that teachers are the agents of change.

The resources person addressed the participants to ask their students coming for passing examination or for learning. She said students learn through mistake. Students do mistake when they try to learn. Each class is unique with individual unique characteristics. She addressed to remember that students; failure is the failure of teachers and students success is the success of teachers. She said performance of the students should be observed regularly. In learning performance of the students, critical thinking, creative thinking are crucial. Self assessment, peer assessment, metacognitivity, cooperative work opportunity must take into account. With the same, social, emotional skill is not to be taught separately. It will be integral. Attention of students is not asked, but it is prepared for better learning environment.

In the next point, she discussed between virtual and physical learning. She stated the online learning is rapidly increasing, but dominance class is the physical learning across the globe. The expert emphasized on active participation on learning. Art like drama activity is the best resources for active participation. She referred drama based pedagogy in learning. Other activity like music, painting, dancing must be included in teaching strategies. For these, she discussed proactive learning, discovery learning etc. In this context, the expert also discussed about fundamental and activity learning environment. With the example of Piaget, she stated that the teachers should love to learn how to teach each student; should be focused on holistic teaching and learning. The diverse class and inclusive class of students need multiple learning processes. with example of neuroscience, the resources person stated that students learn not by repetition; to improve students learning, teachers need to know multiple intelligence of all students.

The resources person lighted on the importance of direct engagement of children in the learning process, where the resources person gave example of various programs like Debate, Drama activity, music. The resources person also described that active participation

is needed in every classroom. Every classroom is unique and it consists of students from different diversity. So, as a teacher s/he should encourage students for active participation in the classroom, especially those students who are very shy by nature. The resources person also focused on Drama based pedagogy, where the resources person suggested that drama classes should be encouraged at the Teacher Education Institutions. The resources person also thrown lights on multisensory: how it helps in alerting all the senses of a child and how it works for a child who have problem in attention. The resources person also covered neuroscience, multiple intelligence, and values. The workshop concludes with the questions answers and formal discussion between participants and resources person.

After the completion of the presentation the session was open for the discussion, where the participants were allowed for questioning. The resources person also cleared all the doubts of the participants. Vote of thanks was given by Dr.Y.Vijaya Lakshmi, Assistant Professor of School of Education (SE), Central University of Gujarat. The resources person thanked Vice Chancellor, convenor and co- convenor of the programme. The resources person also expressed her gratitude to Ms. Patricia Arbona, the resource person of the workshop, for her beautiful presentation.

Photo Gallery

Report Written by : Onima & Bablu

A Report on

Online Workshop on "Let's Play Boomwhackers "Learn English through Music and Play"

Organised

By

Centre for Professional Development of Teacher Educators (CPDTE)

Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching

School of Education, Central University of Gujarat, India -382030

Date: 24th March, 2021

The School of Education, Central University of Gujarat organized an online workshop on a pioneering teaching method called "Let's play Boomwhackers "Learn English through Music and Play" on 24th March 2021. The workshop was organized under the Centre for Professional Development of Teacher Educators in PanditMadan Mohan Malviya National Mission on Teachers and Training. Prof. Rama Shankar Dubey Hon'ble Vice-Chancellor, Central University of Gujarat was the Patron of the programme; Prof. H.B. Patel and Dr Rajesh Patel were the convenor and co-convenor of the programme.The programme was commenced with University Kulgeet, followed by a welcome speech given by Professor H.B. Patel. He welcomed Chief Guest Ms. Effie Bachtsevana and gave an introduction of her. She is a music teacher, author, global educationist, speaker and researcher from Thessaloniki. Further he highlighted about the richness of different Indian festival and music to incorporate in learning of English language. He also welcomes the organizing committee and all the teachers, faculty members, researchers across India participated in the conference.

Then the guest speaker preceded the programme with a nice presentation, where she sheds light on Boom Whackers. She showed us the demo by singing rhymes and taping the tube on the floor and explained about the rhythm activity with movement, where she explained that sounds which are produced through Boom Whacker depend on the different length, the size, the durability, and lightweight of the tube. She mentioned a characteristic of Boom Whackers that its different colour make excitement to the little one and individual can easily use inside and outside the school by tapping not only on surface but also on body. She also threw lights on the importance of this instrument and how teachers and educators can use it in daycare centers, kindergartens, primary and secondary schools, universities, language

schools, conservatories, music schools, teacher training schools and vocational training institutions. Moreover she pointed out Indian can combine Boom Whackers with Indian classical music, which will encourage students to learn more in the classroom. After that, she showed us some demo through pencil and Boom Whackers, where she played the famous Rhyme song “twinkle twinkle little star”. And she explained new words and vocabularies can be taught to the child through this teaching approach. Ms. Effie Bachtsevana also explained that this teaching approach can also help children in learning different colours, help in the movement of the body, imagination skills and in improve listening skills. According to her Boom Whackers activities can encourage students to communicate, be creative and become expressive.

Later the session was open for discussion and participants were allowed to ask their queries. A participant dropped a question that how can we implement this teaching method in English grammar and Social Science? Interestingly it was answered by combining a song and to prepare lesson on question and answer through Boom Whackers.

After some discussions Patron Prof. Rama Shankar Dubey, Hon’ble Vice-Chancellor, Central University of Gujarat, delivered the presidential address. He emphasized India has classical musical instruments of bamboo sticks but boom is light weighted and having different colour will attract children. He thanked the organizers of the programme and focused the method appears to be interesting and helpful in grasping the English language. He also showed interest in small project collaboration in future.

At the end of the programme, vote of thanks was given by Dr. ShilpaPopat,Assistant Professor, School of Education, Central University of Gujarat by expressed her gratitude to Prof. Rama Shankar Dubey, Prof. H.B. Patel, Ms. Effie Bachtsevana, organizers and all the participants for the support and successful of Conference.

Photo Gallery

Report written by: Chitra & Anima

A Report on

One Day Online Workshop on "Raising a Personality in the Educational Process"

Organized

By

Centre for Professional Development of Teacher Educators

Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching

School of Education, Central University of Gujarat, India -382030

Date: 25th March 2020

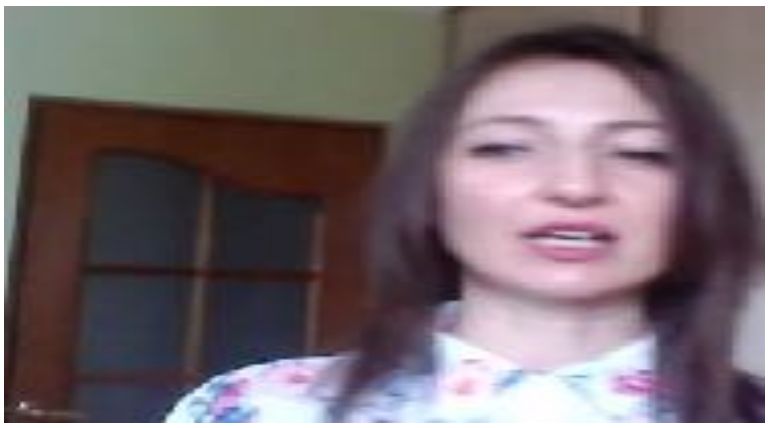
Timing: 3.30 pm- 5.30 pm

The one-day online workshop began with the permission of honorable Vice Chancellor of Central University of Gujarat, Prof. Rama Shankar Dubey.

Dr. Ankita Patel, the Co-Convener of the workshop briefly gave introduction about the workshop and also briefly introduced the guest speaker of the workshop Ms. Yuliya Zrada. The session then proceeded with the invocation of University's *"Kulgeet"* of Central University of Gujarat which is written by honorable Vice-Chancellor of Central University of Gujarat Prof. Rama Shankar Dubey and subsequently set to music by Pandit Bholanath Mishra, an eminent classical singer of Varanasi gharana.

Tripti Singh, one of the anchors for the workshop invited Prof. H.B. Patel, Dean, School of Education, Central University of Gujarat for the welcome address and orienting participant about the one-day online workshop. Prof. Patel welcomed all the dignitary guests and participants who were attending one-day online workshop organized by School of Education, Central University of Gujarat under the scheme of Pandit Madan Mohan Malaviya National Mission for Teachers and Teaching.

After welcome address, the workshop proceeded with the lecture by Ms. Yuliya Zrada, who is an inspiring Online English Teacher from Ukraine.



Workshop Resource Person Ms. Yuliya Zrada

Ms. Yuliya Zrada, began her lecture by sharing that she is having experience of working with the student of 6 to 17 years and one thing that she considers significant is that the aims of education whether given online or offline should not only be supporting them in their academics but also helping them to become disciplined in their work and managing their emotions. They should have faith in themselves. In the current era of virtual classes where internet is everywhere, lots of things are learnt through distance learning. Students are attending online classes where teachers should learn different ways to establish good relationship with their students that will further help them to establish good rapport with their students. They should be achievable and reachable. They should encourage their students to learn from their mistakes. Ms. Zrada shared her experience of building rapport with her students by sharing different videos about Ukraine and learning on popular social platforms such as facebook and Instragram.

She further shared that each of us are unique. To help children in the process of learning, a teacher should also become children sometimes by creating energetic environment for students to help them becoming creative in their work. Children should learn different concepts by practicing it rather than just memorizing the content from textbooks or information available on internet. A teacher is also a learner who needs to learn all her life. They are also the engine of change. Therefore, they should be ready to endorse changes that are coming their way because of the current scenario of online education. A teacher can post different interesting facts, videos, and games on social networking sites. Before posting anything on online platform, a teacher should first develop and plan their schedule like they have to do while taking offline classes. Children should see the emotions and liveliness of

their teachers even while learning on the online platform. Teachers should create an environment where the child feel safe. The profession of a teacher is very noble, and it is important for the society to acknowledge that. Teacher's mission should be to inculcate the feeling of love among students towards the process of learning. In the end, Ms. Zrada said that a teacher should provide freedom of choices to students so that they take full ownership in the process of learning and therefore, become capable enough to self-develop, learn, and regulate themselves.

The session then proceeded with the question and answer where teachers from different parts of India asked their queries related to different styles and methods to be adopted for different types of students coming from different age group. Ms. Zrada suggested various learning site to them such as- BBC, Kahoot and learn English by British Council for teaching English or language through interesting methods. She also suggested them to use these platforms for teaching English to students to further help them build understanding towards global issues. She also suggested various online platform for the personality development of teachers and students.

Prof. HB Patel, Dean, School of Education thanked Ms. Zrada for sharing her valuable views and to the participants who showed active participation throughout the workshop.

Presidential Address by Prof. Rama Shankar Dubey, Hon'ble Vice Chancellor of Central University of Gujarat

After the speech of Ms. Yuliya Zrada, Prof. Rama Shankar Dubey, Vice Chancellor of Central University of Gujarat was invited for the presidential address. Prof. Dubey started her presidential address by appreciating Ms. Yuliya Zrada for such a motivational speech where

she clearly emphasized that the role of a teacher should be to motivate students that would develop their overall personality. He emphasized that the holistic development of a child's personality is the major purpose of education. Students learn from the behaviour of a teacher. Indian philosophy considers teachers, mother, and father as godly figure. It says, "Acharya Devo Bhava" and "Maatri-Pitri Devo Bhava". Therefore, character development through education is considered as one of the significant aims of education according to Indian philosophy.

He appreciated the words of Ms Zrada for emphasizing the role of a teacher as life-long learner and quoted the words of Mahatma Gandhi who said, "A true teacher is someone who establishes rapport with the taught, becomes one with them, learns more from them than he teaches them. Prof. Dubey further quoted the words of Rabindranath Tagore who said, "A lamp can never light another unless it continues to burn its own flame, therefore a teacher can never truly teach unless he is still learning himself". He cleared one of the doubts raised by a participant regarding the role of genetics and environment in determining the Intelligence Quotient (IQ) of a child. He said that both have considerable role to play, however, the role of an environment is extremely significant in shaping child's overall personality and therefore, this signifies the role of a teacher in the life of a student and our history has many such examples of a great teachers.

He further appreciated the thoughts shared by Ms. Zrada on the current scenario of online education where the role of teachers becomes extremely important in making those online classes interesting for students by showing them interesting as well as informative videos and presentation to students. It would also help students to become independent learner where they will learn by themselves which will develop their personality significantly. In the end he appreciated Ms. Zrada for giving such a nice talk in such a simple language.

Finally, the one-day workshop concluded with the vote of thanks by Dr. Shamim Aara Hussain, Assistant professor, School of Education, Central University of Gujarat where she conveyed her sincere thanks to honourable Vice Chancellor of Central University of Gujarat, Prof. Rama Shankar Dubey, Ms. Yuliya Zrada, the guest speaker for the one-day workshop, Prof. H B Patel, Dean, School of Education, Central University of Gujarat, all the teaching

and non-teaching staff of School of Education, ICT Committee, report writing committee and all the participants from different parts of India for making the workshop successful.

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Three Days Online Workshop

On

Methodology of Educational Research

Organised

By

School of Education, Central University of Gujarat

Sector-29, Gandhinagar

Date: 24th to 26th May, 2021

Chief Patron

Prof. Rama Shanker Dubey

Hon'ble Vice Chancellor,

Central University of Gujarat

Patron

Prof. H. B. Patel

Professor & Dean,

School of Education,

Central University of Gujarat

Resource Persons of the Workshop

Dr. Samson R Victor

Assistant Professor,

School of Education, Indira Gandhi National Tribal University, MP

Dr. Vimal Kishore

Associate Professor,

Dean, School of Education & School of Mass Communication and Technology, Central University of Jharkhand

Dr. K Thiyagu

Assistant Professor,

School of Education, Central University of Kerala

Schedule of the Workshop

Date & Time	Topic	Resource Person
24.05.2021 @ 10: 00 am onwards	Quantitative Data Analysis	**Dr. Samson R Victor**
25.05.2021 @ 10: 00 am onwards	Qualitative Data Analysis	**Dr. Vimal Kishore**
26.05.2021 @ 10: 00 am onwards	Use of Computer in Data Analysis	**Dr. K Thiyagu**

Organising Team

Dr. Jayendra kumar N. Amin
Associate Prof. & Chairperson,
Centre for Studies in Research and Education, School of Education,
Central University of Gujarat

Dr. G. R. Angadi
Workshop Coordinator &
Associate Prof. School of Education,
Central University of Gujarat

Dr Y. Vijaya Lakshmi
Assistant Professor
School of Education,
Central University of Gujarat

Dr Shamim Aara Hussain
Assistant Professor
School of Education,
Central University of Gujarat

Dr Shilpa S. Popat
Assistant Professor
School of Education,
Central University of Gujarat

You are Cordially Invited

by

All Faculty Members, Scholars & Students of School of Education,
Central University of Gujarat

Join the workshop by clicking the link: https://teams.microsoft.com/l/meetup-join/19%3ameeting_Y2E0NGMzZTItNDU4Zi00MDhkLTk2ZTEtZTNmNTNiOTczYWVm%40thread.v2/0?context=%7b%22Tid%22%3a%22a9f49153-63cf-4340-9806-620cee520e63%22%2c%22Oid%22%3a%227aa98574-7c06-4a1b-9b37-f4fd05cef96b%22%7d

About the Workshop:

Three days' Online Workshop on Methodology of Educational Research was organised by the School of Education, Central University of Gujrat, Gandhinagar. The workshop was of three days with the objective to get in-depth knowledge and understanding on how we analyze Qualitative & Quantitative data and use of computers in analysing the data.

Day 1(Monday): 24th May, 2021

Session (10:00 – 11:30), Monday

Workshop Coordinator : Dr G.R. Angadi

Resource Person: Dr. Samson R. Victor

Topic: Quantitative Data Analysis

Resource Person, Dr. Samson R. Victor

The session began with brief introduction of session by workshop coordinator Dr. G. R. Angadi, Associate Professor, School of Education, Central university of Gujarat. The expert is currently working as an Assistant Professor in School of Education, Indira Gandhi, National Tribal University, Amarkantaka. He has ten years' experience in Teaching and Research. He has a master's degree in chemistry from KUVEMPU

University. Master's degree in Education from University of Mysore, and Ph.D. in Education from Christ University, Bangalore. He has qualified UGC-NET. He has been awarded as Best Teacher from BTL Educational Trust, Bangalore and also Academic Excellence award from Friendship from of India, New Delhi. He has been the chairman and member of Board of studies for Bachelor in Education offered by Horizon College International, Sri Lanka. He has published various articles in national and international Journals and books. He has been regularly presenting papers in National and International Seminar/Conference / Symposium. He was a resource person various Programmes, and also completed a major research Project.

The session was attended by 143 -163 Participants who were M.Ed. Students, Ph.D. Research Scholars and faculty members from various institutions across the country.

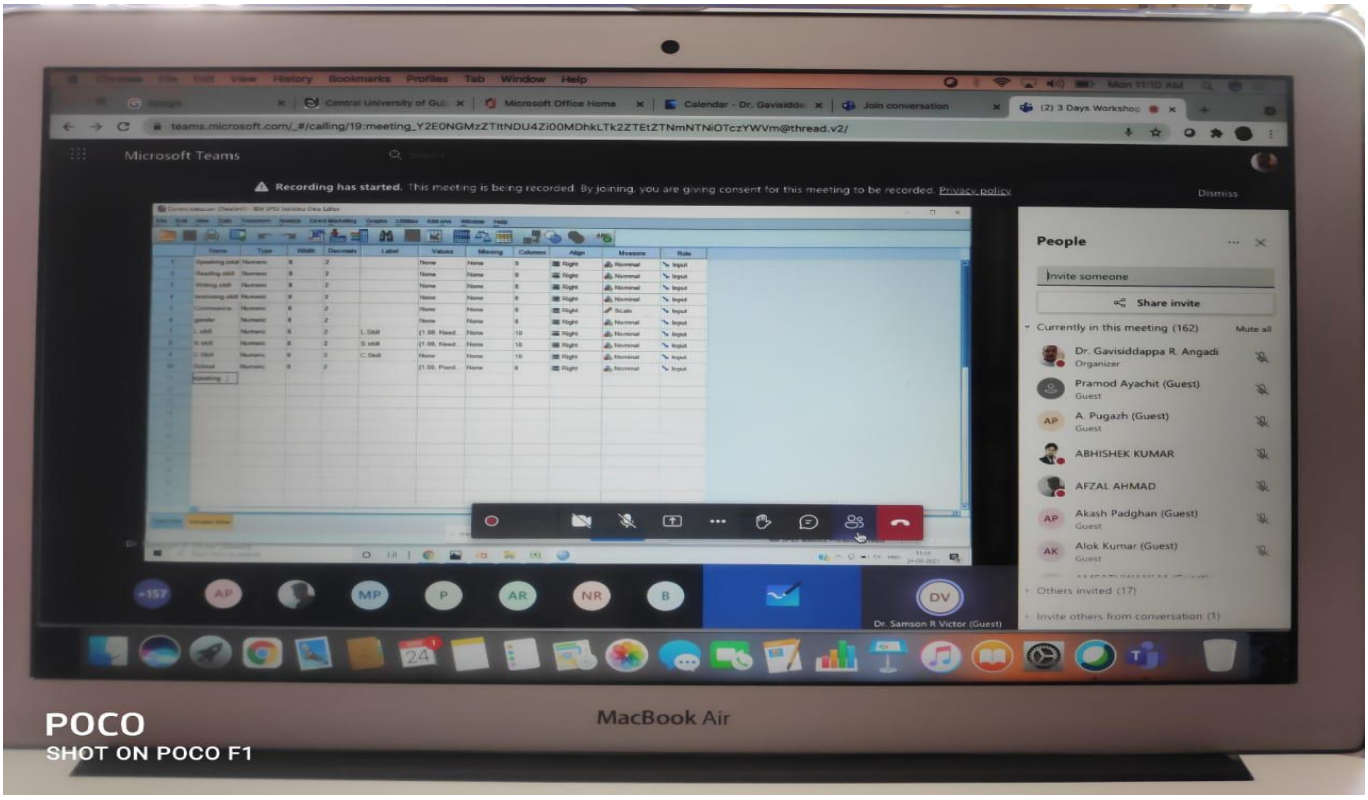
The expert began the session by introducing qualitative data analysis and how to use it in research.

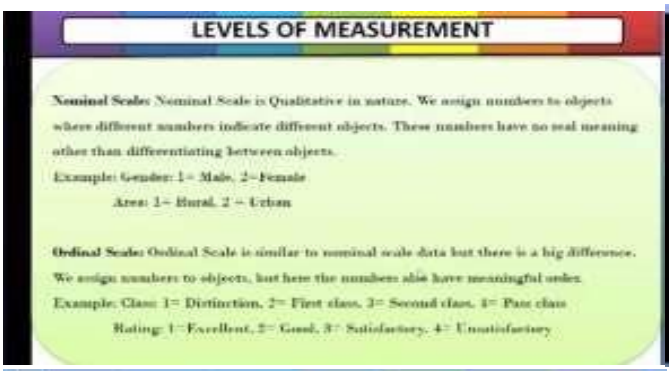
He then talks about: -

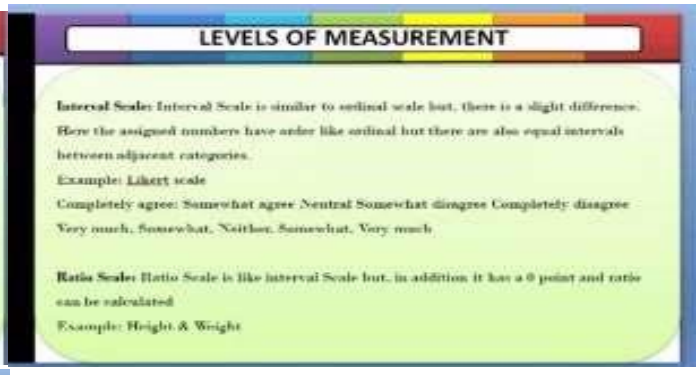
- Research problem
- Research question| objectives
- Sampling, Instrument & data collection
- Data analysis

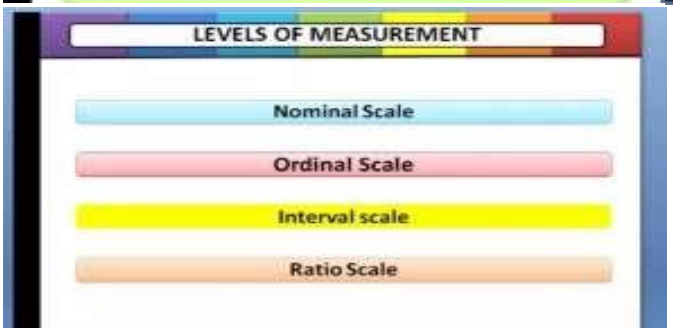
Quantitative data analysis is all about analysing number based data (which includes categorical and numerical data) using various Statistical techniques. He explains various type of tool for example: Types of Quantitative Research, Steps of Quantitative data analysis, levels of measurement and Descriptive Statistics.

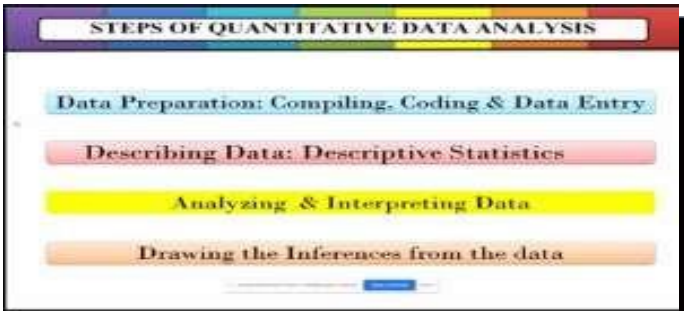
Some Screen shoots

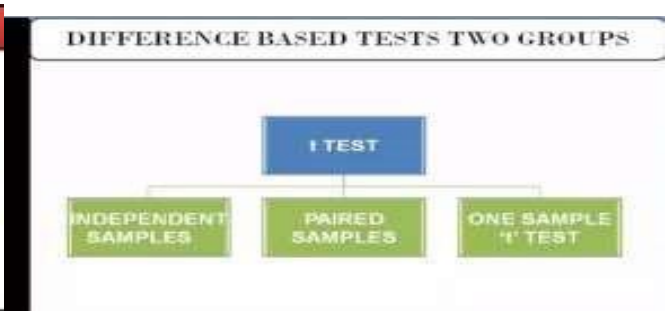












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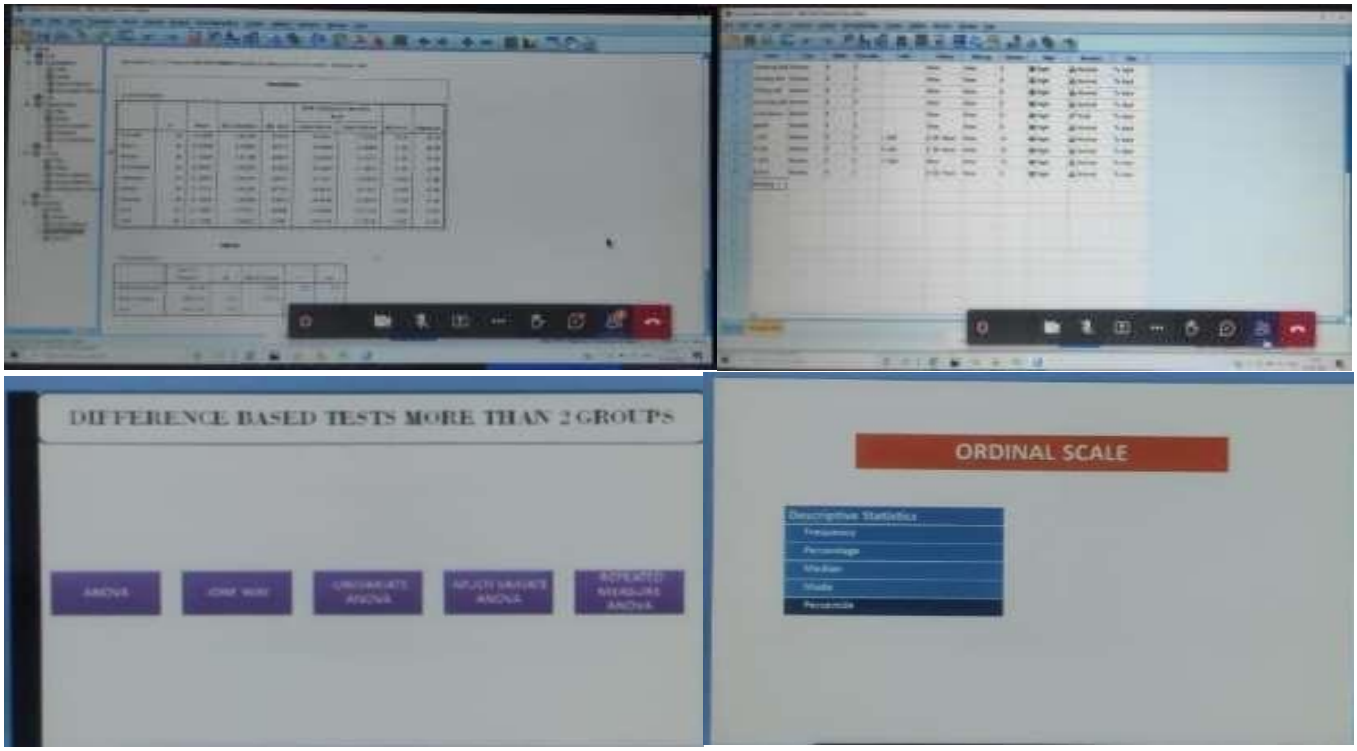

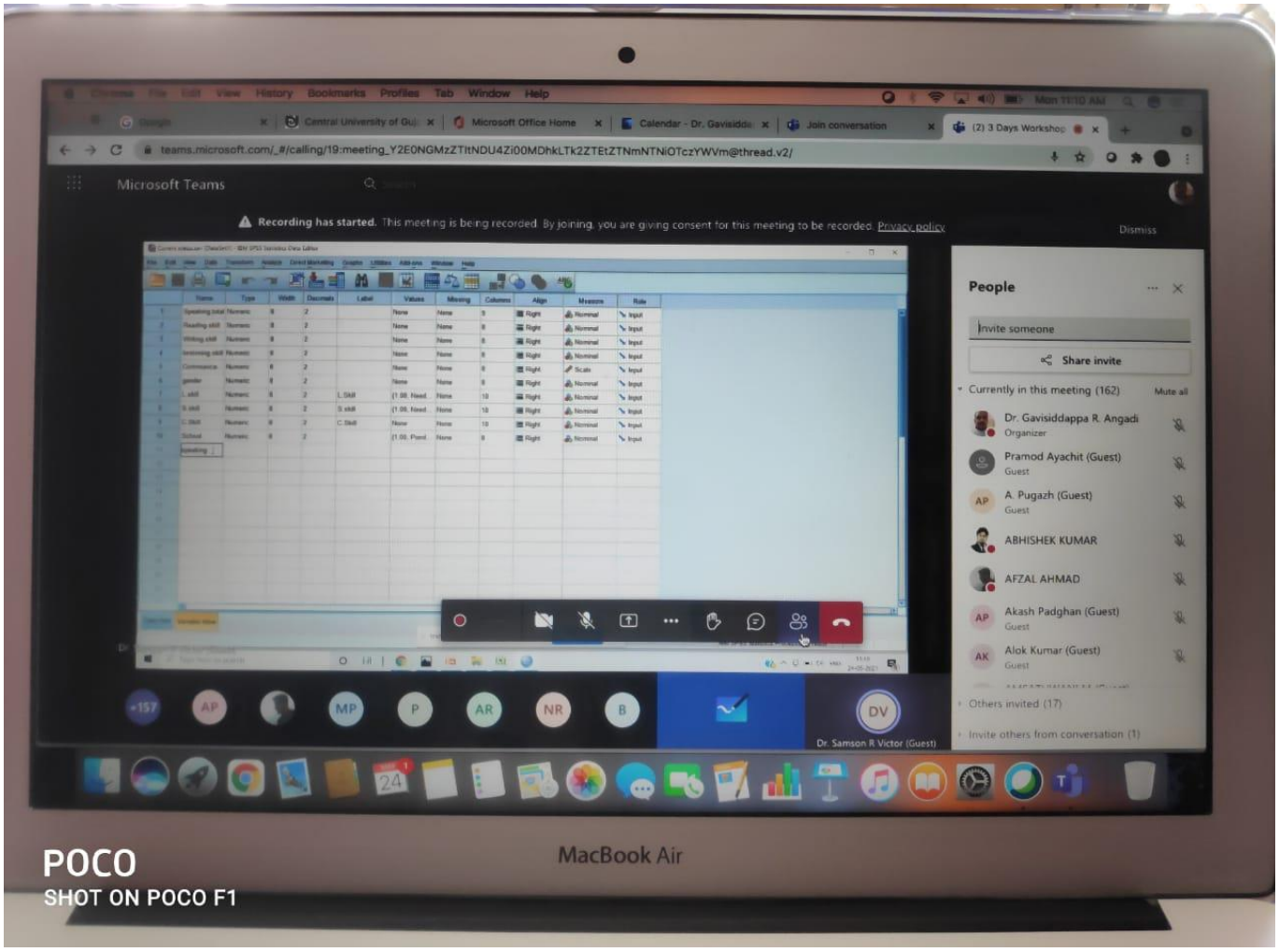

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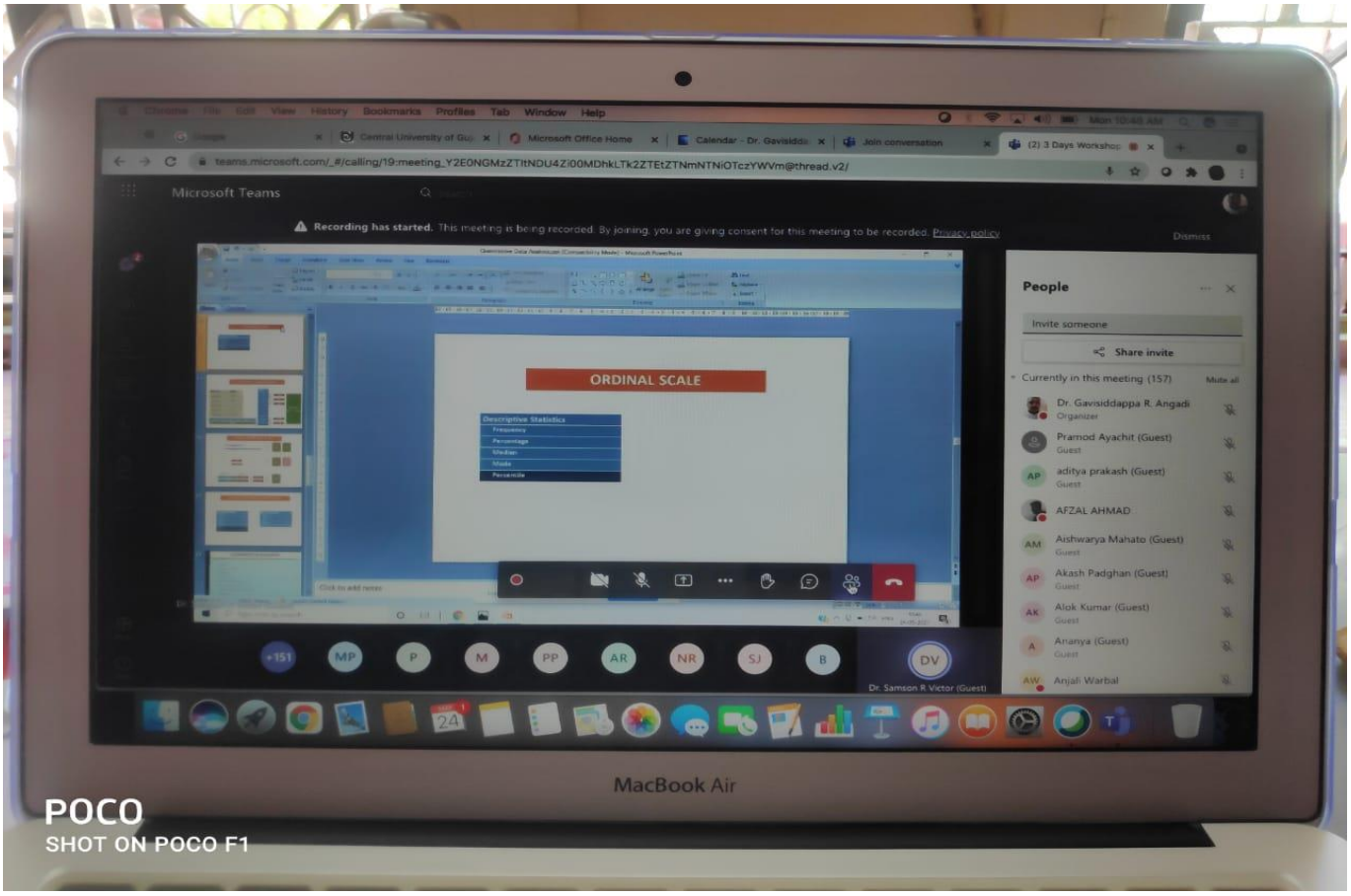

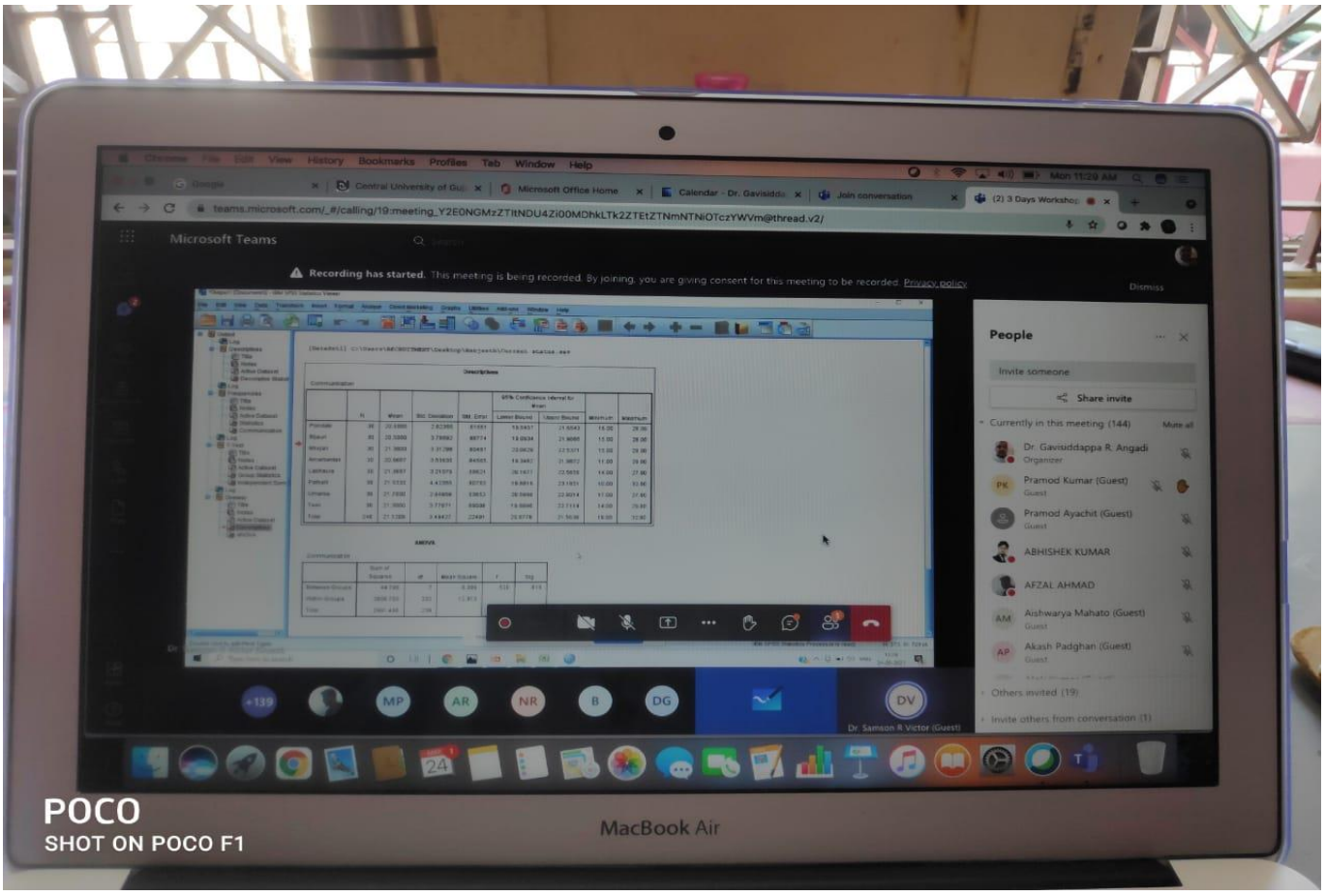

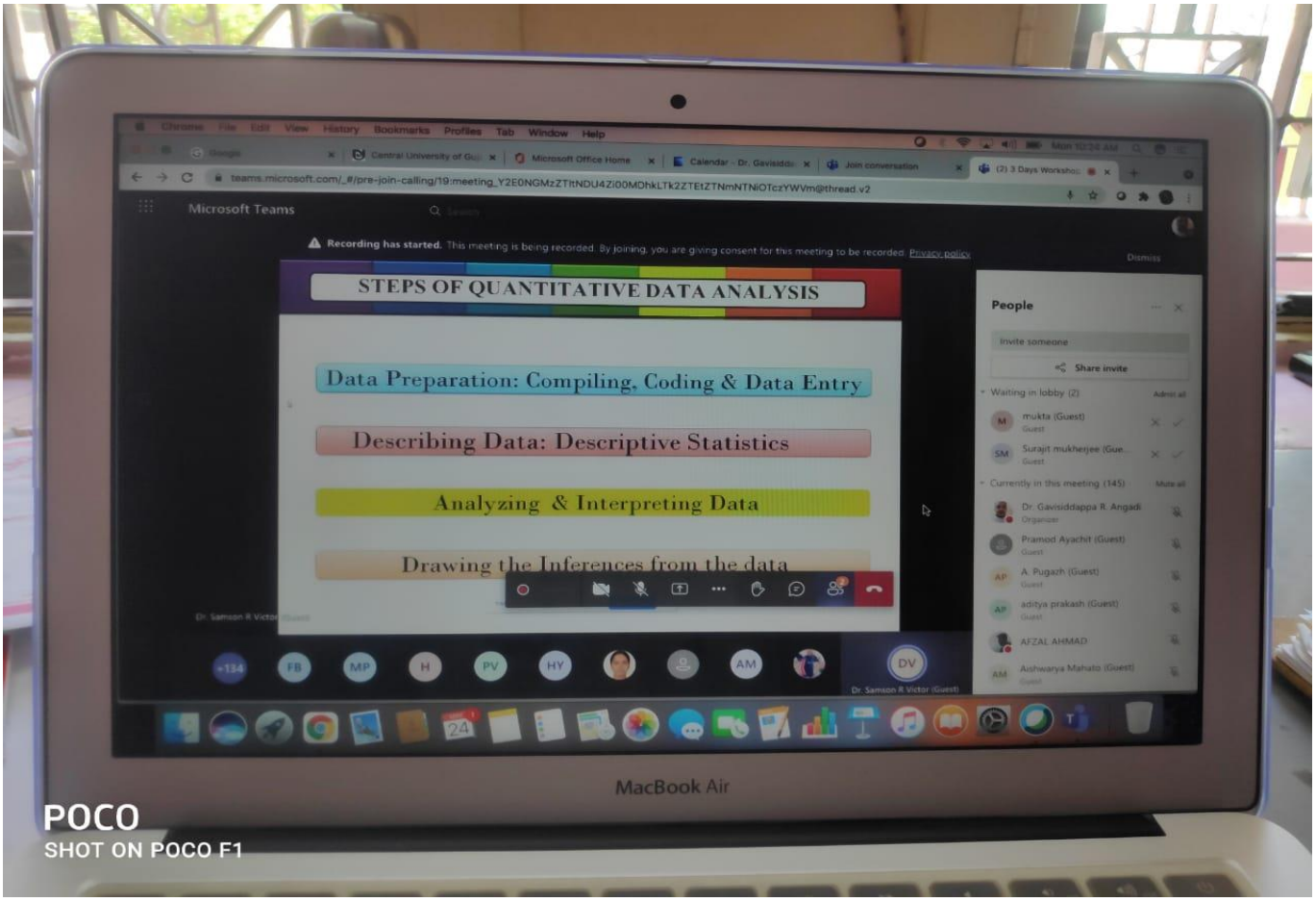
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Dismiss
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Data Preparation: Compiling, Coding & Data Entry
Describing Data: Descriptive Statistics
Analyzing & Interpreting Data
Drawing the Inferences from the data
People
Invite someone
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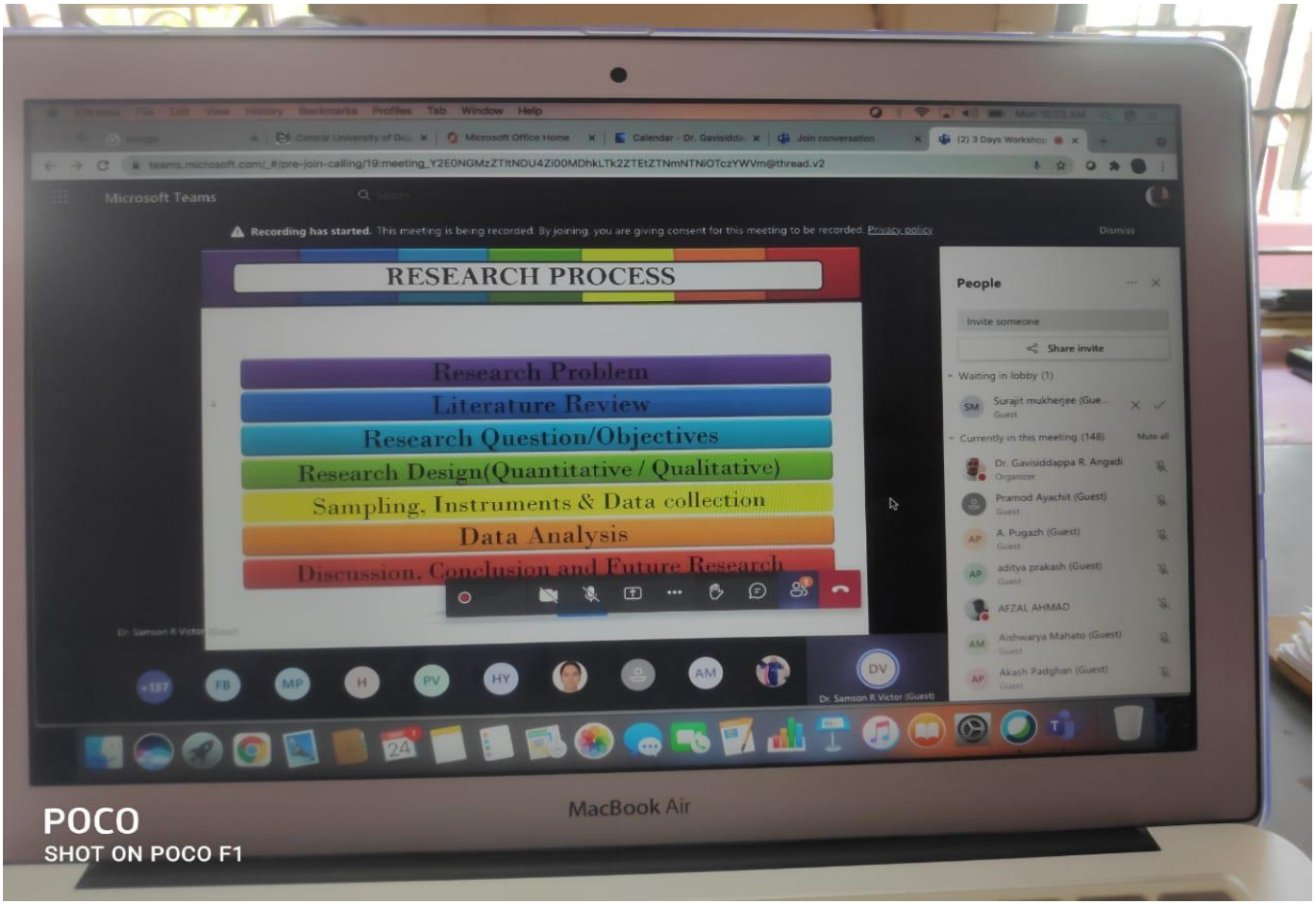
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RESEARCH PROCESS
Research Problem
Literature Review
Research Question/Objectives
Research Design(Quantitative / Qualitative)
Sampling, Instruments & Data collection
Data Analysis
Discussion, Conclusion and Future Research
People
Invite someone
Share invite
Waiting in lobby (1)
Currently in this meeting (148)
MacBook Air
POCO
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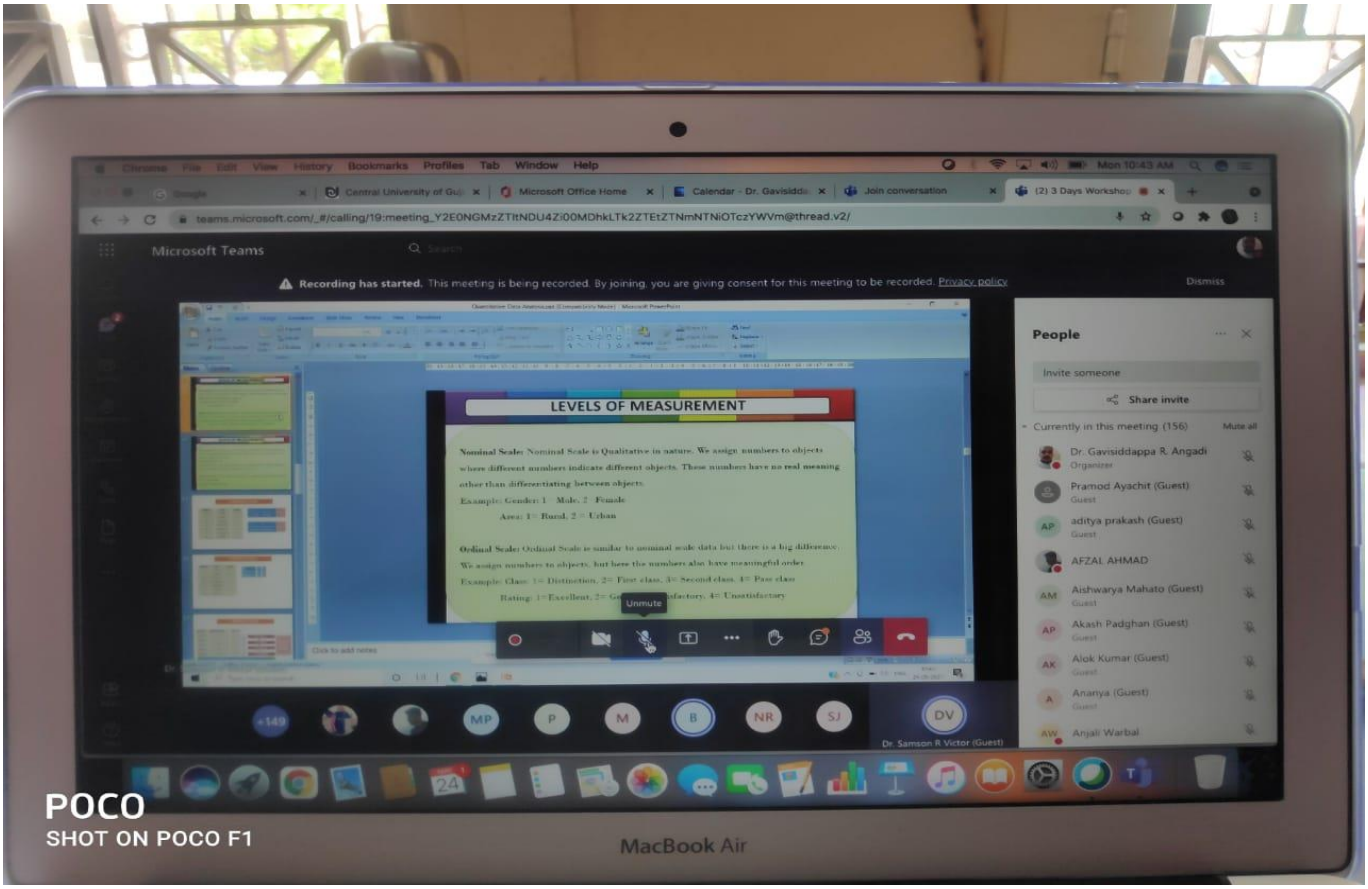


At the end of the session clarifications by participants and were clarified it by the expert. The session concluded and ended by vote of thanks by the Workshop coordinator, Dr. G.R. Angadi, Associate Professor, school of Education, and greeted and appreciated by the all participants successful and resourcefulness of the workshop.

Day 2(Tuesday): 25th May, 2021

Session (10:00 – 11:30), Tuesday

Workshop Coordinator : Dr G.R. Angadi

Resource Person: Dr. Vimal Kishore

Topic: Qualitative Data Analysis

The second day of the workshop was began with the introduction of basic understanding on qualitative data analysis and with introducing the resource person of the day Dr. Vimal Kishore by the workshop coordinator Dr. G.R. Angadi ,

Resource Person: Dr. Vimal Kishore

The resource person for the second day of the workshop was Dr. Vimal Kishore. He is an Associate Professor, Dean, School of Education & School of Mass Communication and Technology, and Finance Officer (I/c), Central University of Jharkhand. He was before joining CUJ he worked in Sikkim university, He did his Doctorate from Himachal Pradesh University, Shimla. He has been part of several national and international

assignments, and his research interest areas are such are Educational Environment, Teacher resources, Technology etc.

The Resource person started the seminar with brief introduction on research that-

- What is research?
- Why should we do research?
- Which type of research is good?

And next he talked about Research Data collection Methods in Qualitative approach:-

1. Observations: recording what you have seen, heard, or encountered in detailed field notes.
2. Interviews: personally asking people questions in one-on-one conversations.
3. Focus groups: asking questions and generating discussion among a group of people.
4. Surveys: distributing questionnaires with open-ended questions.
5. Secondary research: collecting existing data in the form of texts, images, audio or video recordings, etc

And we don't go for the large population and sample sizes in qualitative data as we do only in-depth study of Phenomena which we know as Variables in quantitative study.

After giving this much back information he come to explain the research techniques of qualitative data analysis as follow:

1. **Content Analysis**
2. **Classification**
3. **Categorisation**
4. **Triangulation**
5. **Frequency and Percentage Analysis.**

Content Analysis:

"Content analysis is concerned with the classification, organisation and comparison of content of the document or communication". Means the data we collected in any form through recording, writing so we have to organise and classify the data.

For eg. In the classrooms we use CA, when we systematize things like the teaching-learning process.

"A central idea in content analysis is that the many words of the text are classified into much fewer content categories" (Weber,1985).

Steps to be follow while analysing the data:

We record a lot of data, interview. But sometimes it's large and sometimes it's difficult to organise the data then we come to categorise the data to reduce. As data is broader and difficult to come to the central point so we minimize the content in different parts, try

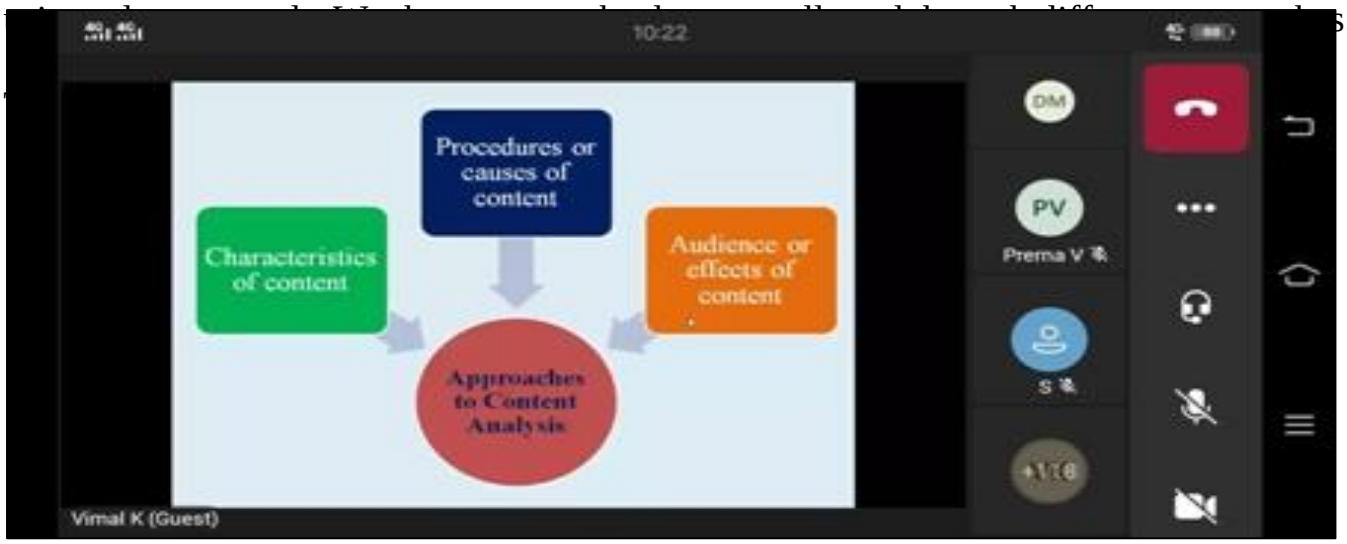


Fig. webinar on qualitative data analysis

1. **Characteristics of Content:** In the first approach, the researcher is interested primarily in the characteristics of the content itself. For instance, if you are content analyzing a historical writing, you must concentrate upon the substantive aspect of the writing. Whereas, if you are content analyzing any archival material, you may concentrate both on the substantive dimension and form of the content.
2. **Procedures Or Causes of Content:** In the second approach, the researcher attempts to draw valid inferences about the nature of the procedures of the content or the causes of the symbolic material from the characteristics of the material itself.
3. **Audience Or Effects of Content:** In the third approach, to content analysis the researcher interprets the content so as to reveal something about the nature of its 'audience' or its effects.

For eg. If we conduct a study on what are the causes in male juveniles? We find the reason behind it, we have the nature of the problem analysis character, and the effect on the audience we see.

Procedure of Qualitative Content Analysis:

Mayring(1983) has developed a procedure for qualitative data analysis which includes we steps such as:

1. Define the material- to select the interviews or those parts which are relevant for answering the research questions.
2. Analysing the situation of data collection- How was the material generated? Who was involved? Who was the present in the interviews? Where do the documents to be analyzed come from? Etc.
3. Material is formally characterized- How was the material documented? How was the edited influence of the transcription on the texts?
4. Direction of the analysis- For the selected text and ‘ what one actually wants to interpret out of them?’ The researcher defines in this that which of the three techniques can be applied concretely.(techniques in the next section).
5. Analytic units are defined- Differentiates between the units as follow:
    - ‘Loading unit’ is what is the smallest element of material which may be analyzed, the minimal part of the text which may fall under a category.
    - ‘Contextual unit’ defines what is the largest element in the text which may fall under a category.
    - ‘Analytic unit’ defines which passages are analyzed one after the other.

Techniques of Qualitative Content Analysis:

The concrete methodological procedure basically include three techniques:

Summarizing Content Analysis	**Explicative Content Analysis**	**Structuring Content Analysis**
Summarize the data with less relevant text, reduce the material and cut the insufficient data. And paraphrases are bundles and summarized. E.g. Interview from retired school teacher Wishes to start a coaching class/ charging only actual expenditure. etc We can reduce discussion like- How are you,your current occupation?/etc.	It clarifies indegenous or contradictory to remove previous definitions. E.g. A retired teacher says that he is going to do tuition classes and also charge the students, but he doesn't have a profit motive. Now you have two words 'tution class' and 'profit motive'. Based on the meaning, researchers can paraphrase the content like " the retired teacher is intending to start a coaching class on no profit and loss basis".	The content is structured formally in materials. No general rule can be defined in analysing it depends on the respective research question and analytical power of the analyst. E.g. What are the motives of the retired teacher? Fromm the analysis of interview transcript you can filter out the internal structure like: "Coaching class on no profit and no loss basis".

Classification:

Classification is a way of knowing; we have to be cognizant of the attributes or things to be able to group them (Tesch, 1990).

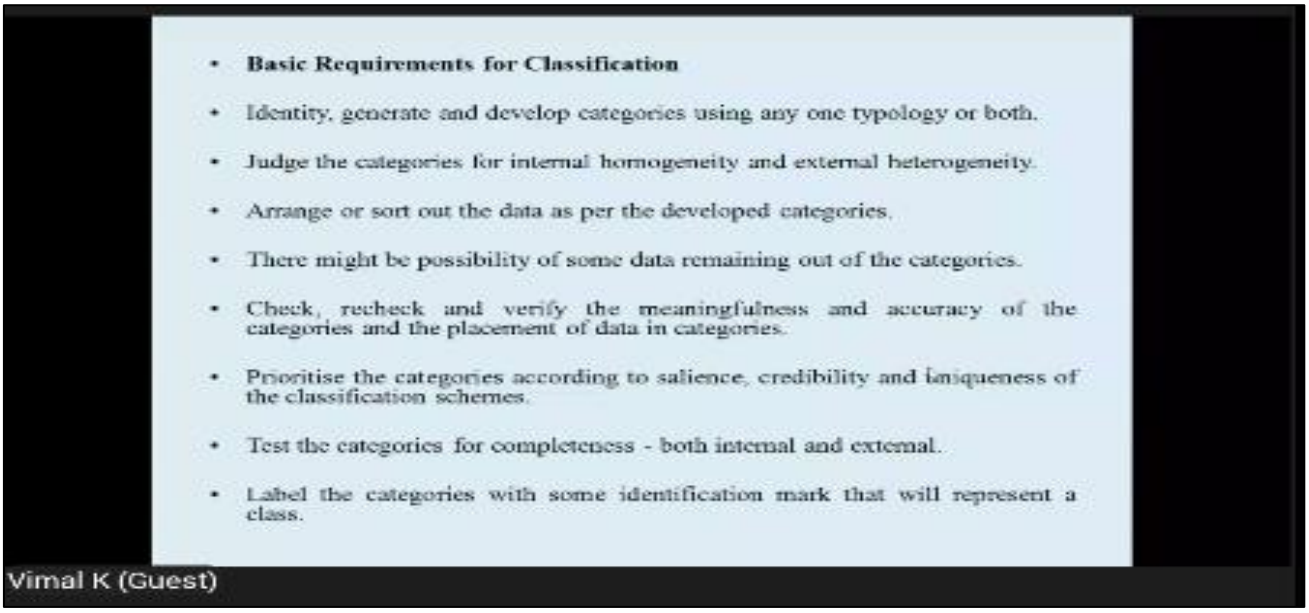
Eg. Periodic Table.

So basically it is a systematic grouping of units according to their common characteristics. The qualitative Analyst , using classification as a tool for analysis, then l**ooks for**

convergence in the data that have been categorised using typologies. Such an activity leads to a classification system of data.

The categories are judged by two criteria: "internal homogeneity" and "external heterogeneity".

- ➢ First criteria concerns the extent to which the data that belong to a certain category hold together in a meaningful way.



- ➢ Second criteria concerns the extent to which differences among categories are bold and clear.

Basic Requirements for Classification:

The next is how we do categorization of the data.

Categorisation:

Categorisation is the process of identifying patterns in the data; recurring ideas, themes, perspectives and descriptions that depict the social world you are studying.This is an intellectually challenging phase or data analysis. To some extent it is an art and is creative as well.

Patton, (1990) describes inductive analysis as a strategy to identify salient categories or themes. Inductive analysis means that the patterns, themes, and categories of analysis come from the data, they emerge out of the data rather than imposed on them.

In Inductive analysis, data can be categorized using Typologies Indigenous typologies and Analyst constructed typologies.

Indigenous Typologies	**Analyst Constructed Typologies.**
Indigenous typologies are categories that come directly out of the everyday popular talk(jargon) of the field in which you are researching. E.g. a project on reducing dropout rate among tribal school children. Terms I defined "chronics" or "borderline"	It is an opportunity for creative thinkers, writers who do creative writing, poetry, short stories etc.

These typologies are created by the researcher and don't necessarily correspond directly to the categories of meaning used by the participants.

Triangulation

Triangulation is a method used to increase the credibility and validity of research findings. We use when we have to find out, evaluate the content, the ideas behind this thing are the same or not. Findings fulfil the purpose, reliability or constituency, credibility.

Eg. we as a teacher ask students why he/she was absent yesterday repeatedly.

Credibility refers to trustworthiness and how believable a study is; Validity refers to the extent in which study accurately reflects or evaluates the concept or ideas being investigated.

- ➔ Findings are different in quantitative and qualitative approach
- ➔ The change can be increased and decreased.
- ➔ It is employed in both method appropriate studies. Validation in quantitative and inquiry in qualitative.
- ➔ It becomes an alternative to "traditional criteria like reliability and validity."

➔ It is the preferred line in the social sciences because participants aren't willing to speak, shy in nature, so we use triangulation.

➔ To find out whether the purpose is fulfilling or not.

Methods of Triangulation:

1) Triangulation of methods,
2) Triangulation of sources;
3) Triangulation of analyst, and
4) Triangulation of theory.

We check the credibility of our findings through these four methods of triangulation.

Triangulation of Methods: checking out the consistency of findings generated by different data- collection methods. That is called "method triangulation". It most often revolves around comparing data collected through some kind of qualitative methods with data collected through some kind of quantitative methods.

E.g. of multi- method approach to study the *education of tribal women.* Conducted by panigrahi, in 1987.

Title- Education of tribal women: A socio- Ecological perspective.

Objective: to explore the predominant factors operating in the tribal women's socio-ecological field with special reference to education.

Methods: Development of village profile, Examination of school records, Classification of economic and household activities, Interviews with parents and teachers, Observation of tribal women's activities out field work.

The finding of the above study gives three sets as:

Triangulation of Sources:

Checking out the consistency of different data sources within the same method, that is 'triangulation of sources'. This means comparing and cross- checking the consistency of information derived at different times by different means within qualitative methods.

➔ Cross checking(observation data might be different from interview data)

➔ Comparing the views.

Analyst Or Investigator Triangulation:

Using multiple analysts/investigators to review findings, that is analyst triangulation. As triangulating observers provide a check on bias in data collection. A strategy of doing is two or more persons independently analyse the same qualitative data set and then compare their findings.

E.g. two researchers observing a group of students and recording all the data independently, and then comparing the data in order to judge the extent of agreement or disagreement between the observers.

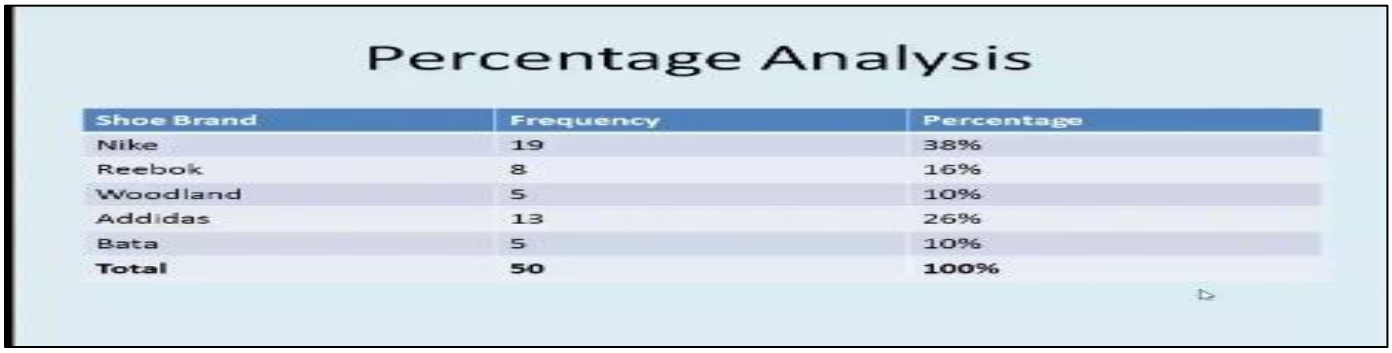
Theory/Perspective Triangulation:

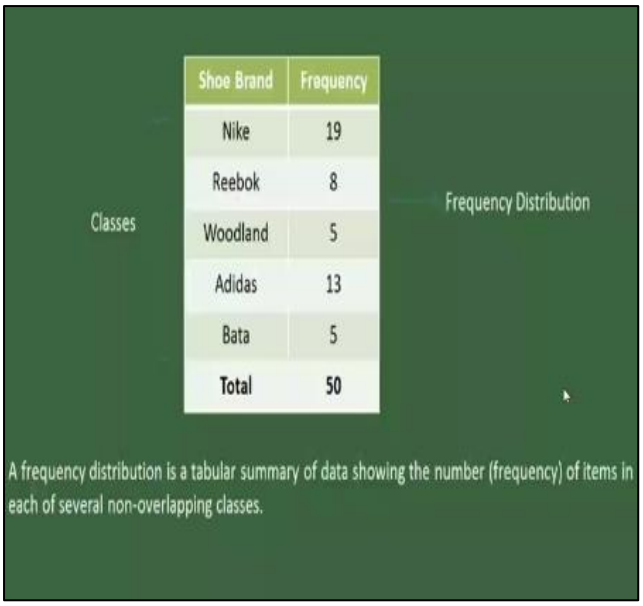
Using multiple perspectives to interpret the data, that is, theory/perspective triangulation. It involves using different theoretical perspectives to look at the same data. Such an observation of a group, community, or organization can be examined from a Marxian or Weberian perspective.

E.g. existence of civil law in the society, a functionalist sees it as a way of increasing social integration. But conflict is seen as a way of defining and upholding a particular order that only benefits some other groups.

Frequency and Percentage Analysis

Frequency analysis is a part of descriptive statistics. In statistics, frequency is the number of times an event occurs. It is an important area of statistics that deals with the number of occurrences(frequency) and analyzes measures of central tendency, dispersion, percentiles, etc.

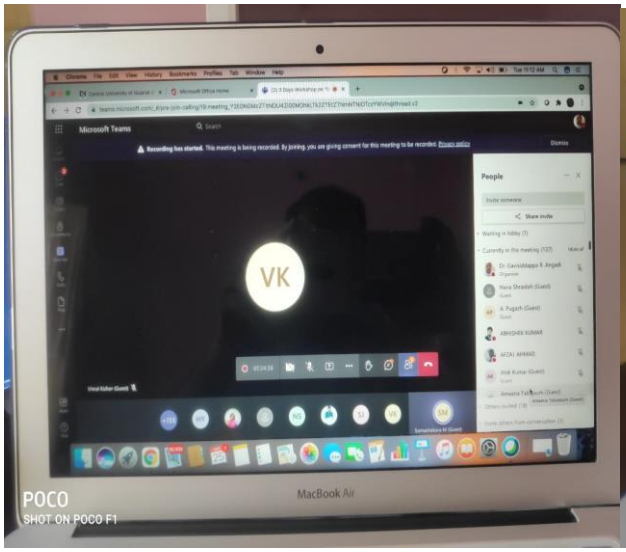




From the above images we can see how the frequency and percentile is done. As we see that data we collect doesn't give more information so we use frequency to make a sense of data. It gives an idea of different participants. In the same way, we can use this method of content analysis of problems in education areas like dropout rates in schools. It gives us easy trends and findings.

The workshop was about 1 hr 45 min. long included the discussion time. And at the end the vote for thanks was given by the PhD Scholar Jaya Mrilalini. To show gratitude to the resource person for taking a fruitful session, and all the faculties' members and specially the coordinator of the workshop arrange a knowledgeable session for all the students and scholars.

Some Screen shoots of the 2nd day session



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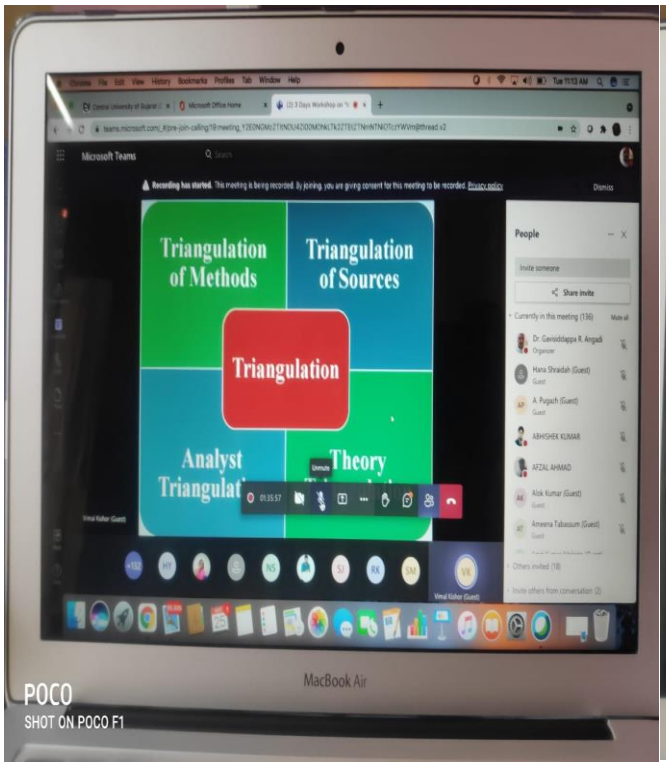
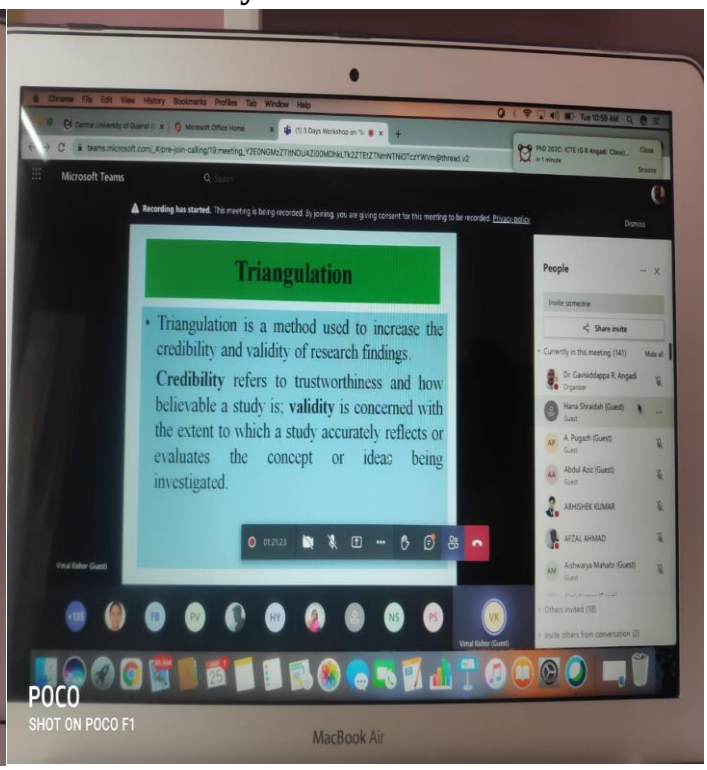
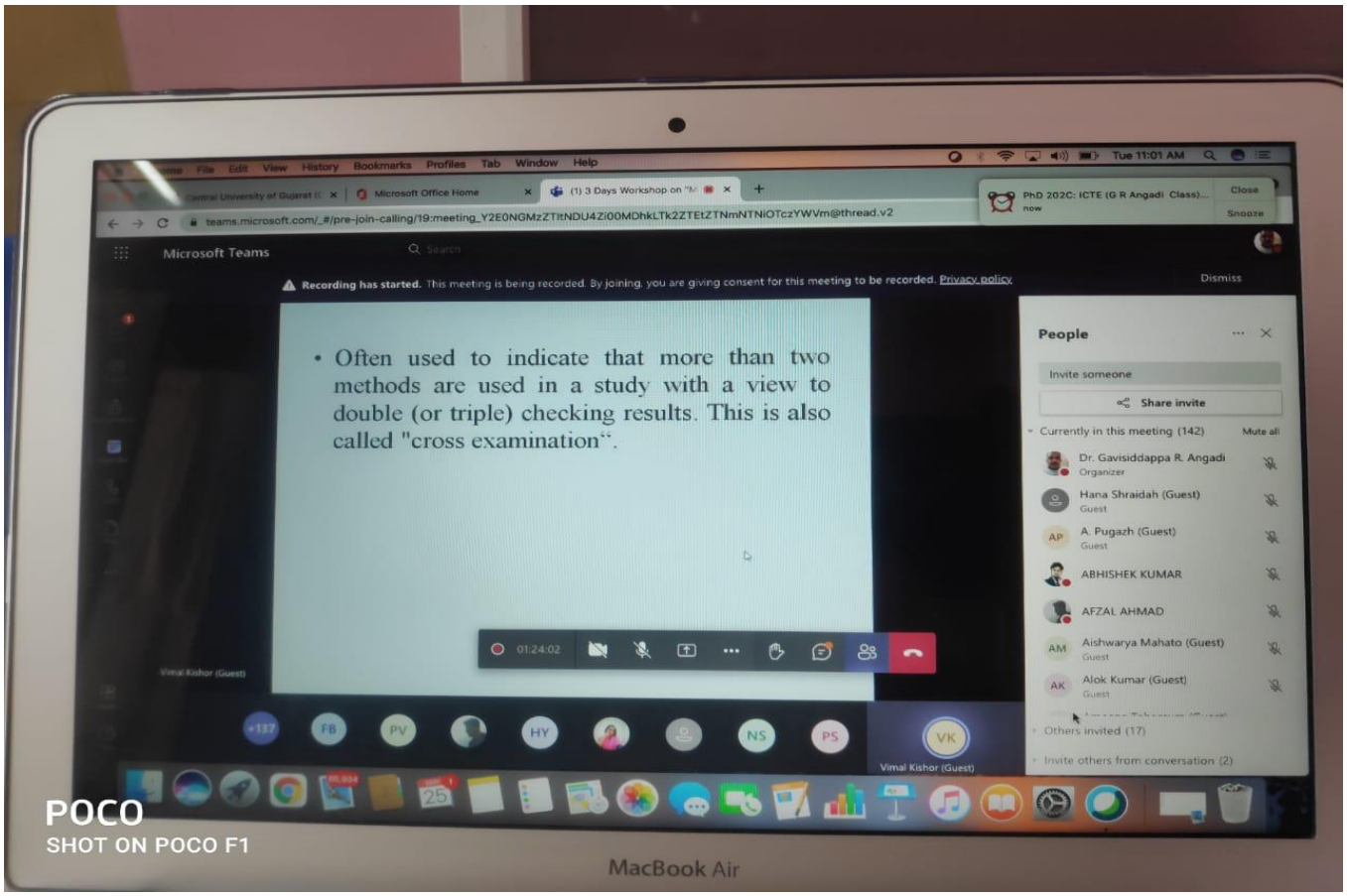
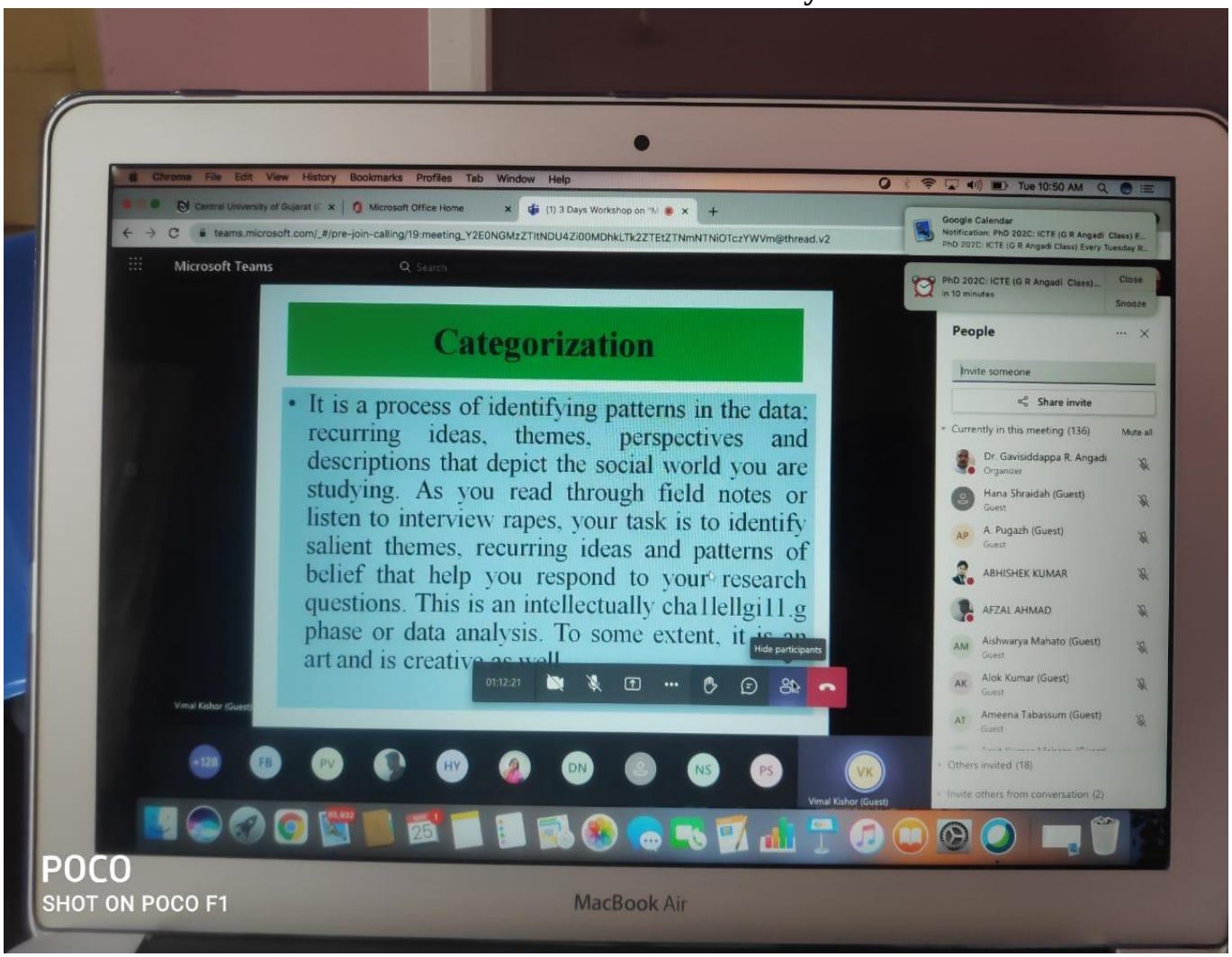
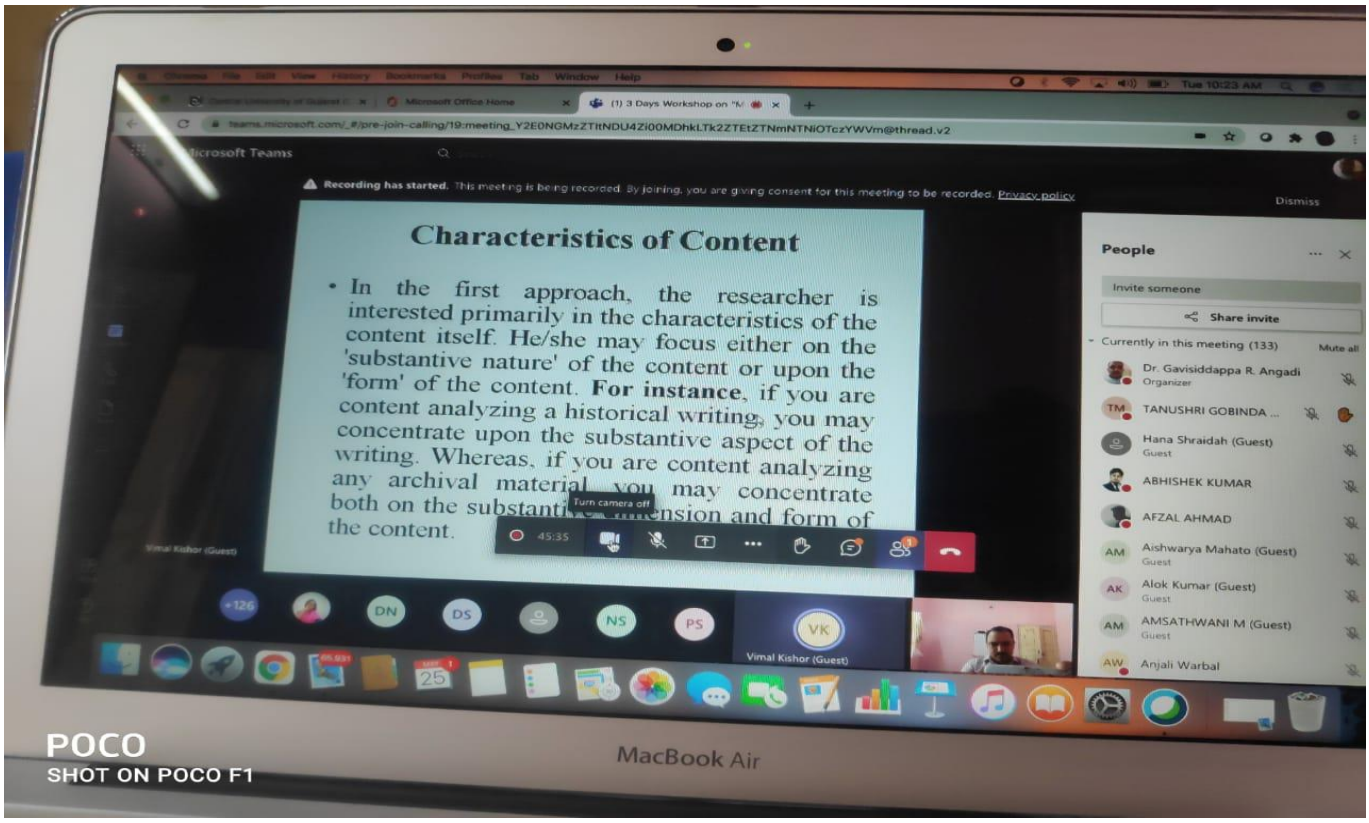






…Some Screen shoots of the 2nd day session





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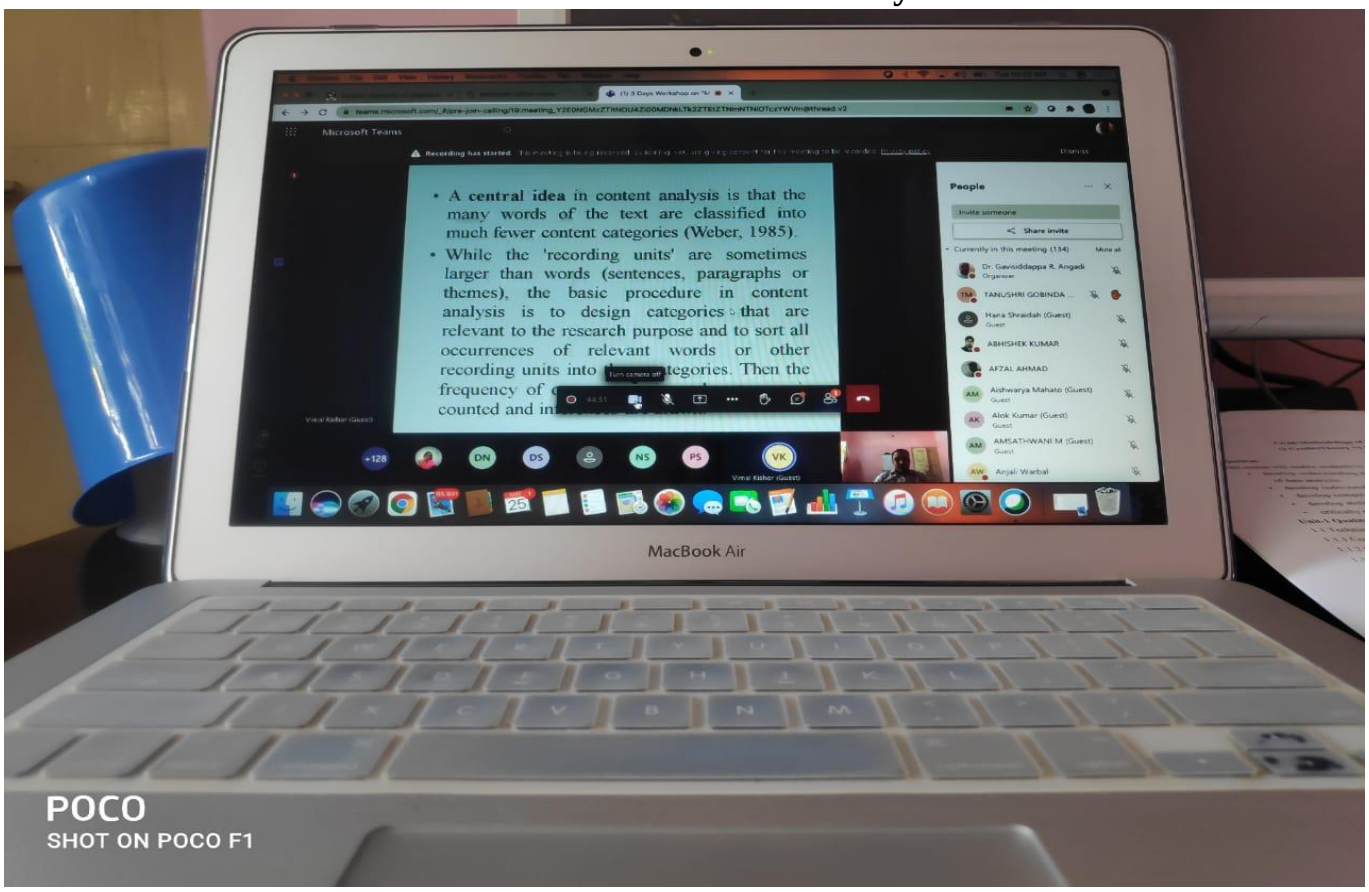
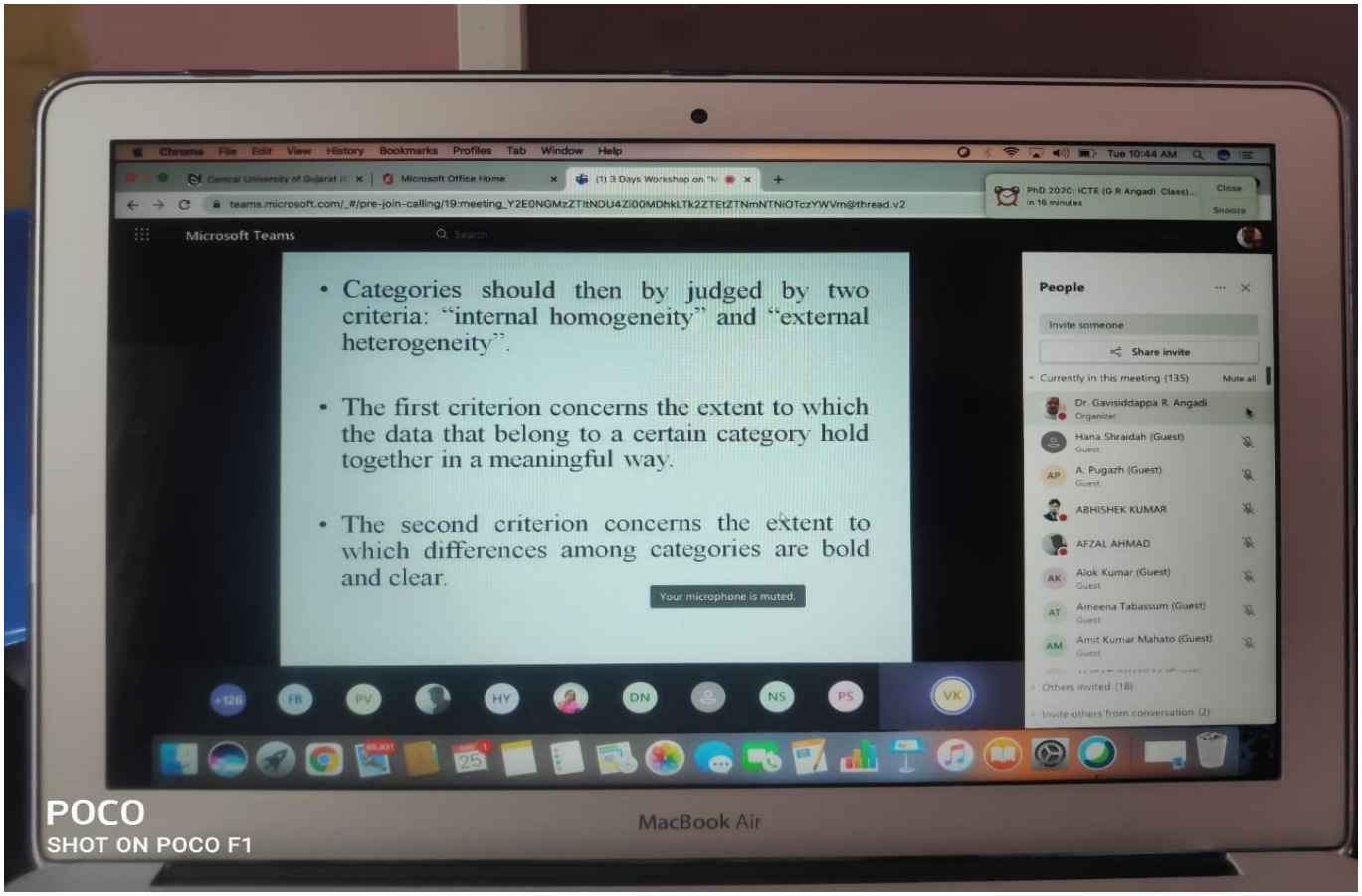




Day 1(Wednesday): 26th May, 2021

Session (10:00 – 11:30am), Wednesday

Workshop Coordinator: Dr G.R. Angadi

Resource Person: Dr. Thiyagu Suri

Topic: Use of computer in Data Analysis

Resource Person, Dr. Thiyagu Suri

The session began with brief introduction of session by workshop coordinator, Dr. G R Angadi, Associate Professor, School of education, CUG. The resource person Dr. Thiyagu Suri is currently working as an Assistant Professor in School of Education, Central University of Kerala, Kasaragod, Kerala. He completed his M.Sc. (Math). M.Phil. (Math), M.Ed., M.Phil. (Edn), M.Sc. (Psy), and Ph.D. (Education) and has a teaching experience of 13 years. His main areas of specializations are Descriptive Statistics, Inferential Statistics, Multivariate Data Analysis Techniques and Educational Research Methods. He had published Seventy five (75) articles in national and international level journals and also presented 125 papers in various national and international conferences.

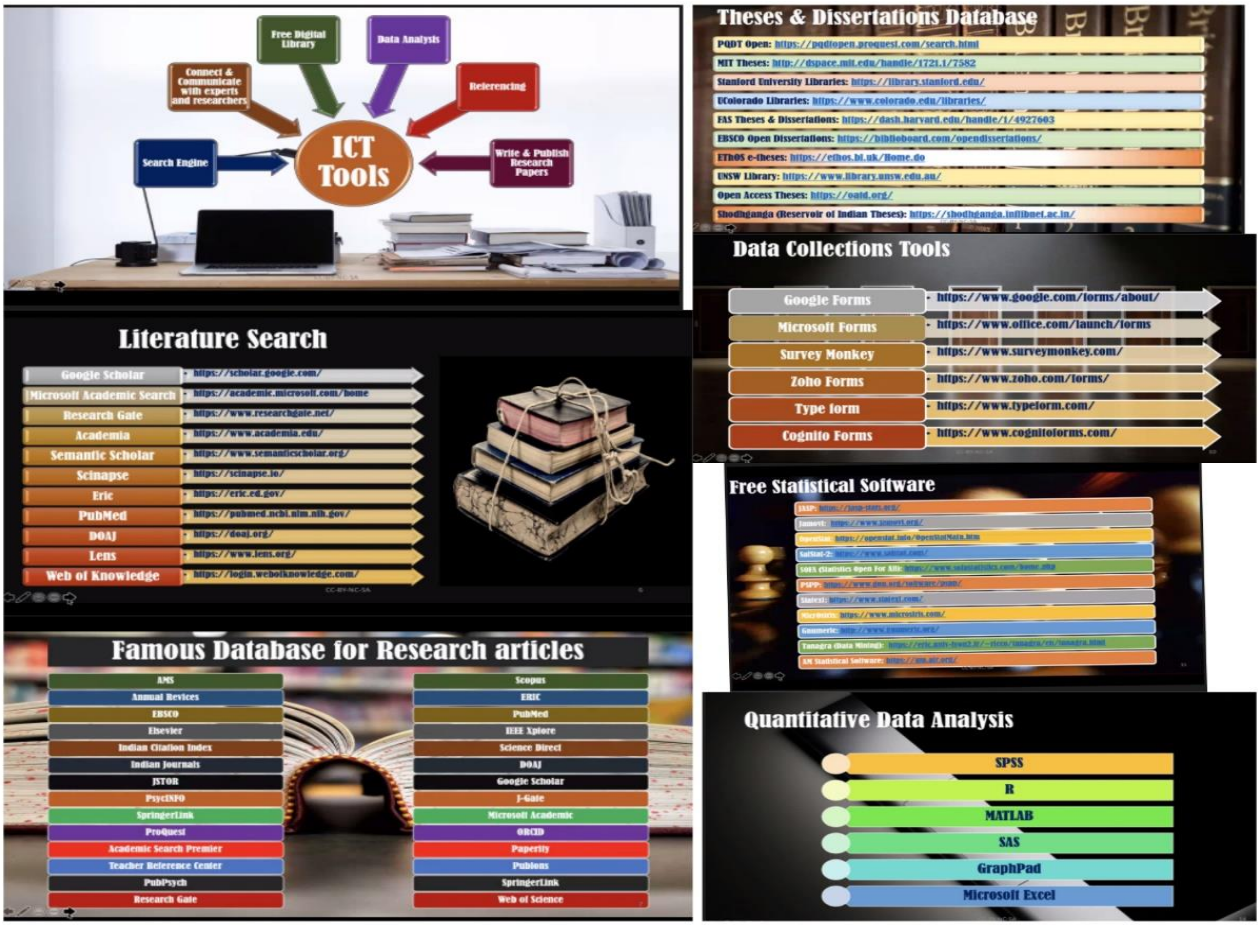
The session was attended by 132-142 participants who were M.Ed. students, Ph.D. research scholars and Faculty members from various institutions across the country.

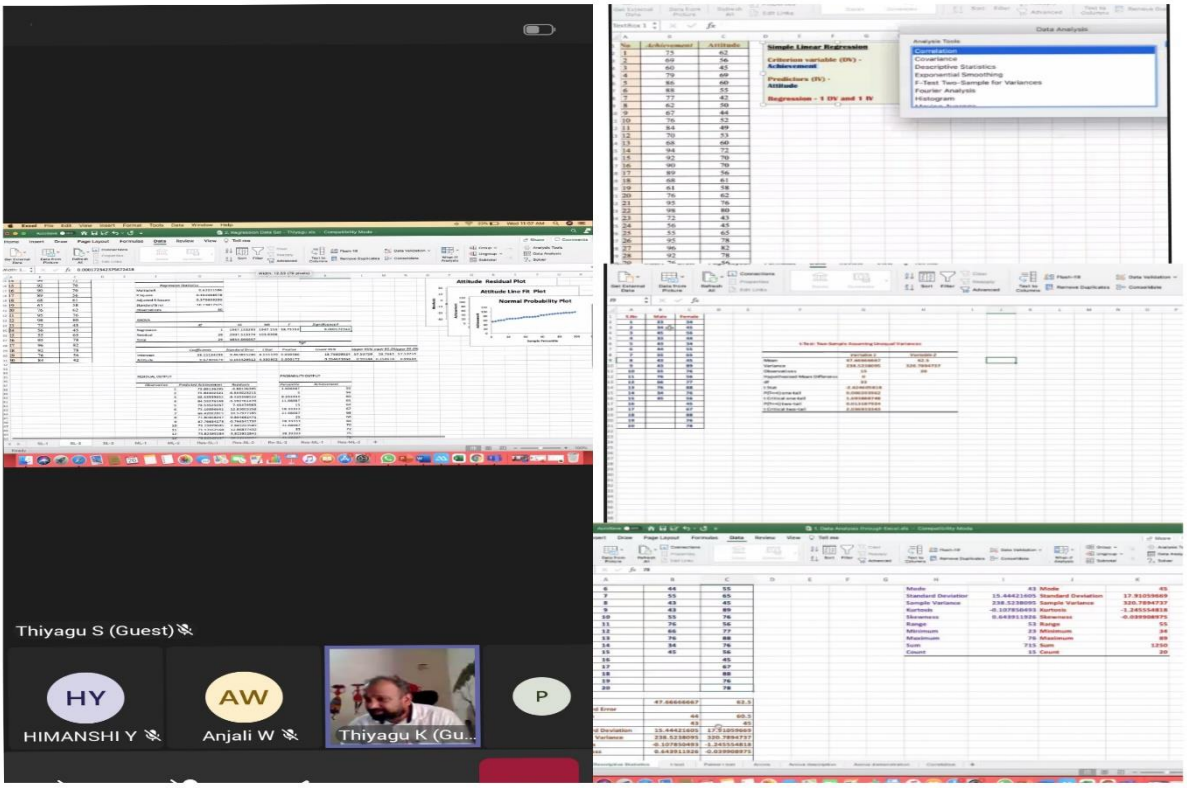
At around 10:10 am the session expert began by introducing the terms data analysis and how computers can be used to analyse the statistical data collected in research. He then talked about:

- Applications of ICT tools
- Tools for pre-data analysis
- Literature search
- Famous database for Research articles
- Thesis and research databases
- Data collection tools
- Quantitative data analysis: SPSS, R, MATLAB, SAS, Graph pad, Microsoft excel
- Free statistical software
- Qualitative data analysis
- Demonstration of descriptive statistics, t-test, paired t test, ANOVA, ANCOVA description, correlation.

The expert emphasised on usage of free software resources which will make the statistical analysis effective. He demonstrated step by step on how to do analysis of the data as well as on how to ad-on the softwares to make the calculations in Microsoft excel itself. He explained various tools by taking relevant examples as well as explained them by showing formulas used in the calculations. He also explained about when and how a particular test or tool to be used by the researcher. He at the end explained regression and the aspect related to it.

Some Screen shoots of the 2nd day session





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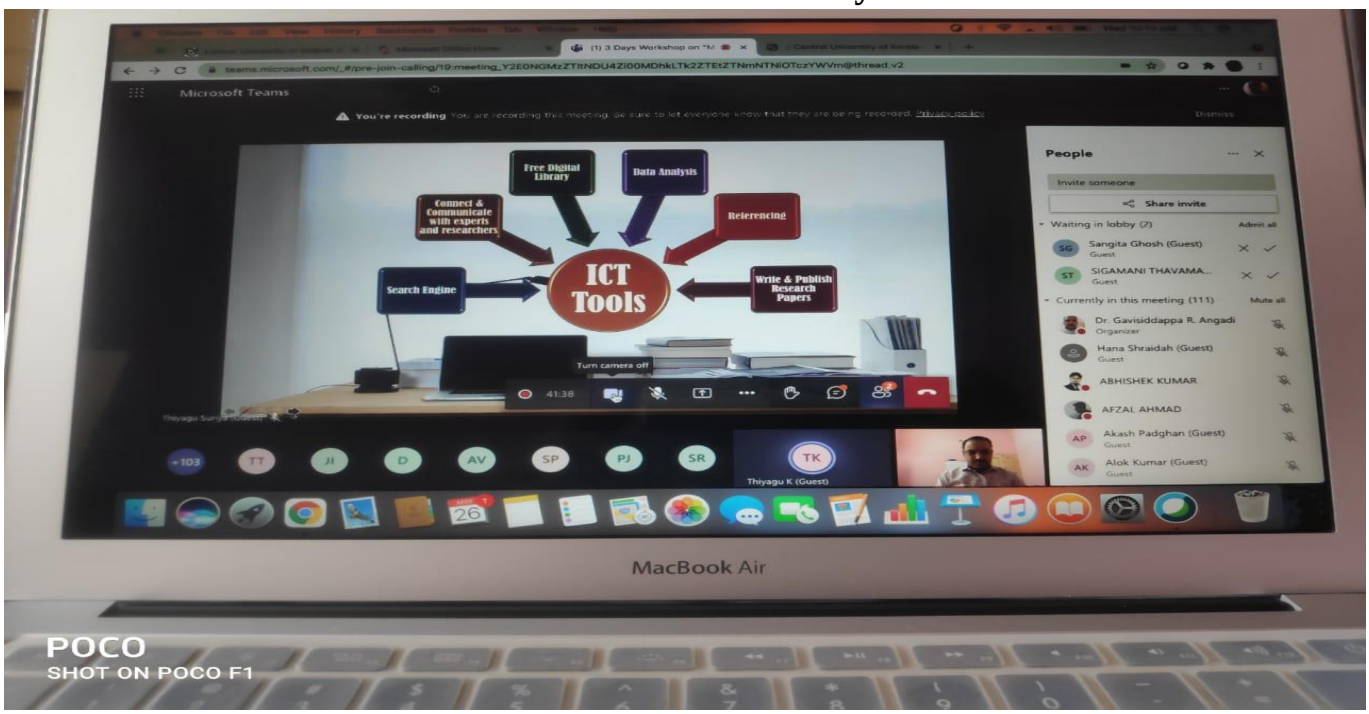

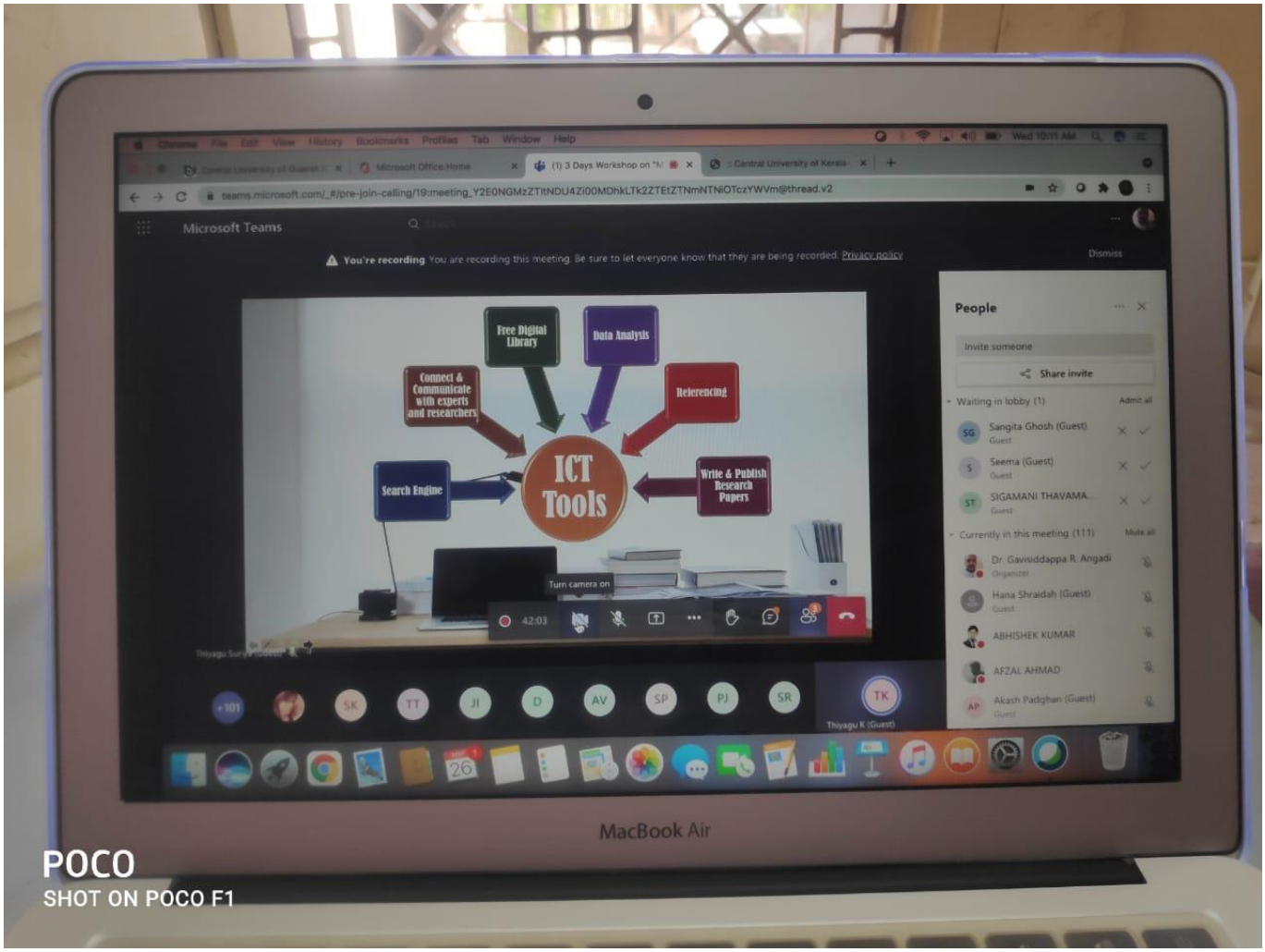

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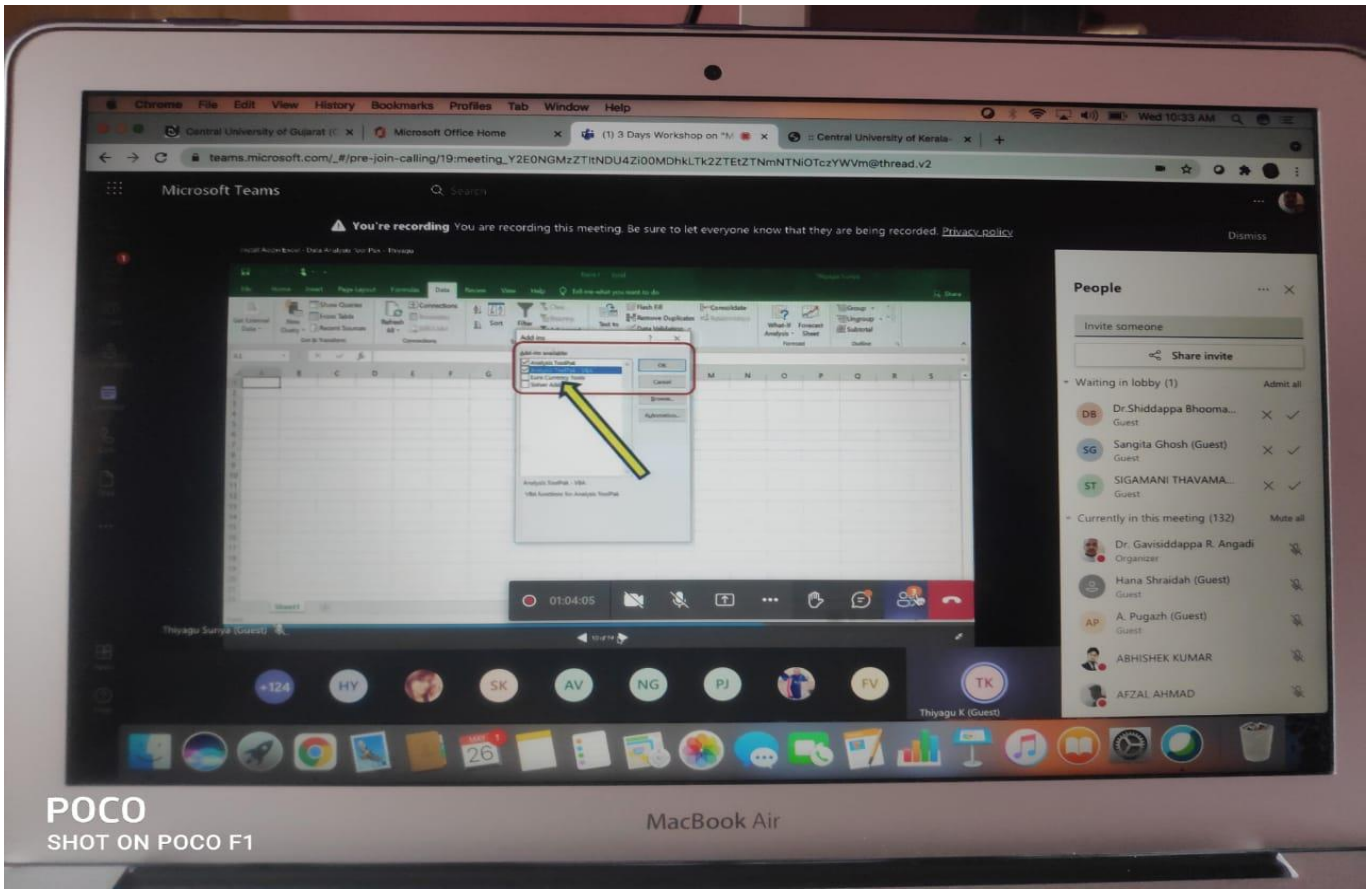

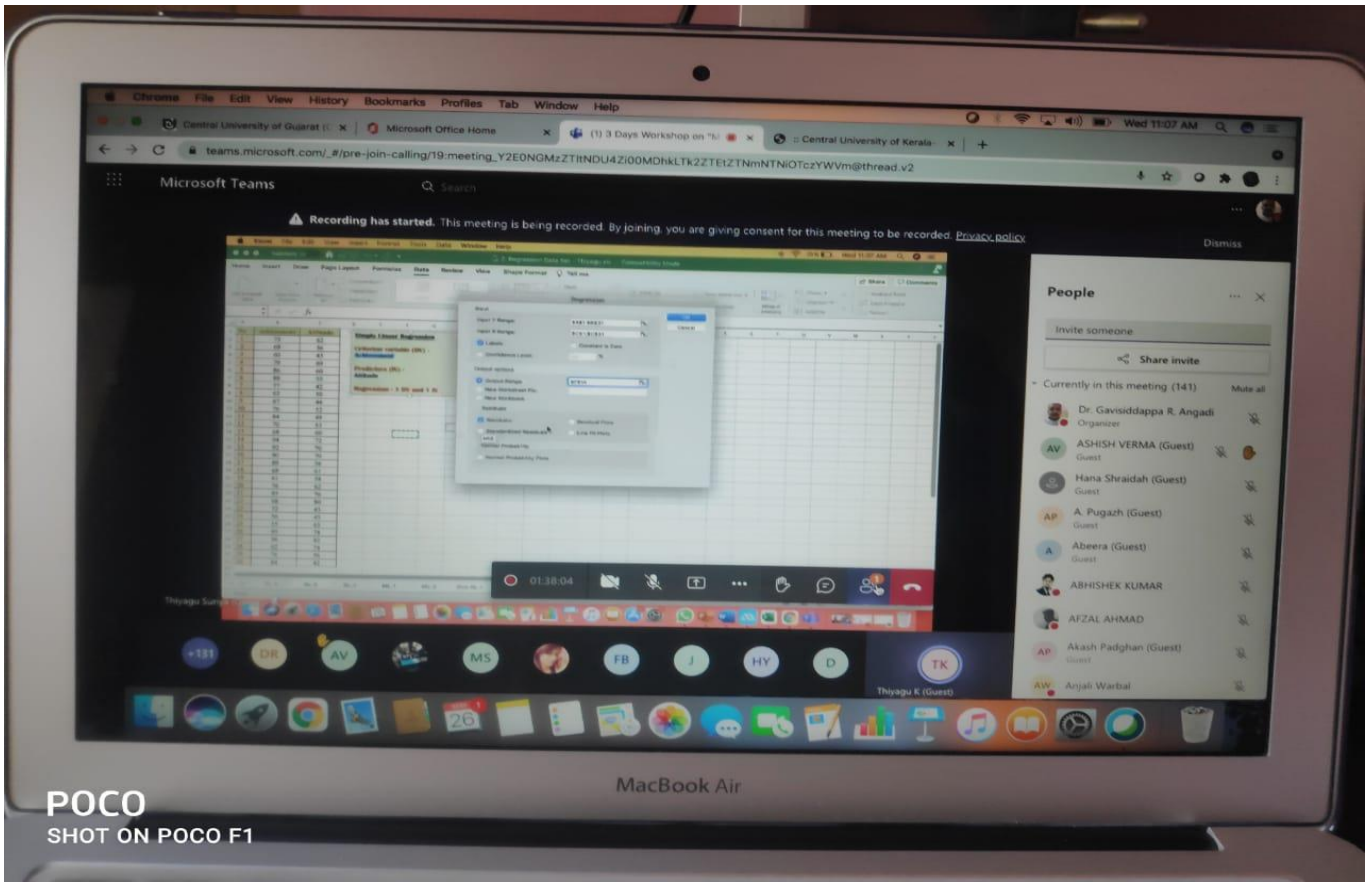

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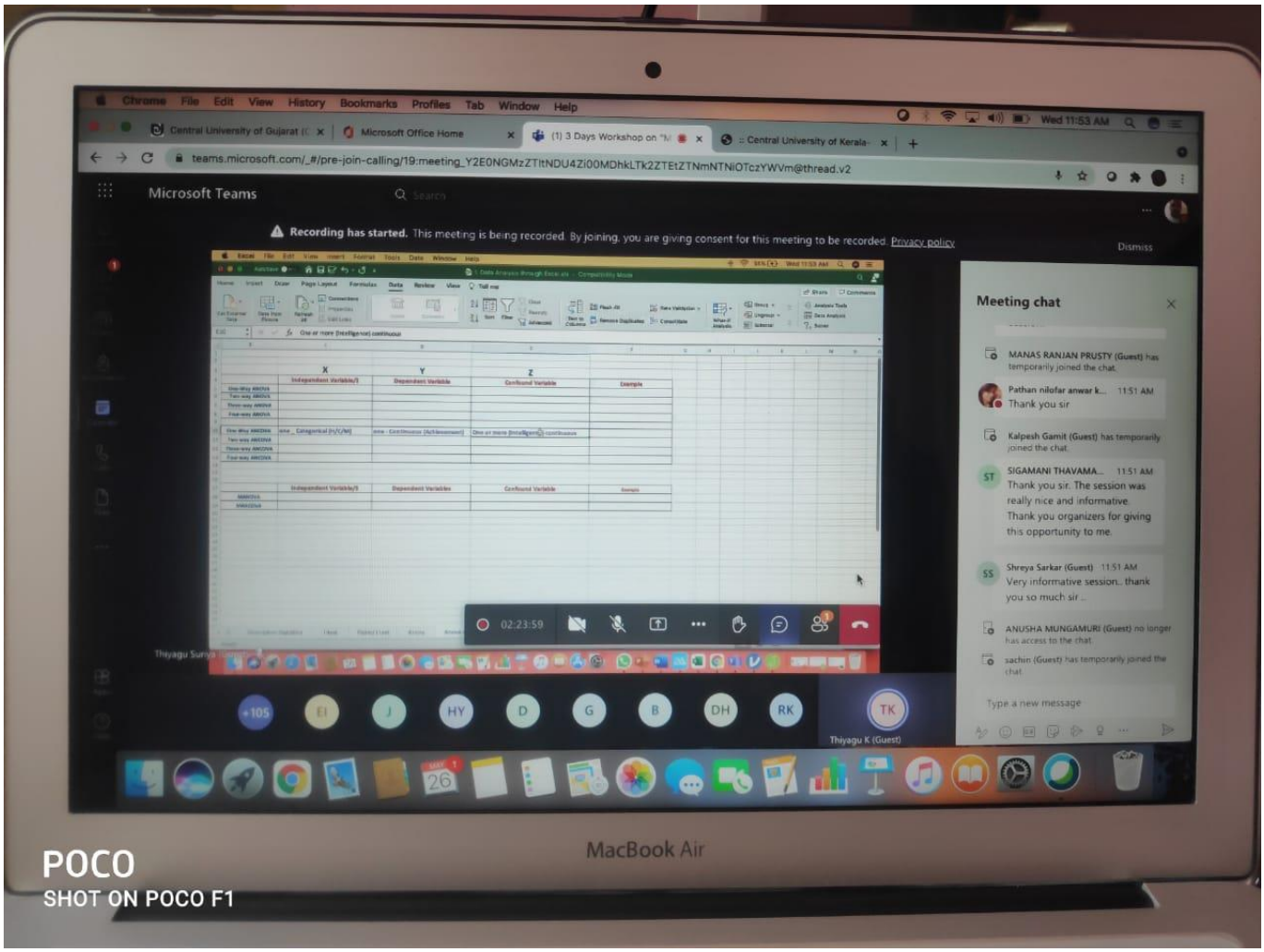


The session then was followed with questions by students and were answered by the expert. The session concluded and ended by vote of thanks to the session expert, organizing committee of the school of education, CUG and all the participants for attending and actively participating and making the workshop a successful program.

***** End of the Report*****

Invitation for an Invited Lecture.

Prof. H. B. Patel <hbpatel@cug.ac.in>

Sat 6/12/2021 3:23 AM

To: drjigp@gmail.com <drjigp@gmail.com>

Cc: Naresh Vankar <naresh.vankar@cug.ac.in>

गुजरात केन्द्रीय विश्वविद्यालय (भारत की संसद के अधिनियम सं. 25, 2009 के तहत स्थापित)

CENTRAL UNIVERSITY OF GUJARAT (Established by an Act of Parliament of India, No 25 of 2009)

Prof. H.B. Patel **Dean, School of Education, Central University of Gujarat**

By Hand/Speed Post/E-Mail/Fax

F.No. 2-1/2018-SE/930 12th June, 2021

To,

Dr. Jignesh B. Patel
Asso. Prof & CoE (I/C),
Dept. of Education,
School of Innovative Education,
Children's University,
Sector-20, Gandhinagar, Gujarat.

Sub: Invitation for an Invited Lecture.

Respected Sir,

School of Education, Central University of Gujarat is pleased to invite you for an Invited Lecture so kindly enlighten the stakeholders. The details are:

Theme: Role of Specialized Universities: ECCE
Date: 15th June, 2021.
Day: Tuesday
Time: 17.45 PM onwards
Platform: MS Teams
https://teams.microsoft.com/l/meetup-join/19%3ameeting_MzkyOGM4NDktYzhlYS00NDZhLTlmMTQtMmE1NzBmMTg5MGM0%40thread.v2/0?context=%7b%22Tid%22%3a%22a9f49153-63cf-4340-9806-620cee520e63%22%2c%22Oid%22%3a%22c8c5adf7-7937-43d0-bd12-98390c0c3add%22%7d

Please share the presentation with SE, CUG before the lecture or after the lecture.

Thank you very much,

With regards,

Yours sincerely,

Prof. H.B. Patel

Dean,
School of Education,
Central University of Gujarat,
Sector-29, Gandhinagar,
Gujarat, India-382030

web www.cug.ac.in Alternative E-mail: dean.se@cug.ac.in Personal E-mail: drhbeng@gmail.com
Personal Web: www.patelhb.in
Mobile-0091 9426539353 (Office) 0091-79-23977475

Invitation for an Invited Lecture.

Prof. H. B. Patel <hbpatel@cug.ac.in>

Sat 6/12/2021 3:25 AM

To: maunas.thaker73@gmail.com <maunas.thaker73@gmail.com>

Cc: Naresh Vankar <naresh.vankar@cug.ac.in>

गुजरात केन्द्रीय विश्वविद्यालय (भारत की संसद के अधिनियम सं. 25, 2009 के तहत स्थापित)
CENTRAL UNIVERSITY OF GUJARAT (Established by an Act of Parliament of India, No 25 of 2009)
Prof. H.B. Patel **Dean, School of Education, Central University of Gujarat**

By Hand/Speed Post/E-Mail/Fax

F.No. 2-1/2018-SE/931 12th June, 2021

To,
Dr. Maunas Thaker
Asst. Prof.,
H.M. Patel Institute of English Training and Research,
Vallabh Vidyanagar,
Anand, Gujarat-388120.

Sub: Invitation for an Invited Lecture.

Respected Sir,

School of Education, Central University of Gujarat is pleased to invite you for an Invited Lecture so kindly enlighten the stakeholders. The details are:

Theme: Latest Trends: Relationship of Education with Social Sciences and Languages
Date: 17th June, 2021.
Day: Thursday
Time: 17.45 PM onwards
Platform: MS Teams
https://teams.microsoft.com/l/meetup-join/19%3ameeting_NmFhMjM4YWYtYzc1NC00MTBiLThjMjYtZGUxOTdkOGM0NTQ4%40thread.v2/0?context=%7b%22Tid%22%3a%22a9f49153-63cf-4340-9806-620cee520e63%22%2c%22Oid%22%3a%22c8c5adf7-7937-43d0-bd12-98390c0c3add%22%7d

Please share the presentation with SE, CUG before the lecture or after the lecture.

Thank you very much,

With regards,

Yours sincerely,

Prof. H.B. Patel

Dean,
School of Education,
Central University of Gujarat,
Sector-29, Gandhinagar,
Gujarat, India-382030

web www.cug.ac.in Alternative E-mail: dean.se@cug.ac.in Personal E-mail: drhbeng@gmail.com
Personal Web: www.patelhb.in
Mobile-0091 9426539353 (Office) 0091-79-23977475

Report on

Guest Lecture

on

School System in Canada and

Career Opportunities

Organized by

Placement cell

School of Education, Central University of Gujarat, Sector 29,

Gandhinagar-382030

3rd July, 2021, 6.00PM

Brochure of Guest Lecture

Guest Lecture

School System in Canada and Career Opportunities

Organized By

Placement Cell
School of Education, Central University of Gujarat

3rd July 2021, 06:00 pm Onwards

Chief Patron
Prof. Rama Shanker Dubey
Hon'ble Vice Chancellor
Central University of Gujarat

Patron
Prof. H. B. Patel
Dean
School of Education
Central University of Gujarat

Convenor
Dr. Y. Vijaya Lakshmi
Assistant Professor
School of Education
Central University of Gujarat

Contact Us

Dr. Y. Vijaya Lakshmi
Assistant professor
School of Education
Central University of Gujarat

Email:
vijaya.lakshmi@cug.ac.in

Website
https://www.cug.ac.in/se.php

Resource Person

Dr. Rupen Parmar
Teacher with Saskatoon Public Schools, Canada

Organizing Team

Microsoft Teams Link
https://bit.ly/36O01uC

Feedback Link
https://padlet.com/jayayanduri/xdqp9puwvcc7j2x5

You are Cordially Invited
by
All Faculty Members, Scholars & Students of School of Education,
Central University of Gujarat

3rd July, 2021 6:00 P.M. to 7:30 P.M.

Mode: Virtually via Microsoft Teams

Welcome	
Welcome address and SE, Profile	**Prof. H.B. Patel (Patron)** Dean, School of Education, CUG
About the Guest Lecture	**Dr. Y. Vijaya Lakshmi** Convener, Assistant Professor, School of Education, CUG
Organizing Team	**Dr. J.N. Amin,** Associate Professor, School of Education, CUG **Dr. G.R. Angadi,** Associate Professor, School of Education, CUG **Dr. Shamim Aara Hussain**, Assistant Professor, School of Education, CUG **Dr. Shilpa S. Popat,** Assistant Professor, School of Education, CUG
Expert talk	**Dr. Rupen Parmar** Teacher with Saskatoon Public Schools, Canada
Vote of Thanks	Jaya Mrinalini, Research Scholar, School of Education, CUG
Teams Link	https://teams.microsoft.com/l/meetup-join/19%3ameeting_M2ZkMzM0MTItMDE0ZC00ZjM3LWI2ZWEtMTVkODA1ZmE3NjQ1%40thread.v2/0?context=%7b%22Tid%22%3a%22a9f49153-63cf-4340-9806-620cee520e63%22%2c%22Oid%22%3a%22e91877c0-5c75-4977-a5d4-110c0fe19eaf%22%7d
Recording available on	https://web.microsoftstream.com/video/15b27011-9336-4806-b4f0-b7ca53382126
Rapporteurs: Nancy Gogia & Himanshi Yadav **Technical Assistance: Ishfaq Majid, Afzal** **Additional Support: Chitra Chakma; Onima Dakpe; Daisy Meena**	

On 3rd July 2021, School of Education, Central University of Gujarat organized a one-day online guest lecture via Microsoft Teams on **School System in Canada and Career Opportunities**. The inaugural session started with the kulgeet of CUG. Then Prof. H.B. Patel Dean, School of Education, CUG extended his warm welcome to the expert, faculty members, research scholars, students, and all the participants. Dr.Y. Vijaya Lakshmi Convener, Assistant Professor, School of Education, CUG welcomed the resource person Dr. Rupen Parmar and then the lecture started with a nice presentation, where he presented the following points:

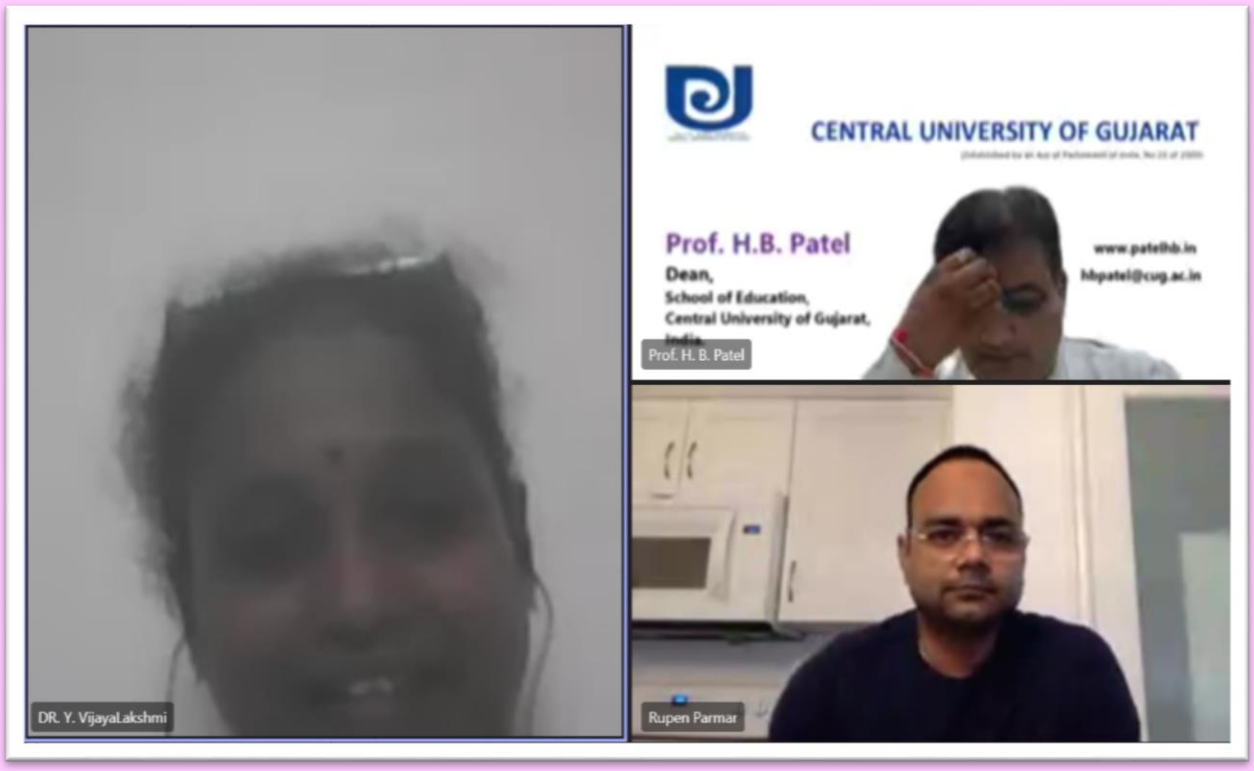
- ✓ Education system in Canada is publicly funded, governed, and regulated by the province.
- ✓ The education system in India and Canada is similar in the division of grade; primary, secondary, and post-secondary, but cegap in Quebec, it is also a part of general divisions which is a kind of diploma done after the completion of 12 years of education.
- ✓ Further, he explained about the teaching profession in Canada, where he stated that the teaching profession in Canada is regulated by provinces. If anyone wants to teach in

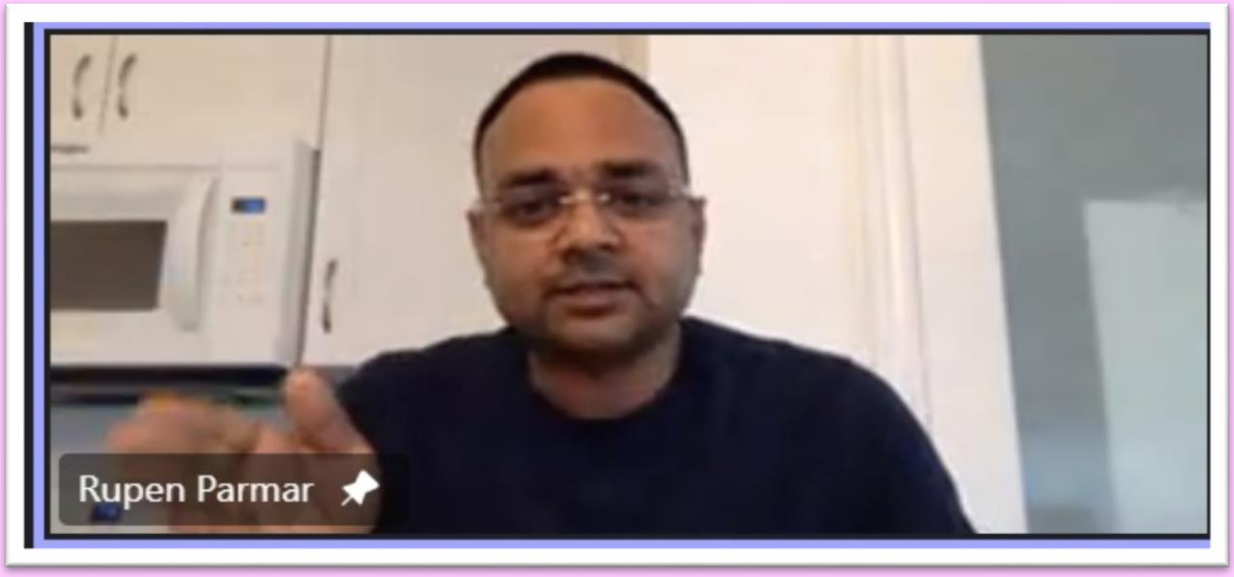
Canada then he or she must obtain a license from the particular provincial body, for this, an individual has to send credentials, academic records, and expression to the provincial body then the concerned authority will evaluate whether the candidates meet the requirements to teach in the province or need to undertake varied courses offered at the local universities/colleges.

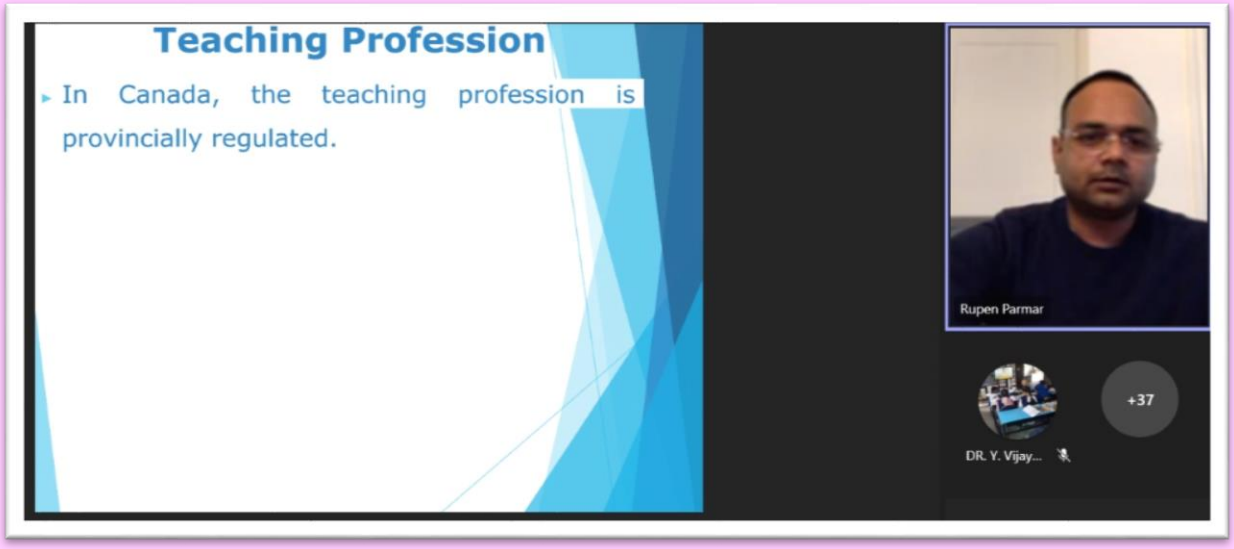
- ✓ He also mentioned the various documents that are required to obtain a license such as identity proof, criminal record, academic record, verification letter from colleges last attended, a verified copy of B.Ed. syllabus and proof of language proficiency, etc.
- ✓ He threw light on the salary and perks of teachers in Canada, where he explained that salary depends on the factors like provincial Collective Bargain Agreement, type of qualification, type of license (conditional, temporary, full), years of experience, type of location (urban, northern, isolated, fly-in, drive-in), governance of school (federal, provincial, band) and sometimes it's the decision of the local governing body.
- ✓ He also stated that salary is increased year by year ie. by gaining experience, schools also give extra salaries and benefits such as isolation and retention premium, and transportation also.
- ✓ He also gave some tips such as, getting a license is a cumbersome task so make sure to keep all your documents ready from the home country and must come directly from the institution to the licensing body, for evaluating the credentials one must contact World Education Services, Canada, wisely choose your province for teaching and after attaining the license apply to those organizations which regularly conduct mass recruitment process every year, etc.
- ✓ Later on, the session was open for questions, where the participants were allowed to ask their doubts and queries. In the discussion session, he showed some pictures of the classroom and various facilities available such as bike, smartboard, and Chromebook, etc. and furthermore, he explained about the management of the classroom during the Covid pandemic which is both online and offline mode, there exist similarity and difference of teaching methods and evaluation process between India and Canada.
- ✓ He also highlighted their teacher-pupil ratio which maximum goes up to 1:20, the approach of inclusive education is also followed, and provision of curricular and co-curricular activities in Canada.
- ✓ After the discussion session Patron Prof. H.B. Patel, Dean, School of Education, Central University of Gujarat, extended his thanks to the resource person and highlighted that it was a very nice session, helpful for employability and placement purposes, and also for

comparative education between India and Canada and looking forward to such kind of lecture in future also. Last but not least the session ended with a vote of thanks to the resource person by Jaya Mrilanini.

Photo Gallery of the Session




Rupen Parmar


Teaching Profession
In Canada, the teaching profession is provincially regulated.
Rupen Parmar
+37
DR. Y. Vijay...


CENTRAL UNIVERSITY OF GUJARAT
(Established by an Act of Parliament of India, No 25 of 2009)
Prof. H.B. Patel
Dean,
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RUPEN PARMAR

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Educational Administrator, Researcher and Educator

Educational Administrator • Researcher • Gender Equality • Education of Marginalized Communities

PROFILE

- Demonstrated experience in teaching students pursing Bachelor of Education courses
- Expertise in employing qualitative and quantitate research methods for conducting research, involving organizing, analysing and interpreting large data
- Solid computer skills: MS Word, Excel, PowerPoint, Outlook, QuickBooks and software used for analyzing research data such as SPSS
- Experienced in developing learning programmes, tools and strategies for delivery of training
- Familiar with practical implementation of inclusive education approach with understanding of student differences and diversity
- Well-versed in using synchronous and asynchronous modes of teaching
- Skilled in performing psychometric tests and counselling students based on results
- Broad experience in working with aboriginal people and dealing with their issues
- Adept at conducting sessions with community members, delivering counselling, and providing cooperative support in a professional manner
- Effective in managing and coordinating large projects
- Excellent communication skills both written and verbal with ability to interact within a diverse environment and easily build rapport and trust

EDUCATION

2017 **Ph.D. in Education**, The Maharaja Sayajirao University of Baroda, India
Equivalent to Canadian Doctorate degree, according to World Education Services Canada Credential Evaluation and Authentication Report
Specialization: Gender equality, socio-economic status and its impact on access to education, educational issues of aboriginal community
Supervisor: Professor R. S. Mani

2006 **Master of Education**, The Maharaja Sayajirao University of Baroda, India
Educational Equivalent to Canadian Master's degree, according to World Education Services Canada Credential Evaluation and Authentication Report

2005 **Bachelor of Education** (English Language Teaching), Sardar Patel University, India
Equivalent to Canadian Bachelor's degree (Four Years), according to World Education Services Canada Credential Evaluation and Authentication Report

2003 **Master of Arts** (English Literature & Language Teaching), The Maharaja Sayajirao University of Baroda, India
Equivalent to Canadian Bachelor's degree (Four Years), according to World Education Services Canada Credential Evaluation and Authentication Report

2001 **Bachelor of Arts** (English Literature), Veer Narmad South Gujarat University, India
Equivalent to Canadian Bachelor's degree (Four Years), according to World Education Services Canada Credential Evaluation and Authentication Report

CERTIFICATIONS & COURSES

2018 **Professional A Teaching Certificate 9002816,** Saskatchewan Professional Teachers Regulatory Board

2019 **Teaching Certificate,** Ontario College of Teachers

2019 **Teaching English Language Learners, Part 1 (Equiv),** Ontario College of Teachers

2020 **OHS Standard First Aid, CPR-C and AED, 1939851379,** St. John Ambulance

2019 **Emergency First Aid and CPR, HSF ID 1474762** Heart and Stroke Foundation, Ottawa

2016 **Certificate in French**, University of Saskatchewan, Canada

2015 **Course on Research Methodology,** The Maharaja Sayajirao University of Baroda, India

2013 **School Assessor**, Quality Council of India, India

2013 **Certificate Course on Computer Concepts Plus (CCC+),** Government Polytechnic Gandhinagar, Government of Gujarat, India

2007 **Certificate Course on Computer Concepts (CCC)**, DOEACC, Department of Information Technology, Ministry of Communications and Information Technology, Government of India, India

2006 **Certificate in French,** The Maharaja Sayajirao University of Baroda, India

QUALIFICATION EXAMINATIONS

2013 University Grants Commission National Eligibility Test (UGC NET). Qualification examination for a teaching position in Indian universities and colleges

2013 University Grants Commission Gujarat State Eligibility Test (UGC GSET). Qualification examination for a teaching position in universities and colleges in the State of Gujarat, India

2013 Central Teacher Eligibility Test (CTET). Qualification examination to become a teacher in the schools run by federal government

2012 Secondary Teacher Aptitude Test (STAT). Qualification examination to become a teacher in the secondary (grades 9-10) schools run by the state government

2011 Higher Secondary Teacher Aptitude Test (HTAT). Qualification examination to become a teacher in the higher secondary (grades 11-12) schools run by state government

2011 Teachers Eligibility Test (TET). Qualification examination to become a teacher in the primary schools run by the state government

FELLOWSHIP

Recipient of Chief Minister's Fellowship, Government of Gujarat, India

CAREER PROGRESSION

Teaching Experience
September 2019 till date

Classroom Teacher
Kinistin Education Centre
Teaching school subjects from the Saskatchewan Curriculum

September 2016 to May 2017

Language Monitor
Odyssey, Canada

- Taught thorough self - prepared innovative ESL activities in classes ranging from 16 to 30 students

June 2010 to March 2011

Lecturer
Mahila B.Ed. College, India

- Developed curriculum and prepared teaching material for B.Ed. students
- Prepared lesson plans to meet specific student needs and delivered lessons
- Taught "Methods of Teaching English and Current Concerns and Trends in Education"

July 2008 to April 2009

Teaching Faculty
Sheth C. N. English Centre, India

- Prepared ELT material and taught students in grades 4 to 12

June 2006 to June 2008

Lecturer
Aradhana College of Education, India

- Instructed students using systematic plan of lectures, demonstration, group discussions, seminars, and field assignments
- Taught Psychological and Philosophical Foundations of Education along with Methods of Teaching English
- Provided individual tutorial instructions
- Conducted assessment of students to determined their strengths and weaknesses

Research Experience

October 2011 to March 2017

Researcher
The Maharaja Sayajirao University of Baroda, India

- Undertook a comprehensive study of educational problems of girls living in the region predominantly inhabited by the aboriginal people.
- To understand the social discriminatory practices and gender prejudices prevalent in the society, a perception scale was developed. The indigenous people largely survived on limited and local resources.
- To understand the socio-economic condition and its impact on the girls' education a socio-economic scale was developed.
- The research work involved extensive fieldwork and data collection from girl students, teachers, principals and community members.

Project Experience

January 2015 to April 2016

Project Consultant
National University of Education Planning and Administration, India

- Developed framework for school evaluation
- Conducted workshops for the lecturers of educational institutions

June 2009 to May 2010

Project Leader
Bharatiya Jain Sanghathana, India

- Led a team and implemented programs that included accreditation of schools, conducting psychometric tests for students and soft-skills training programs for teachers
- Worked closely with the community and implemented educational programs that involved direct interactions with parents and community leaders

Fellowship Experience

January 2012 to December 2012

Chief Minister's Fellow
Education Department, Government of Gujarat, India

- Organized meetings with senior government officials and different representatives with regard to the implementation of various state level projects
- Conceptualized web portal for researchers – a unified repository system for research work from educational institutions
- Organized meetings and workshops to ensure proper implementation of programs and schemes
- Facilitated establishment of school accreditation council
- Successfully led delegation at the "National Level Steering Committee Meeting for the Implementation of Program on Exchange of International Best Practices" organized by European Union and "Save the Children"

RESEARCH INTERESTS

- Educational Administration
- Educational Finance
- Educational Technology
- Educational Psychology
- Gender Equality
- Linguistics
- English Language Teaching
- Postmodern Theories
- Politics and Ideology in Teaching English
- Literary Criticism
- Issues related to educational access, retention, dropout, socio-economic condition of isolated individuals/communities

PROFESSIONAL ACHIEVEMENTS

Monitoring Backward Region Programmes and Grants

- Monitored work performed under the government's Backward Regions Grant Fund (BRGF), grants meant for underdeveloped regions on Human Development Parameters

Project Implementation by Education Department of Government

- Project on *Web Portal for the State Researchers* was selected for implementation by the Knowledge Consortium Gujarat (KCG), a government initiative for the promotion of networking among the institutes of higher education
- Project on *School Accreditation* was accepted by the Education Department, Government of Gujarat

Assessment Module Development

- Contributed in the module development for National Programme for School Standards and Evaluation at the National University of Educational Planning and Administration (NUEPA), India

Leading Government Delegation to* European Union (EU) *Sponsored Meet

- Led a delegation with innovative educational projects at the *National Level Steering Committee for the Implementation of Program on Exchange of International Best Practices* organised by the European Union and Save the Children

Invitation as Guest Faculty

- Guest faculty for course on English Communication at Pandit Deendayal Petroleum University, India
- Guest faculty for the course on Teaching Methodology at Indian Institute of Hotel Management, India

Shortlisted to Present Research Proposal

- Presented research proposal at National Council for Educational Research Training (NCERT), India

Empanelled Assessor for Quality Council of India

- Conducted evaluation of vocational training institutions with Quality Council of India as a senior empanelled assessor

Project Leadership

- Led a team of 8 to 10 members at Bharathiya Jain Sanghatana for the implementation of an educational project that involved conducting soft-skill sessions with teachers, psychometric tests for students, accreditation of schools and preparing project reports

Textbook Review

- Reviewed grade eight English textbook for the Gujarat Council of Educational Research and Training (GCERT), India

PUBLICATIONS

Articles Published in Refereed Journals

The following two publications relate to the study of educational issues from the gender perspective are the focus of my doctoral work. They have been published as articles in refereed academic journals.

Parmar. R, and Mani, R.S. (2014). Girls' Enrolment in India at Elementary Level: An Analysis, Journal of Educational Technology and Research, I(III) ISSN No. 2319-2437

Parmar. R, and Mani, R.S. (2012). Problem of Girl Child Education in Gujarat; A Perspective, Education for All, I(I) ISSN No.2278-232X

PRESENTATIONS & PARTICIPATION IN WORKSHOPS & SEMINARS

- Participated in Think Indigenous International Education Conference 2020 at Edmonton
- *"Superhuman"*, presentation at Odyssey, Workshop for Language Monitors Quebec, Canada in 2016
- Facilitated arrangement of two workshops on *National Programme for School Standards and Evaluation (NPSSE),* at the National University of Educational Planning and Administration (NUEPA), India in 2015
- Participated in the workshop on *National Programme on School Standards and Evaluation (NPSSE),* National University of Educational Planning and Administration (NUEPA), India, 2014
- Participated in the National seminar on *Institution Appraisal System in India*, Department of Educational Management, Faculty of Education and Psychology, The M S University of Baroda, India in 2012
- Participated in workshop on *Simulation Teaching* at the Gujarat University, India in 2007
- *"Institution Accreditation and Evaluation Around the Globe"*, Sardar Patel Institute of Public Administration (SPIPA), India in 2012
- *"Web Portal for State Researchers"*, presentation, Sardar Patel Institute of Public Administration (SPIPA), India in 2012
- Attended first ELTAI Conference (English Language Teachers Association of India) at AMA, Ahmedabad, India in 2009
- Participated in National Seminar on '*Quality Concern in Education*' organized by Department of Education, Faculty of Education and Psychology, The M S University of Baroda, India in 2006

LANGUAGES

Proficient in English, Hindi and Gujarati
Read, speak and understand basic French and Sanskrit

School System in Canada and Process to Get Teaching Licence In Canada

Education in Canada

- Publicly funded, governed and regulated by province
- General divisions are; primary, secondary and post- secondary, cegap (in Quebec)
- There are two official languages in Canada; English and French
- School year starts in September and ends in June

Teaching Profession

- In Canada, the teaching profession is provincially regulated.
- One needs to obtain a licence from the provincial body to teach in Canada.
- The provincial regulatory body assesses the credentials and determines whether the applicant meets the requirements to teach in the province or needs to undertake courses offered at the local universities/colleges.

Teaching Profession

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- It will greatly help if the arrangement of the documents is done prior to leaving the country of origin.
- The requirement of documents may vary from province to province.
- You need to visit the website of the regulatory body of the province where you want to go and work. Carefully look at the requirements and the list of documents that you need to submit. (A few links have been given below).

Some Commonly Required Documents are:

(1) Proof of identity (passport, pr card, Canadian citizenship ID)

(2) Criminal Record Check (from the police station in Canada)

(3) Academic record; year by year statement of marks, scroll of degrees, transcripts/mark sheets (can be submitted through World Education Services, Canada. You may be asked to get it directly sent in a sealed envelope from your institution/university)

Some Commonly Required Documents

(2) Verification Letter from your college of education. It should state

(i) duration of the course

(ii) grade levels and the subjects you taught in your B.Ed. i.e your major and minor subject methodologies.

(iii) you may be asked to provide details of the number of weeks of your supervised practice teaching.

*Make sure that it is stated that the grades mentioned for practice teaching apply to subject methodology/ies stated in the mark sheet also.

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Some Commonly Required Documents

(3) A copy of course descriptions/a verified copy of your B.Ed. syllabus (optional but I highly recommend it to be sent as the verification letter may not be able to contain all the information of your B.Ed. and sometimes applicants are asked to provide additional/missing information about their B.Ed. course from the college. This could delay your licence. The course descriptions will have all the details of your B.Ed. program.)

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Some Commonly Required Documents

(4) Proof of language proficiency (a letter from your institution stating that the medium of instructions at B.Ed. program was English/French should suffice, however, in the province of Alberta you might be asked to take the English/French language proficiency test. You need to score enough in the test to obtain your permanent licence. In the province of Ontario, you need to take the math proficiency test.

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Some Commonly Required Documents

Statement of Professional Standing

It is a letter of experience from your latest employer. It should be...

(a) on official school/institute letterhead

(b) be dated and signed by the head of the school

(c) be sent directly to the Registrar of the licensing body by the head of the school/college in a sealed envelope

(d) It should detail the duration of employment as well as subjects and grades you taught

(e) It should attest that you left the school in good standing.

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Some Commonly Required Documents

* The statement of professional standing is an important document. It is very likely that the grades and the subject/s that you will be assigned to teach in the province are based on this document and not on the teacher training (B.Ed.) program because it is a more recent document reflecting your qualification to teach.

Some other documents (may or may not be required)

- school leaving certificate
- evidence of name change (due to marriage or for some other reasons)
- birth/marriage/divorce certificate

- The requirement of documents stated here is based on the best of knowledge, personal experience and available resources at the time. The licensing bodies keep making changes as and when they deem them necessary. Please visit their websites for up-to-date information or contact them directly for a specific query.
- Keep a copy of all the documents that you send.

Salary and Perks

Salary depends on the factors like the provincial Collective Bargain Agreement, type of qualification, type of licence (conditional, temporary,full), years of experience, type of location (urban, northern, isolated, fly-in, drive-in), governance of school (federal, provincial, band) and sometimes it's the decision of the local governing body.

Salary and Perks

STEP	CLASS C	CLASS I	CLASS II	CLASS III	CLASS IV	CLASS V	CLASS VI
1	49588	49588	49588	49588	59459	62828	66940
2		51348	51348	51348	62116	65588	69824
3		53172	53172	53172	64893	68466	72831
4		55057	55057	55057	67793	71470	75966
5		57010	57010	57010	70822	74611	79239
6		59034	59034	59034	73989	77885	82650
7		61131	61131	61131	77294	81304	86210
8		63299	63299	63299	80749	84871	89922
9		65546	65546	65546	84358	88598	93797
10		67874	67874	67874	88127	92487	97834
11		70282	70282	70282	92067	96547	102048

Salaries and benefits

All salaries are determined by the MELS, based on the education and experience of the teacher. The evaluation is done jointly by MELS and Kativik Ilisarniliriniq.

SCHOOLING	SALARY
Under 17 years	$42,431
17 years (B. Ed)	$46,115
18 years (Masters)	$50,118
19 years	$54,468
Maximum of the scale	$82,585

Isolation premiums

SECTEURS	WITH DEPENDENTS	WITHOUT
Sector II: Kuujjuaq, Kuujjuaraapik, Inukjuak, Puvirnituq, Umiujaq	$17,652	$10,015
Sector III: All other Nunavik villages	$20,825	$11,813

Retention Premium*

SECTEURS	1st AND 2nd YEAR UNDER CONTRACT	FROM THE 3rd AND SUBSEQUENT YEARS UNDER CONTRACT
Sector II: Kuujjuaq, Kuujjuaraapik, Inukjuak, Puvirnituq, Umiujaq	$5,500	$7,000
Sector III: All other Nunavik villages	$7,000	$9,000

* This premium is subject to yearly review by the provincial government. It is granted only to employees who have a valid Quebec teaching permit or license.

Transportation

- The transportation costs of the employee and his/her dependents' personal effects are paid by the School Board, up to:
  - 228 kg per adult and per child aged 12 and up;
  - 137 kg per child under 12;
  - 45 kg for cooking utensils
- The School Board provides three return trips per year to its full-time employees and their dependents, from their place of residence in Quebec to the community where the employee is assigned. For employees recruited from outside of Quebec, the School Board provides two return trips to the place of residence in their province, and one return trip to Montreal.

Some Tips

Sometimes getting a licence can take upto two years or even more; this includes arranging and getting the documents sent from India. Your statement of professional standing and academic documents (transcripts/degrees, proof of language proficiency etc.) must come directly from the institution to the licensing body. It can be really time consuming, challenging and even frustrating at times because as an immigrant you are in urgency to find livelihood as soon as possible. The following tips can be helpful.

Tips

- As an international professional, you are required to get your credentials evaluated by organizations like World Education Services, Canada. These organizations directly receive documents from your institution. They evaluate, store and on your request send out your verified documents to the potential employers and licensing bodies. Some licensing bodies accepts documents from such organization. Having your documents stored with them saves your time and energy compare to arranging them all the way from your country of origin every time you apply for a licence or a job.

Tips (continues)

- If you choose WES, Canada - choose their ICAP and opt for **course by course** evaluation. The course by course evaluation caters almost all purposes of employment and licensing.

- Start arranging for the documents from your country of origin.

Tips (continues)

- Choose a province where the rush of internationally educated teachers is low. In such provinces, the process to get a licence is relatively straightforward, hassle-free and faster.

- Choose a province where internationally trained teachers are not required to take tests. Such tests can further delay your licence.

Tips (continues)

- Once you are licensed in one province of Canada, you are under Labour Mobility Act i.e. if you choose to move to another province you cannot be denied your licence in that province unless you have a criminal record or you do not meet the language proficiency requirement or the statement of professional standing is unfavorable. You cannot be subjected to additional assessments or tests.

Tips (continues)

- Once you have your licence, rather than applying to individual and urban schools, apply to the organizations which regularly conduct mass recruitment process every year. Though the schools for which they conduct the recruitment process might be remote and isolated, they are your best bet. Moreover, there are extra perks for staying on to those places. All your moving and accommodation requirements are also taken care of. Such organizations are Teach for Canada, Kativik Ilisarniliriniq etc. Links have been given below.

Links:

Immigration:

https://www.canada.ca/en/immigration-refugees-citizenship/services/immigrate-canada.html

https://www.immigration-quebec.gouv.qc.ca/en/informations/rules-procedures.html

Licensing Bodies:

https://www.sptrb.ca/web/sptrb/

https://www.oct.ca/becoming-a-teacher/internationally-educated-teachers/country-info/country-i/country-india

https://www.alberta.ca/teacher-certification.aspx

https://www2.gov.bc.ca/gov/content/education-training/k-12/teach/become-a-teacher/apply/certificate-qualifications

https://www.quebec.ca/en/employment/trades-occupations/exploring-trades-occupations/teaching-general-education-youth-sector-vocational-training-adult-education/obtaining-teaching-licence

School Boards & Organizations:

Kativik Ilisarniliriniq - The School Board of Nunavik

https://teachforcanada.ca/en/

https://eeyoueducation.ca/

Thank you!

rupenacademic@gmail.com

BACHELOR OF EDUCATION (SECONDARY TEACHER EDUCATION)

Secondary school teachers require a Bachelor's degree in Education. The Bachelor of Education requires one year of full-time study following a three-year Bachelor degree. Generally, the Bachelor of Education program prepares teachers to teach Grades 5 through 10. However, since this methodology is subject specific and not generalist training, it is appropriate for the granting of the Intermediate division in Ontario.

LANGUAGE PROFICIENCY

To satisfy the language proficiency requirement, the College requires a verification letter from the institution where the teacher education program was completed confirming that the entire teacher education program was completed in English or French.

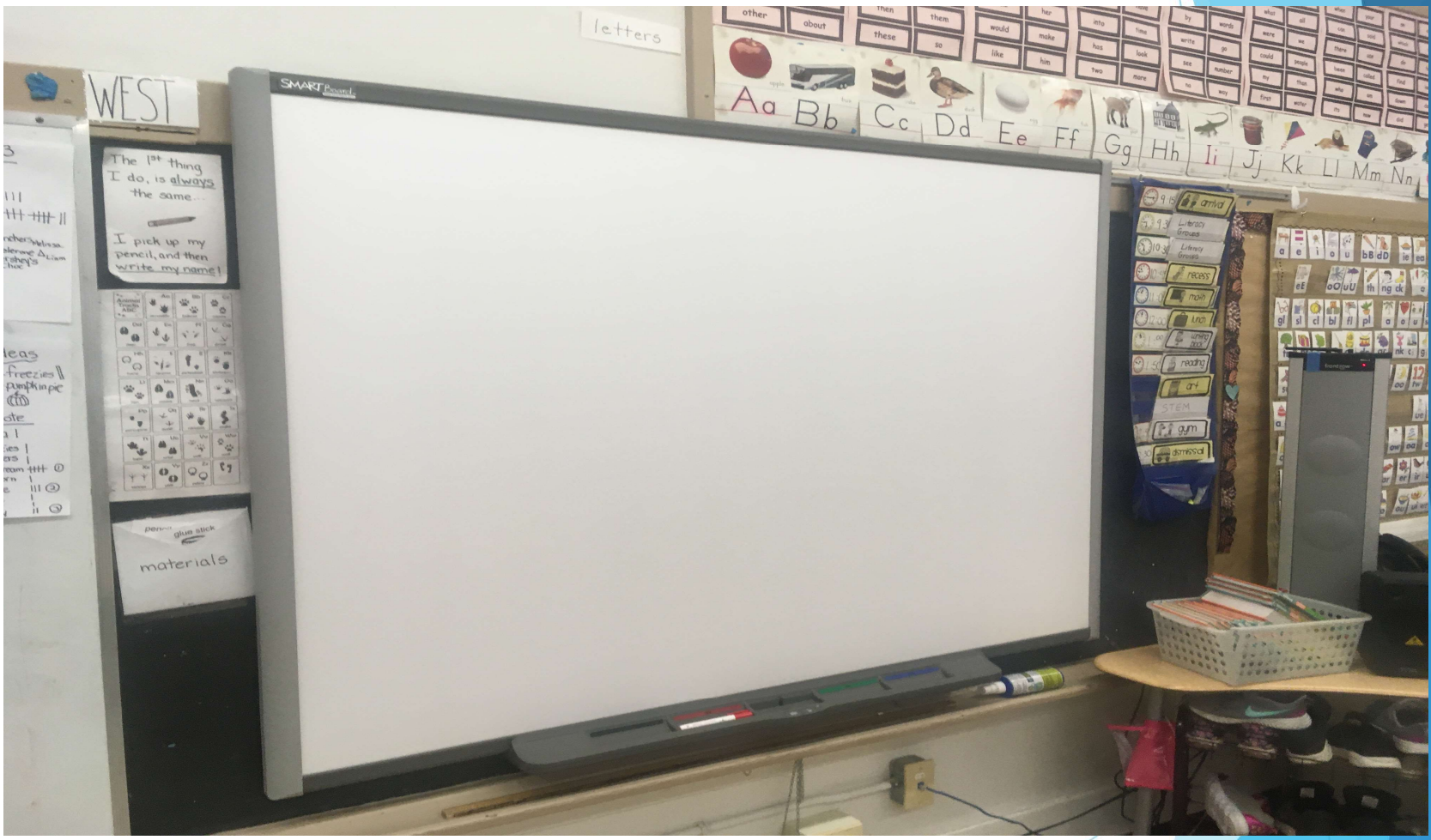
Alternatively, you can provide evidence of acceptable language proficiency test scores.

SUMMARY

Many applicants who have completed their teacher education programs in India meet the College's registration requirements for certification. Some applicants may be required to complete additional teacher education coursework that will be listed as conditions on the certificate.

To be eligible for certification, you will still have to meet the academic, language proficiency, and suitability requirements for certification.

This is for information purposes only. Each application will be reviewed on a case-by-case basis.


letters
WEST
The 1st thing I do, is always the same...
I pick up my pencil, and then write my name!
materials
SMART Board
Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk Ll Mm Nn
arrival
Literacy Groups
recess
math
lunch
reading
art
STEM
gym
dismissal


Grade 3
Week at a glance


JKL MNO PQR
STU VWX YZ!
Tens
bed
C=k
P q

Career Opportunities in Canadian Schools

Placement Cell, School of Education, Central University of Gujarat

VIJAYA LAKSHMI JUN 30, 2021 09:16PM

well organised

Quite well organised mam.The good thing was the unique topic.Mostly university organise such webinars for their own students for placements. But you organised it on national level so that all can benefit.This thing I appreciated the most in your webinar.
And thank you for getting all our questions answered by the expert.

Thank you!

The session was really helpful especially in this current pandemic situation where we all are skeptical about our jobs. It's really important to know how jobs are offered in our field in the developed countries like USA, Canada and other European countries. So, sessions like this are really useful.

Thank you
 very nice ..it is benificial for us to get this much knowladge

It was a very informative session. We got to know about the education system of Canada and what are the procedures for applying in Canada.

All information was very useful

Very informative session. Some light could be she'd on the specific advantages of teaching in Canada.

The session was quite informative. Also, I request our school of education to arrange more guest lectures on career opportunities in other countries too.

Very interesting and useful sessions.

What is the ratio of students and teachers according to Canadian provisions?

very informative session from the perspectives of placement and cimparative education.

Need more clarification regarding who have not no experience. And step by step.

Thank you for that kind of presentation 😊

Useful Session

It was quite a useful session for people trying to apply as teacher in Canada. Thank you Sir!

Very Beneficial...

Thank you

Very beneficial session for all those who want to apply abroad. Most of the points were covered by sir. Very fruitful

Thank you

Sir thank you very much for such a nice and detailed presentation my question is about the medical facilities provided to the teachers if you can throw some light on it.

Informative session for us such a nice lecture

Very relevant session ..

A frutiful session about taking up teaching profession in international schools.Thank you Sir for the insights that you provided.

Thank you

It is a new topic for us but also beneficial for working in abroad specially in school .

Thank you
Very beneficial session for us

Sir Is there any benefit on the basis of Indian School Experience?
Are the proficiency tests held in India or in Canada?
What are educational qualification for the all level of education?

Thank you

Very beneficial session for someone wanting to work abroad in schools.

They are considering job experiences of India or not??

Ok

FEEDBACK WALL.....Dear participants please give your valuable suggestions.....

❋❋❋❋❋❋

Two Week Research Methodology Training Programme
for Faculty Development (Online)
During 7th to 18th June 2021

Chief Patron

Prof. Rama Shanker Dubey
Hon'ble Vice-Chancellor
Central University of Gujarat

Patron

Prof. Sarita Agrawal
Dean,
School of Social Sciences

Convener

Prof. Jaya Prakash Pradhan
Chairperson,
Centre for Studies in Economics & Planning

Co-convener

Dr. Kshamanidhi Adabar
Centre for Studies in Economics & Planning

Organized by:
Centre for Studies in Economics & Planning,
School of Social Sciences,
Central University of Gujarat, Gandhinagar.
www.cug.ac.in

About the University: Established in 2009 by Parliament of India through the Central Universities Act (2009), Central University of Gujarat (CUG)'s main objectives are dissemination and advancement of knowledge creation and sharing. In the survey by Outlook for 2020, the University ranked 18th position among all Central Universities of India. The University offers its various programmes across various disciplines through 11 School of Studies and 1 Special Centre. With 670 research papers published in international journals and 14 patents, out of which 2 patents are commercialized and available in the market as instruments, the University has made noted contribution to the field of knowledge creation and dissemination.

About the Centre for Studies in Economics & Planning: CSEP under the School of Social Sciences is offering M.Phil./Ph.D. programmes in Economics since 2010-11 and MA in Economics since 2015-16. The main objective of the CSEP is to impart quality education in different branches of economics and promote theoretical and empirical research on emerging socio-economic issues that are faced at regional, national and global levels. The syllabus of the Centre is innovatively designed to enhance students' learning in theoretical, analytical and empirical knowledge to better understand behaviours of economic agents like individuals, households, firms and economies and their connection to the general well-being of the country. The Centre comprehensively focuses on the areas of regional economic growth and human development, economics of education, informal sector, employment and wages, public finance and policies, health, international business, and industry studies.

About the Programme: Research is the core strength of any higher education institution that aims at creation and dissemination of knowledge for social and national welfare. No wonder that nurturing and promoting quality research of global standards has been a key challenge before such HEIs in India. In this context, training in Research Methodology plays a very important role in improving quality of Research by both existing researchers and the beginners. It imparts the necessary research skills, knowledge and methodological understanding that enable the researchers to develop the most appropriate methodology for their research work. Apart from enhancing researcher's understanding of appropriate tools, it orients the participants about techniques for data collection, management of collected data, its analysis and presentation of final output in proper form.

This Two Week Research Methodology Programme for Faculty Development will be conducted by the Centre for Studies in Economics & Planning, Central University of Gujarat in online mode. The training programme is intended for faculty and academic staff in Central and State Universities, Research Institutions, and Government-aided colleges. Maximum number of participants is fixed at 30. Experience and diversity among applicants will guide the selection.

Eligibility: Faculty and academic staff in Central and State Universities, Research Institutions, and Government-aided colleges.

Registration fee: There is no registration fee.

How to apply: Interested persons may apply online for the programme by submitting duly filled registration form along with uploading required documents at: https://docs.google.com/forms/d/e/1FAIpQLSfOhE8vhCUucUmsZ3-ZAIRRaA5UTkdJfg_LmPE-ohWRETy3zg/viewform?usp=pp_url

The last date of submitting application is 3rd June 2021. Shortlisted candidates would be intimated by e-mail by 5th June 2021. Selected candidates must confirm their participation in the programme strictly by 6th June 2021.

Certificate of participation: Certificates shall be issued to those participants who have attended the program with a minimum of 90% attendance.

For more details, you may contact:

Prof. Jaya Prakash Pradhan Convener of the Programme, Mobile: 8160335856	Dr. Kshamanidhi Adabar Co-convener of the Programme Mobile: 9316061330

E-mail: cseprm@gmail.com

OUTLINE OF THE COURSE

The programme covers both the qualitative and quantitative tools of research and provides operating knowledge of statistical tools. Participants will receive orientation through lectures and discussion with senior social scientists and experts in the field of social sciences and research methodology. Group discussions, open question answer sessions and presentations by participants may also be conducted during the training programme. Several topics including those listed below will be covered:

- Philosophy of social science research
- Research ethics
- Research design
- Review of literature
- Identification of research problem
- Language skills in scientific writings
- Nuances of field research
- Qualitative data analysis
- Parametric and non-parametric tests of hypothesis
- Correlation analysis
- Statistical inference and testing of hypothesis
- Regression analysis
- Factor analysis
- Dummy variable analysis
- Pitching you research: How to write and publish in a scientific journal?

हिंदी अध्ययन केंद्र
गुजरात केंद्रीय विश्वविद्यालय, गाँधीनगर

आयोजित

एक दिवसीय ई- संगोष्ठी

राष्ट्रीय चेतना और दिनकर

दिनांक: 13 अगस्त, 2020 समय: 11:00

अध्यक्ष

प्रो.रमा शंकर दुबे
कुलपति
गुजरात केंद्रीय विश्वविद्यालय

वीज वक्तव्य

डॉ सदानंद गुप्त
अध्यक्ष,
उत्तर प्रदेश हिंदी संस्थान, लखनऊ

मुख्य वक्ता

प्रो.चंदन कुमार
दिल्ली विश्वविद्यालय

विषय प्रवर्तन एवं स्वागत

प्रो. आलोक गुप्त
रजिस्ट्रार एवं अध्यक्ष
हिंदी अध्ययन केंद्र

आभार ज्ञापन

डॉ प्रमोद कुमार तिवारी
संयोजक
हिंदी अध्ययन केंद्र

Page link https://www.facebook.com/cugadmin/

गुजरात केन्द्रीय विश्वविद्यालय

भाषा, साहित्य एवं संस्कृति अध्ययन संस्थान

हिन्दी अध्ययन केन्द्र

द्वारा आयोजित

प्रेमचंद जयंती समारोह

प्रो. रमा शंकर दूबे
कुलपति, गुजरात केन्द्रीय विश्वविद्यालय
अध्यक्ष

प्रो.जितेंद्र श्रीवास्तव
निदेशक,अंतरराष्ट्रीय प्रभाग,इग्नू
वक्तव्य

प्रो.आशीष त्रिपाठी
प्रोफेसर, हिन्दी विभाग, बीएचयू
वक्तव्य

डॉ. गजेंद्र कुमार मीणा
सहायक प्राध्यापक
संचालन

डॉ. प्रमोद कुमार तिवारी
सहायक प्राध्यापक
आभार

प्रो. संजीव कुमार दुबे
अधिष्ठाता, भाषा साहित्य एवं संस्कृति अध्ययन संस्थान

31 जुलाई, अपराह्न 2:00 से 4:00 बजे।

हम से जुड़ें...फेसबुक लिंक÷https://www.facebook.com/cugadmin/

गुजरात केन्द्रीय विश्वविद्यालय
(भारत की संसद के अधिनियम सं. 25, 2009 के तहत स्थापित)
CENTRAL UNIVERSITY OF GUJARAT
(Established by an Act of Parliament of India, No 25 of 2009)

Dr. Satya Prakash Upadhyay
Registrar

Speed Post/Regd. Post/By Hand

F. No. 3-14/2019-A&A. /541..

Date: 30.03.2021

To,
Ms. Jaspreet Kaur Layal,
Assistant Professor & Coordinator,
Centre for German Studies,
School of Language, Literature & Culture Studies,
Central University of Gujarat.

Sub: Approval of guest faculty to deliver lecture – reg.
Ref: Your letter dated 10.03.2021.

Dear Ms. Jaspreet Kaur Layal,

With reference to your letter dated 10.03.2021, the Competent Authority has approved your request to organise an online lecture of Prof. Chitra Harshvardhan, Center for German Studies, JNU, New Delhi, on 07.04.2021. Further, the Competent Authority has sanctioned honorarium @ 1,500/- as per the University rules.

This is for your kind information and necessary action please.

Thank You.

Warmly,

30/03/2021

Registrar

Copy to:

1. Dean, SLL&CS
2. VC Secretariat

Note: The Hindi version will follow.

सेक्टर-२९, गांधीनगर-३८२०३०, फ़ोन नं- ०७९२३९७७४०७, फेक्स-०७९२३२६००७६
Sector-29, Gandhinagar-382030, Phone No. 07923977407, Fax-07923260076
Email: registrar@cug.ac.in, website: www.cug.ac.in

गुजरात केन्द्रीय विश्वविद्यालय
CENTRAL UNIVERSITY OF GUJARAT
(Established by an Act of Parliament of India, No. 25 of 2009)

Centre for Chinese Studies

SCHOOL OF LANGUAGE, LITERATURE AND CULTURE STUDIES

Centre for Chinese Studies, CUG invites you to the Preliminary Competition of the 20th "Chinese Bridge"- Chinese Proficiency Competition for College Students in the Republic of India: University Level

汉语桥

20th "Chinese Bridge"

第二十届汉语桥比赛

(A Chinese language proficiency and cultural competition)

The participants are required to submit two short videos:

1. A video of 2-5 mins. of "Self-Introduction" **(自我介绍)** and views on "Covid Era: Opportunities or Challenges" **(新冠时代：机遇还是挑战)** in Chinese
2. A video of 2-5 mins. on any artistic/cultural performance such as Chinese Calligraphy, Painting, Dance, Song, Music, Mono Acting, Jokes etc.

Qualifications: Indian National, University Student, Age-18 to 30.

Note: Two students will be selected and recommended to participate in this prestigious competition from our university.

The videos must be submitted on the following link:

https://forms.gle/jhxtef6PsjEHWzad8

latest by 11th July 2021 at 11:00 pm.

About the 20th "Chinese Bridge"

The "Chinese Bridge" Chinese Proficiency Competition for Foreign College Students Program is a large-scale international competition organized by Confucius Institute Headquarters (Hanban). Since its launch in 2002, this annual event has been held 11 times and attracted more than 1,000 college students from over 80 countries to participate in the semi-finals and finals in China. In addition, there are more than 300,000 students all over the world involved in the preliminary rounds. This competition is now an important platform for international college students to learn the Chinese language and understand more about China. It also serves to help young people in the world better communicate with one another. The contents of the competition include Chinese language proficiency, knowledge about China, Chinese cultural talents, and comprehensive learning abilities. Students who win the preliminary rounds held in their countries qualify to come to China for the semi-finals and finals. They will also get scholarships to further their studies in China as rewards.

About the Centre

Centre for Chinese Studies was established in 2011. It started offering academic programmes from the academic year 2012-2013. Currently the Centre offers BA (Hons) in Chinese and MA in Chinese programmes. We have MoU with two prestigious Chinese universities: Beijing Foreign Studies University, Beijing, PRC & Jinan University, Guangzhou, PRC.

Convenor & Coordinator

Swami Kundan Kishor, Assistant Professor, CCS, SLL&CS

Email: swamiyadav@cug.ac.in; 9328022358

Organizing Committee

1. Nishant Kumar, Assistant Professor, CCS, SLL&CS
2. Prabhat Kumar, Assistant Professor, CCS, SLL&CS
3. Prashant Kaushik, Assistant Professor, CCS, SLL&CS

गुजरात केन्द्रीय विश्वविद्यालय
CENTRAL UNIVERSITY OF GUJARAT

CENTRE FOR CHINESE STUDIES
SCHOOL OF LANGUAGE, LITERATURE AND CULTURE STUDIES
CENTRAL UNIVERSITY OF GUJARAT

INVITES YOU TO A TWO-DAY NATIONAL WEBINAR

ON

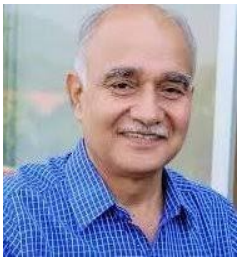
SALIENCE OF HISTORY, CULTURE AND LANGUAGE IN INDIA CHINA RELATIONS: LONGUE DURÉE AND COURTE DURÉE

DATE
September 29th-30th, 2020

TIME
10am - 2pm

ON
Facebook Live
https://www.facebook.com/cugadmin/

INAUGURAL SESSION
(29.09.2020)



Chair

PROF. RAMA SHANKER DUBEY HON. VICE -CHANCELLOR, CENTRAL UNIVERSITY OF GUJARAT

Introduction of webinar — 10:00 -10:05 AM

NISHANT KUMAR, ASSIST. PROF., CENTRE FOR CHINESE STUDIES & WEBINAR CONVENOR

INVOCATION OF KULGEET — 10:05 -10:10 AM

Welcome Address — 10:10 -10:15 AM

PROF. ATANU BHATTACHARYA, DEAN, SLL&CS

Remarks by Registrar — 10:15 -10:20 AM

PROF. ALOK GUPTA, CUG

Keynote Address– I — 10:20 -11:00 AM

PROF. KAMAL SHEEL (RETD.), DEPT. OF FOREIGN LANGUAGES, BHU

Keynote Address– II — 11:00 -11:40 AM

PROF. SABAREE MITRA, CCSEAS, JNU

Presidential Remarks — 11:40 -11:55 AM

Vote of Thanks

PRASHANT KAUSHIK, ASSIST. PROF., CENTRE FOR CHINESE STUDIES — 11:55-12:00 PM

PLENARY SESSION– 1
(29.09.2020)
INDIA-CHINA RELATIONS: CULTURAL EXCHANGES

Plenary Speaker-1: : Role of Buddhism in Bringing India-China Closer — 12:20 -12:50 PM

DR. ARUN KUMAR YADAV, ASSISTANT PROF., NAV-NALANDA MAHAVIHAR

Plenary Speaker-2 — 12:50 -1:20 PM

YET TO BE CONFIRMED

Question & Answer — 1:20 –1:50 PM

Chair

PROF. SANJAY KUMAR JHA, DEAN, SCHOOL OF NATIONAL SECURITY STUDIES, CUG

Moderator

SWAMI KUNDAN KISHOR, COORDINATOR, CENTRE FOR CHINESE STUDIES, CUG

PLENARY SESSION– 2

(30.09.2020)

INDIA-CHINA RELATIONS: PAST, PRESENT AND FUTURE

MINI SESSION-I

Plenary Speaker-1: Chinese Scholars' Perspectives on India-China Relations under the Modi-Xi Governments

MS. SAHELI CHATTARAJ, ASSISTANT PROFESSOR, JAMIA MILIA ISLAMIA

9:20 –9:45 AM

Plenary Speaker-2: China in the Imagination of Indian Cinema: Understanding the Changing Narratives

MR. MADHURENDRA JHA, ASSISTANT PROFESSOR, DOON UNIVERSITY

9:45 -10:10 AM

Question & Answer

10:10 -10:20 AM

(10 MIN. BREAK)

MINI SESSION-II

Plenary Speaker-1

PROF. B. R. DEEPAK, CHAIRPERSON, CCSEAS, JNU

10:30 -11:00 AM

Plenary Speaker-2

DR. KAMAL KUMAR DUTTA, DEPT. OF FOREIGN LANGUAGES, BHU

11:00 -11:30 PM

Question & Answer

11:30 -12:00 PM

Chair

DR. ARUN VISHWANATHAN, ASSOCIATE PROFESSOR AND CHAIRPERSON, CENTRE FOR SECURITY STUDIES, SNSS, CUG

Moderator

PRASHANT KAUSHIK, ASSIT. PROF., CENTRE FOR CHINESE STUDIES, CUG

PLENARY SESSION– 3

(30.09.2020)

INDIA-CHINA RELATIONS: THE ASPECTS OF LANGUAGE

Plenary Speaker-1

PROF. ADITI JHA, DEPT. OF FOREIGN LANGUAGES, BHU

12:10 -12:40 PM

Plenary Speaker-2: Importance of Learning Each Others Language in Promoting India-China Mutual Understanding

PROF. AVIJIT BANERJEE, CHEENA-BHAVAN, VISVA BHARATI

12:40 -1:10 PM

Plenary Speaker-3: Chinese Language Education a Window to Understand China better: A Case Study of India

MRS. ARPANA RAJ, ASSISTANT PROFESSOR, CUJ

1:10 -1:40 PM

Question & Answer

1:40 –2:10 PM

Vote of Thanks

NISHANT KUMAR, FACULTY, CCS, CUG AND CONVENOR OF THE WEBINAR

2:10 –2:15 PM

Chair

PROF. BALAJI RANGANATHAN, CHAIRPERSON CENTRE FOR COMPARATIVE LITERATURE AND TRANSLATION STUDIES, CUG

Moderator

PRABHAT KUMAR, ASSIST. PROF., CCS, CUG

Fwd: Proposal for organising a Two-day Webinar in Centre for Chinese Studies.

Dr. alok kumar <alok.kumar@cug.ac.in>
Sat 19-09-2020 13:26

To: Dr. Hemang Desai <hemang.desai@cug.ac.in>

Cc: Registrar <registrar@cug.ac.in>; Dr.Atanu Bhattacharya <atanu@cug.ac.in>; Nishant Kumar <nishant.kumar@cug.ac.in>; PSTOVC CUG <pstovc@cug.ac.in>

Do needful.

Registrar

Get Outlook for Android

From: Vice Chancellor <vc@cug.ac.in>
Sent: Saturday, 19 September 2020, 12:31
To: Registrar; Dr. alok kumar
Subject: FW: Proposal for organising a Two-day Webinar in Centre for Chinese Studies.

From: rsdbhu@rediffmail.com <rsdbhu@rediffmail.com>
Sent: Saturday, September 19, 2020 2:21 AM
To: Vice Chancellor <vc@cug.ac.in>
Subject: Re: Proposal for organising a Two-day Webinar in Centre for Chinese Studies.

Approval is accorded to organize the webinar as proposed.
RS Dubey

E-mail: rsdbhu@rediffmail.com, Publications: http://scholar.google.com/citations?user=S76rQVEAAAAJ

From: Vice Chancellor <vc@cug.ac.in>
Sent: Sat, 19 Sep 2020 09:06:34
To: "rsdbhu@rediffmail.com" <rsdbhu@rediffmail.com>
Subject: Fw: Proposal for organising a Two-day Webinar in Centre for Chinese Studies.

From: Dr. alok kumar <alok.kumar@cug.ac.in>
Sent: Friday, September 18, 2020 10:47 AM
To: Vice Chancellor <vc@cug.ac.in>
Cc: Registrar <registrar@cug.ac.in>; Dr.Atanu Bhattacharya <atanu@cug.ac.in>; PSTOVC CUG <pstovc@cug.ac.in>; Dr. Hemang Desai <hemang.desai@cug.ac.in>
Subject: Fwd: Proposal for organising a Two-day Webinar in Centre for Chinese Studies.

माननीय कुलपति जी

चाइनीज केंद्र के 29 -30 सितंबर के वेबीनार की अनुमति के लिए सादर प्रेषित . इसे अनुमोदित करने की संस्तुति है.

कुलसचिव

From: Dr.Atanu Bhattacharya <atanu@cug.ac.in>
Sent: Friday, 18 September 2020, 19:45
To: Registrar; Dr. alok kumar

Cc: Nishant Kumar; Swami Kundan Kishor
Subject: Fw: Proposal for organising a Two-day Webinar in Centre for Chinese Studies.

Dear Sir,
This is recommended and forwarded for your approval please.

Kind regards,
Atanu Bhattacharya
Dean, SLL&CS

From: Nishant Kumar <nishant.kumar@cug.ac.in>
Sent: Friday, September 18, 2020 7:39 PM
To: Dr.Atanu Bhattacharya <atanu@cug.ac.in>
Cc: Swami Kundan Kishor <swamiyadav@cug.ac.in>
Subject: Proposal for organising a Two-day Webinar in Centre for Chinese Studies.

To,
The Registrar
Central University of Gujarat
Gandhinagar-382030

Through: Dean, SLL&CS

Subject: Approval for organising Two-Days National Webinar on "Salience of History, Culture and Language in India-China Relations: *Longue Durée* and *Courte Durée*".

Dear Sir,

This is to bring into your kind notice that Centre for Chinese Studies, SLL&CS would like to organise a Two-Days National Webinar on **"Salience of History, Culture and Language in India-China Relations: *Longue Durée* and *Courte Durée*"**. The proposed dates for the webinar are **29-30 September 2020**.

Therefore, I request you to kindly provide us necessary approval to organise the webinar. The proposal of the webinar is attached.

Thanking you!

Sincerely,

(Nishant Kumar)

Enclosures:

1. Proposal of the Webinar (Concept Note)

24 September 2020
Second Session: (2.00 pm to 4.00 pm)

Chairman: Dr. Alok Kumar Gupta

Tribal Folk Culture and Tradition of Rajasthan : Shri Madan Meena

Tribal Folk Literature of Southern Rajasthan : Dr. Ganeshlal Ninama

Rajasthan's Tribal Based Novel : Dr. Gajendra Kumar Meena

Coordinator: Dr. Vijeta Gamit

Third Session (4.00 pm to 5.30 pm)

Presentation of Research Papers

Women in Dungri Garsia Folk Songs : Dr. Prabhudas Patel

Folk songs of Dhodia Samaj : Dr. Mohan Patel

Folklore of Padhar Samaj : Dr. R.J. Yadav

Similarities between folk songs of Gujarat and Rajasthan : Dr. Suresh Makwana

Research and editing of Dangi folklore : Dr. Prabhu Chaudhary

Oral tradition of Gamit community : Dr. Ishvarbhai Gamit

A study in the cultural perspective of 'Gujrano Arelo' : Dr. Niyati Antani

Folk dances of Kukana Tribal Society : Dr. Rishikesh Raval

Wedding song of Varli Community : Dr. D. K. Bhoya

Research and Editing of Varli Community : Dr. Sanat Varli

Tribal Folk Song of Dang : Social - Culture Context : Dhirubhai Patel

Coordinator: Dr. Maulika Patel

Certificate will be provided to the participant at the end of the program after filling and submitting feedback form

Live on https:www.facebook.com/cugadmin

Convener
Dr. Ajaysinh Chauhan
Associate Professor
Centre for Gujarati Language and Literature, Central University of Gujarat

Invited by

Dr. Rajesh Makwana
Professor and Chairperson
Centre for Gujarati Language and Literature
Central University of Gujarat

Dr. Himmat Bhalodia
Registrar,
Gujarat Sahitya Academy
Gandhinagar

Prof. Alok Kumar Gupta
Registrar
Central University of Gujarat
Gandhinagar

Center for Gujarati Language and Literature
Central University of Gujarat, Gandhinagar
and
Gujarat Sahitya Academy, Gandhinagar
cordially invite you to

A Two-Day National Webinar
on
Tribal Folk Literature of Gujarat and Rajasthan
23 - 24 September 2020

Programme Shedual

23 September 2020

Inaugural Session: (10.30 am to 12.30 am)

Invocation of Kulgeet

Introduction of the Webinar : Dr. Ajaysinh Chauhan

Welcome Address : Dr. Rajesh Makwana

Guest of Honor : Prof. Alok Kumar Gupta
(Registrar, Central University of Gujarat)
Dr. Atanu Bhattacharya
(Professor and Dean SLL & CS, CUG)
: Dr. Himmat Bhalodiya
(Registrar, Gujarat Sahitya Academy)

Inauguration : Dr. Balwant Jani
(Chancellor, Dr. Harisinh Gaur Uni., Sagar, M.P.)

Chief Guest : Vishnu Pandya
(Chairman, Gujarat Sahitya Academy)

Keynote Address : Hasu Yagnik
(Writer, Critic, editor, folklorist)

Presidential Address : Prof. Rama Shankar Dubey
(Vice Chancellor, Central University of Gujarat)

(12.30 to 2.00 lunch break)

First Session: (2.00 pm to 4.00 pm)

Chairman : Hasu Yagnik
Tribal Folk Literature of North Gujarat : Dr. Bhagwandas Patel
Tribal Folk Literature of South Gujarat : Dr. Anand Vasava
Tribal Folk Literature of Saurashtra : Dr. J. M. Chandrawadia

Coordinator: Dr. Hetal Hingu

www.cug.ac.in

EK BHARAT SHRESHTHA BHARAT (EBSB)

Central University of Gujarat

Cordially invites you to attend the inagural session

Gujarati Basic Language Training Program

(For the students of Guru Ghasidas Central University, Bilaspur)

6 July,2020 Time: 11:00 AM

Chair of the session

Prof. Rama Shanker Dubey
Hon'ble Vice Chancellor
Central University of Gujarat,

LIVE
/CUGADMIN

Chief Guest

Prof. Anjila Gupta
Hon'ble Vice Chancellor
Guru Ghasidas Central University,
Bilaspur, Chhattisgarh

Special Address

Dr. Alok Kumar Gupta
Registrar
Central University of Gujarat

Welcome Address

Dr. Atanu Mohapatra
Chairman & Nodal Officer (EBSB)
Central University of Gujarat,

Facilitator

Prof. Rajesh Makwana
Chairperson,
Centre for Gujarati Language,
Central University Of Gujarat

Closing Remarks

Dr. Ajay Sinh Chauhan
Centre for Gujarati Language
Central University Of Gujarat