

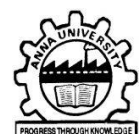
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# REPORT

## INTERDISCIPLINARY RESEARCH

### TOOL-SHOP (VIRTUAL)

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## OVERVIEW

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South Asian Water (SAWA) Leadership Programme on Climate Change is a fellowship program for women enrolled in master's level Interdisciplinary Water Resources Management (IWRM) programs across four universities in South Asia and aims at facilitating the creation of a group of interdisciplinary women leaders with a strong foundation of crosscutting scientific and societal issues of water resource management. The program is funded by the IDRC, coordinated by SaciWATERs and implemented in four South Asian universities – University of Peradeniya (Sri Lanka), Bangladesh University of Engineering and Technology (Bangladesh), Nepal Engineering College (Nepal), and Anna University (Chennai, India).

Regional training workshops aimed at building capacities of fellows in the theories and methods of interdisciplinary research is a core activity of this program. These workshops have focused on teaching the significance and challenges of inter-disciplinarity, understanding climate change and related environmental issues through an interdisciplinary lens, and finally qualitative and quantitative methods through field based research methods.

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## OBJECTIVES AND EXPECTED OUTCOMES

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The current training workshop (co-funded by UNDP CapNET and IDRC) is designed to further supplement and strengthen this training provided during the regional workshop. The aim of this workshop is to provide more in-depth supervised training in the practical use of some essential research tools - its uses, benefits and challenges, dos and don'ts, and stepwise implementation. This workshop is particularly relevant in the current circumstances of digital online learning and limited hands-on field based research training.

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## PROGRAMME DETAILS

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### **Module: QUALITATIVE METHODS**

#### **In-depth interviews/Gender Narratives/FGDs/Oral histories**

The objective of this session is to teach (any) 2 qualitative data collection methods in detail including

- When is this method used?
- What kind of data and insights can this method produce?
- What are the steps of implementing this method?
- What are the challenges of implementing this method?
- What are the common mistakes one can often make while using this method?
- What are the good practices for using this method correctly?

- Design a small practical session to illustrate these steps, mistakes, and good practices.

### **Translation and Transcription**

After data is collected using the qualitative data collection methods, how is this descriptive information processed for analysis? How do you ensure maximum retention of the essence of the data while translating so that loss in translation is minimized? Transcription is more than just word by word notes of an interview; it can capture the critical nuances of information collected. What are the aspects to watch out for while transcribing so that your raw data is in its best possible condition before you begin analysis of the data. Brief introduction to data management – importance of storing the data in a systematic manner, naming files and folder management, creating metadata, anonymity, and backing up.

### **Qualitative data coding and software based qualitative data analysis**

Once the raw data is processed and stored the qualitative data is now prepared for analysis. How do you code qualitative data to start making sense of the volumes of information? What are the various modes ways of coding this data? What are the various softwares available for qualitative data analysis? Introduction to any 1 software illustrating how it helps code data and analysis that can be drawn from the same.

## **Module 2 - QUANTITATIVE METHODS:**

### **Using GIS for interdisciplinary mapping**

Various sources of water related spatial data sets in South Asia, sources of social data sets in South Asia and how to map various data sets to reveals interdisciplinary research.

The objective of this session is not to teach GIS softwares or theory. The aim is specifically to discuss the various methods which may be used to analysed together both social and physical indicators. For example overlaying of layers, masking physical land use using administrative boundaries, overlaying charts and graphs on physical layers, built-up area indices, etc

### **SPSS Software**


The objective of this session is to understand different types of quantitative data, data processing, basic analysis, and effective data presentation techniques using SPSS integrated with Excel, Powerpoint, and any other data presentation tools.

## **Module 3 - SCIENCE COMMUNICATION**

### **Methods for Reviewing Literature**

Purpose of literature reviews in an age of extensive publishing and knowledge creation, different objectives of reviews and varies purposive methods used for finding and reviewing literature, and writing reviews

### **Reference Management – Using Mendeley and Zotero**



Extensive literature and knowledge bases require management for more systematic research that is usable and presentable even much beyond the lifetime of the project and the research. This session will focus on methods of literature management including referencing, citations, annotated bibliographies, and software based management of this large knowledge bases.

### **Communicating science to Communities**

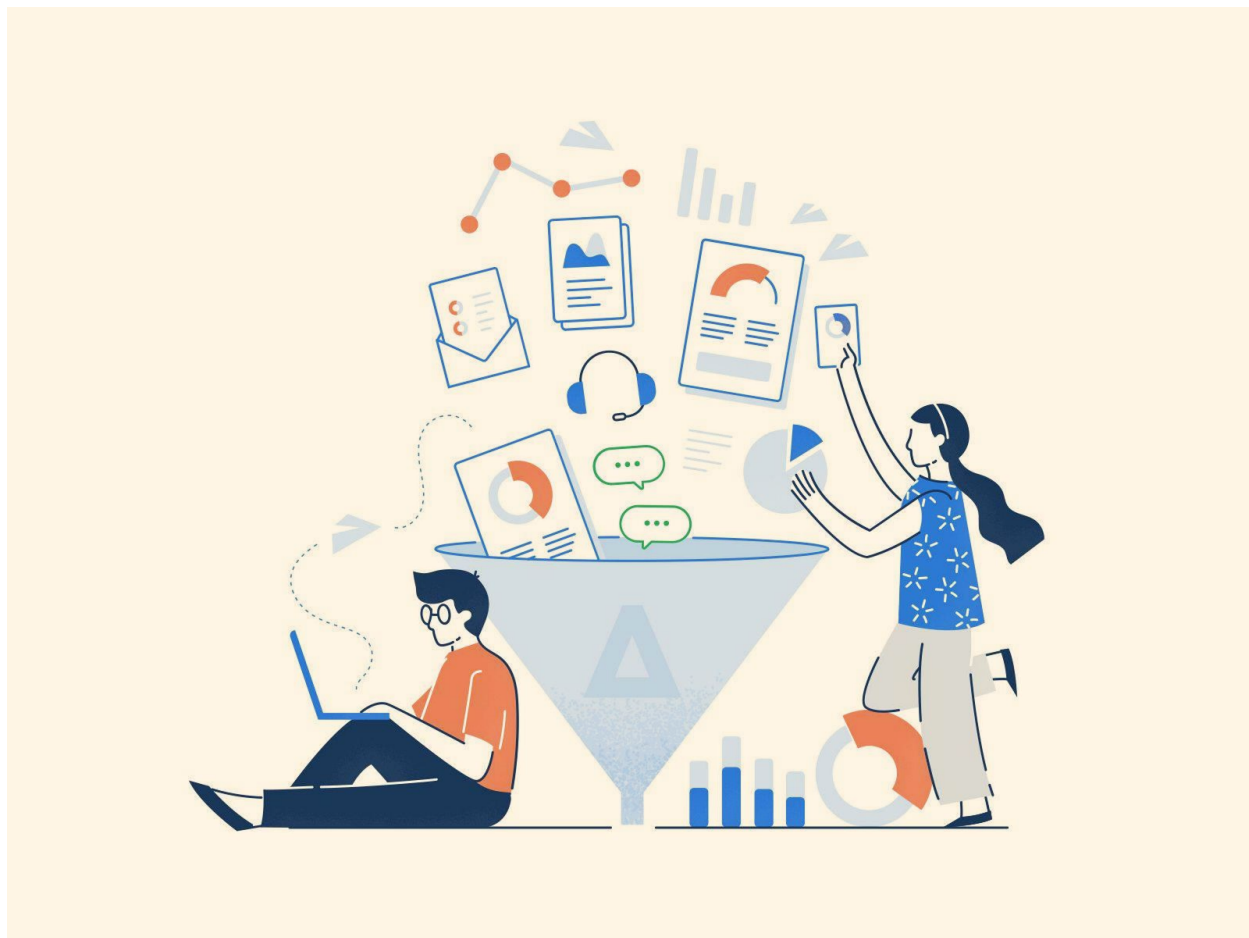
For science to be effectively communicated to local communities various methods and tools exist including wall paintings, posters, brochures, street plays, exposure visits, community platforms, engaging activities, films etc. Capacitating communities with lessons from research requires a certain language, local cultural immersion, understanding representation and power groups, understanding the local relevance of wider research, engaging with contextual issues and constraints are essential.

### **Communicating science to Policy-makers**

Disseminating research findings to policy makers is an essential aspect of science communication and can enable taking your research to ground implementation through policy. Preparing policy briefs, policy engagements, and editorial media writing can all speak to policy makers. These forms of writing for policy makers need focus quite different from academic writing. Additionally a lot of policy advocacy may also be done through one on one engagement, networking activities, understanding policy priorities and power axes etc. The aim of this session is to introduce students to the variety of methods that are often used in fields of advocacy.

### **Popular Science Communication**

Science communication often needs to go beyond academic writing when research findings relate directly to lived experiences, social and political vulnerabilities, decision making, transformations, and solutions. Interdisciplinary research needs to be written both for the scientific community and beyond. Media platforms and many other popular digital platforms (including social media) provide spaces to communicate the relevance, importance, and findings of your research to the larger populace. However the methods of writing for this readership requires different methods and focus areas. This session is aimed at teaching the various platforms and methods of communicating science to the general readership beyond the scientific community.



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# INTERDISCIPLINARY RESEARCH TOOL-SHOP (VIRTUAL)

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**REPORT ON MODULE 1: QUALITATIVE RESEARCH TOOLS**

27-30 SEPTEMBER.2021

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## MODULE 1: QUALITATIVE RESEARCH TOOLS

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DAY 1: SEPTEMBER 27<sup>TH</sup>, MONDAY:

### DOING IN-DEPTH INTERVIEWS AND FOCUSED GROUP DISCUSSIONS

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#### INTRODUCTION

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First day of the lecture series started with the discussion on doing In-depth interviews and FGDs by Dr. Laxmi Vadapalli Thummuru who is a senior fellow at SaciWATERS. The session started with the host requesting all the participants to adhere to certain housekeeping rules like timings, video manners, etc.

A small introduction to SAWA students was given about the program which is majorly revolving around climate change and is funded by IDRC and coordinated by SaciWATERS. The participants were from four countries; Bangladesh, Sri Lanka, India, and Nepal through association with the four South Asian universities – University of Peradeniya (Sri Lanka), Bangladesh University of Engineering and Technology (Bangladesh), Nepal Engineering College (Nepal), and Anna University (Chennai, India). Most of the students were from IWRM stream and understand the importance of in-depth tool study.


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#### QUALITATIVE AND QUANTITATIVE RESEARCH

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Dr. Laxmi explained about the two types of research i.e. Qualitative and Quantitative. She explained that the Qualitative research method is very engaging in the community and that the research work may have major implications on the community. Therefore, one needs to recognize the multiplicity of stakeholders whose interests have to be considered during research work. It is very important to understand what are the stakeholders wanting to say or convey. It can be complex to understand the rough data from the fields and translate it to contextualization and appreciation. Quantitative method is more number based and qualitative is trying to understand the stakeholders better.

She also explained the two types of data i.e. Primary and Secondary data. Primary data will be directly from the respondents in the fields and secondary data will be from data already collected. Secondary data gives an idea about what event happened at what time, and are largely records from government departments, local self-government



institutions, etc. This data helps in understanding what the situation would have been when the study was done and proves to be as a background for the research work.

Primary data can be collected from in-depth interviews, focus group discussions, participant observations, resource mapping, etc. whereas secondary data can be from annual reports of organizations, impact assessment studies, reports and documents from authorities, etc.

For example, National Crime Record Board can prove to be a single point to give lot of data related to several sorts of crime; whether crime against women, crime because of agrarian issues, etc. This data also explains why certain people deal in a particular way in certain situations e.g. in dowry cases, some women would go to police, some would be silent, some would get family support, some won't and so on.

Lots of information needs to be decided well in advance like in which geographical area, who will be the stakeholders. Community is not a homogeneous entity according to Dr. Laxmi, but a heterogeneous one and there are several layers, like age groups, different resources to their benefits, etc. There are schemes for various sectors in a community e.g. water for irrigation scheme but it is to be understood from the field, that what is the last mile connectivity. It can be found that women from upper caste are more privileged and do not need to walk long distances to fetch water for their households. Water issues, when seen from a sociology perspective can portray a totally different picture all together.

Qualitative research is methodology used to gain contextual understanding of the stakeholders. She enlightens the students of going for the research without the urban bias and respect the respondents' narratives without any judgements. First of all, a rapport with the participants needs to be developed to make them comfortable. They also have their stories and one need to understand them with deep sensitivity.

There might be lots of government schemes for girl's education but in the fields, one may find lack of motivation to educate a girl child as the villagers might feel that the girl will anyways go away to someone else's home and thus, there is no point in educating her. Qualitative research gives more depth to the basic information and with that one may explore the policy gaps. It is also good to gather information about sensitive issues like domestic violence but the researcher needs to spend lot of time in the fields and make a good rapport with the respondent.

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## STEPS IN RESEARCH

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Before going to the field

- What and Why of the research.

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- Comprehensive research questions, e.g. impact of construction on a tribal community.
  - What questions to be asked.
  - How to approach community and build rapport with the respondents.
  - Either write down or record.

#### While in the field

- Be neutral and no value judgement
- Ask right questions, be sensitive, come out of urban bias, no politically incorrect questions. They are being generous in accommodating the researcher and answering the questions.
- Multiple methods to collect data.
- Consent before recording and taking photos or videos.

#### Back from the field

- Loaded with info and thus, write field notes every day to remember what was said, who was met.
- Elaborate field notes and if confusion arises, chance of going back next day and getting clarifications.
- Data analysis, significant conclusions, recommendations can also be documented.

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## TECHNIQUES OF DATA COLLECTION

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In depth interviews can be very personal, sensitive, and can be hurting and not very pleasing for the respondent. Interview can be very long and intensive but will give detailed information. No two people will look at one situation in a similar way.

Prior appointment with the respondent is desirable and one should not make them wait. It is important to be sincere, honest, punctual, transparent, and assure that the data from them will be used only for research purposes. There can be warm-up questions initially. One must maintain ethics throughout research, to get authentic data without hurting the sentiments of the respondents.

Respondent might revolt and get angry thinking why should they give all this information, or during some resettlement program, they might not be ready to move at all, but gradually they might be okay with negotiations, they may agree to certain terms, e.g. some people might just answer vaguely that they want certain acres of land in return or some might just ask for a permanent job from government.


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## FOCUS GROUP DISCUSSIONS

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This is not just one on one discussion but having a talk with many people simultaneously. This can be very local specific; one place's situations may not be relatable to other areas,





and thus, it is context specific. Usually women don't talk about their issues when there are upper caste men, also upper caste and lower caste people might not be comfortable in discussing their issues together. Therefore, the researcher will need a mediator or a facilitator in such cases. Such group discussions can also be very helpful as they save time in understanding how a large group of people in the community think.

Stakeholders should be able to connect to the purpose of the research. It is always better to communicate in the local language. It can be a good approach to identify the person who has not spoken yet and enable, involve and encourage that person to speak.

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## CONCLUSION

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She concluded the first day's session by involving all the participants in a mock exercise. She assigned different roles to different participants and suggested to conduct a stakeholder consultation on the topic of 'status of agriculture'.

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## DAY 2: SEPTEMBER 28<sup>TH</sup>, TUESDAY:

### QUALITATIVE DATA CODING AND INTRODUCTION TO QUALITATIVE ANALYSIS SOFTWARE

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The Second session was hosted by Dr. Premlatha Packirisamy, who is a professor at TISS, Mumbai. She started the session with a TED [video](#) on the topic of 'The urgency of Intersectionality' by Kimberle Crenshaw, which talked about gender discrimination. It talked about the issues related to sexism, racism and other social dimensions and the laws related to those. It also talked about the need to bring in limelight, the state violence against black women.

Dr. Premlatha gave 3 minutes to the participants asking them what did they observe in the video shown about the problems, which they would like to study and research upon. She asked them to use their previous knowledge to come up with relevant research topics. All the participants started putting their thoughts through the chat box and came up with different interesting topics based on their understanding like, gender, caste, victim blame, women illiteracy, gender inequality, question of existence of black people, policy gaps, coping capacity in terms of gender, color and class, social constraints faced by women in achieving their goals, invisible governmental frameworks to help victims, etc.

Dr. Premlatha explained the participants that all this study can be done only through qualitative data analysis. Qualitative research is concerned with systematic collection, ordering, description and interpretation of textual data generated from talk, observation or documentation.

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### CODING

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Dr. Premlatha further described about the coding paradigm through the different types.

- Open
- Axial
- Selective

Before explaining all the types of coding in detail, she encouraged the students to interact and discuss, as if they are physically sitting in front of each other in a classroom. She encouraged one of the participants to come forward and share any experience from her research journey and simultaneously asked all others to note down few keywords from her stories and explained that these keywords are called 'open coding'.

One of the students; Sudipta, shared two experiences.

1. She had to interview a woman who was from below poverty line and according to whom, Sudipta was from upper caste. Thus, she was not sure if the questions will be comfortable to the respondent and if this discomfort will influence their discussion. Since both were women, the moment she started responding, Sudipta could relate a lot because of the same gender but many of her assumptions were negated because the respondent had different experiences.
2. Sudipta's father is a shopkeeper and once, when she went to interview a set of shopkeepers, she realized that since they all knew her father, their answers were felt to be very sugar-coated. They were not responding as raw as that other woman she interviewed earlier.

The participants after listening to the stories, came up with various interesting codes like, class discrimination, influence of local people, less transparency, aware of not being influential to the respondent's response, poverty, upper class, difference in social and economic status, classification existing in our society and our mind, marginalized mentality, and so on.

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### OPEN CODING

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Writing open codes is critical as the codes should be very clear and as complete as possible because if one reads these codes after many days or months, then also they should be understandable. She read all the codes posted by students in the chat box and gave her feedback on all. She suggested that all the questions pertaining to What, Why, Where, When, How, etc. help in yielding rich answers.

Key features are the following:

- listening to the respondent,
- keywords from the entire story,
- transcription from the interview,
- core elements posing sensitizing questions,
- intensive analysis of data through conceptualization and categorization,
- goal is to grasp the core idea and develop a wealth of codes.

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### AXIAL CODING

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She explained that if Sudipta's 1-minute story can give 3-4 codes to each participant, one can imagine some 1500 different codes from different respondents while doing in-depth research on field.

Key features are the following:

- Used to investigate relationships between concepts and categories developed during the open coding process,
- Bucketing, clustering, categorizing, and grouping,
- Different codes clustered together in single core categories.

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### SELECTIVE CODING

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Choosing a core category and categorizing and subsuming all other related codes under it, and relating the different coding with each other with cohesive and comprehensive understanding between the codes.

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### CONCLUSION

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She showed examples of all coding systems through a burnout paper and also through a diagram showing how all the open codes in the periphery are grouped together to form categories and further to form selective codes.

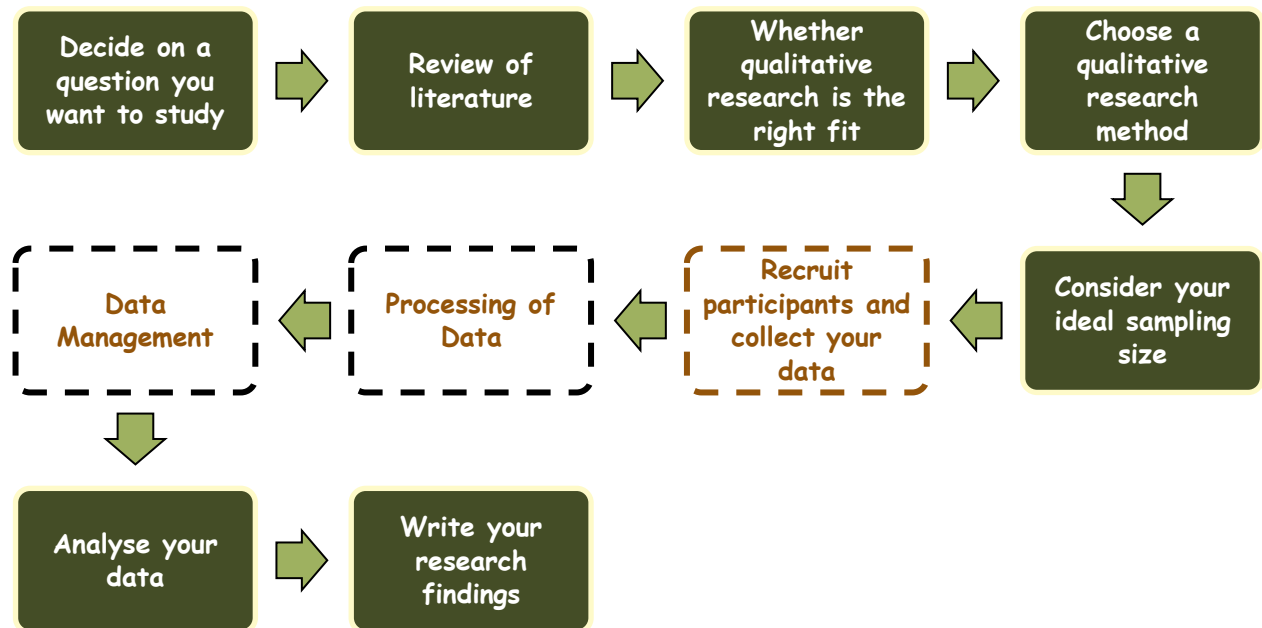
She then introduced all the participants with a coding software, 'ATLAS.ti7'. She showed how to do coding through the software. She took help of some 7 interviews and elaborated on adding open and axial coding and showed the output with the help of the interview texts. She also showed how the output can also be illustrated with the help of a diagram where the different codes can be linked to each other in form of some diagram to explain it better. She said that there can be other softwares too which can be explored by the students. This qualitative data analysis software is better than MS office softwares, according to her, because the categorization for axial and selective coding which can be done through this, will not be possible through other conventional softwares. The data analysis can be much more easier and faster and the output can be more explanatory in these softwares, she elaborated upon.

DAY 3: SEPTEMBER 29TH, WEDNESDAY:

TRANSLATION, TRANSCRIPTION, AND QUALITATIVE DATA MANAGEMENT

The third session of the first module was presented by Dr. Sreenita and Dr. Shreya, who both are senior fellows at SaciWATERS.

Dr. Sreenita started the lecture with the topic of Transcription management in Qualitative research. She further explained about the qualitative and quantitative research methods and the different stages of qualitative research such as:



Tips for recording interviews / Focus Group Discussions, suggested by her were:

- Purchase audio device and recording device with built-in USB facility
- Testing of the recording device
- Equip with extra batteries
- Write notes
- Quiet location for better performance
- Spot check the quality of the recording – if some issue, simply write in notebook
- May not be appropriate to record the interview if it's some sensitive situation

Ethics and Confidentiality was also given due importance by Dr. Sreenita such that the participants know to first take ethical approval from the participant and understand when personally identifying information (PII) should be removed from the transcript.

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## TRANSCRIPTION

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Dr. Sreenita explained why is Transcription required in qualitative research. A transcript is a textual representation of verbal interaction and a change in medium. In video recording, one might not capture everything and in case of audio recording, one might not be able to capture human facial expressions and body language. Thus, transcription helps with both.

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### TYPES OF TRANSCRIPTION

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- Verbatim
  - Word for word transcription,
  - Captures even speech errors, false starts, repetitions, pauses, slang words, etc.
- Intelligent
  - More cost, time, training, qualification, editing is required
- Edited
  - Meaningless parts can be omitted,
  - Cleaning up the clutter,
  - Time-consuming
- Phonetic
  - Specialized form,
  - Aim is to capture the way the speakers, utter words

Dr. Sreenita explained further by giving examples of all the kinds of transcriptions and giving detailed comparisons between all and elaborating what is included and excluded in each of the types. She continued by enlightening the students with the Standards of transcription and translation, which include identifying the speakers, using easy to distinguish terms, colons, numbers, time stamps, ellipses, etc. to highlight various matters for ease in understanding for future use.

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## QUALITATIVE RESEARCH DATA MANAGEMENT

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Dr. Shreya Chakraborty is a senior fellow at SaciWATERS and started her presentation by explaining the importance of data management.

- Data needs to be findable, accessible, interoperable and reusable.

- Research will not be scientific enough if anybody is unable to access and use the data easily for further research, knowledge generation and dissemination in future.
- Memory of the context is usually short-lived unless well documented.
- Funders now demand Data Management Plans for research funding.
- Loss of data is some sad event which can happen anytime and can be very stressful.

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## RESEARCH DATA LIFE CYCLE

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She further described the data life cycle through the diagram shown below.



Important steps, according to her, for data management should include:

- Planning of data collection
  - Kind of data, methodology, sampling, data collection ethics
- Acquisition/ Creating and Storing the data
  - Nature of data (documents, photos, videos, audios, etc.)
  - Digitizing, creating a metadata, folder management, systematic naming of files
  - Storage for sharing and future access
- Processing / Analyzing / Selecting / Storing and Sharing
  - Quantifying the storage and its time

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- Data needy people
  - Preventing data loss
  - Personal or sensitive data

Dr. Shreya showed an example of data management where a hand-written data and hand-drawn map was digitized for easy use in future. It is easy to use the data in digital format, in future and also easy to store digitally.

She also showed an example of a metadata and elaborated on the different aspects related to the data managed and the importance of each. Metadata includes a story behind each data collected and brings back the memory while the data was collected.

She gave example of a standard which can be used to name the file while saving in digital media for future use. A text file, she said, can be added in each folder describing what one can find in that folder. Adding dates to the file names was also given lot of importance by her.

Data loss is a very common thing which happens during research, according to Dr. Shreya. And thus, she enlightens with the importance of data storage and sharing.

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## CONCLUSION

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Dr. Sreenita then concludes the lecture by illustrating the use of certain transcription softwares, and related tools and tips. She showed with examples of few softwares; 'otranscribe', 'gotrsnacript', and 'otter.ai', on how to do transcription.





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# INTERDISCIPLINARY RESEARCH TOOL-SHOP (VIRTUAL)

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**REPORT ON MODULE 2: SCIENCE COMMUNICATION TOOL**

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30 SEPTEMBER - 02 OCTOBER.2021

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## MODULE 2: SCIENCE COMMUNICATION TOOL

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DAY 1: SEPTEMBER 30<sup>TH</sup>, THURSDAY:

### METHODS FOR REVIEWING, CITING, AND MANAGING LITERATURE AND REFERENCES

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The first session of the second module was presented by Dr. Shreya and Dr. Sreenita, who both are senior fellows at SaciWATERS.

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#### WHY IS LITERATURE REVIEW IMPORTANT?

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Dr. Shreya first explained about the importance and increasing significance of literature review.

- Comprehensive overview
- Varying themes in a research topic
- Conflicting frames in a research
- Identify gaps for further research on a particular topic
- Firm foundation for further research especially in uncovered areas
- Relation to existing knowledge

She further explained that depending on the purpose and quality of execution, different approaches can be thought about and the typologies for varied purposes can be such as the following:

- **Semi-systematic / Narrative Reviews**
  - Broader topic
  - WHEN to use – overviewing a topic
  - WHY to use – impossible to review every related article
  - HOW to analyze – thematic or content analysis
  - WHAT is it – thematic fields of research, historical timeline, agenda for further research
- **Systematic Reviews**
  - Answers around a particular question
  - WHEN to use – to answer a particular question or hypothesis
  - WHY to use – systematic, transparent, reproducible
  - HOW to analyze – quantitative meta-analysis and qualitative relational analysis
  - WHAT is it – relationships across different contexts
- **Integrative Reviews**
  - Building blocks to create new theoretical models
  - WHEN to use – new theoretical frameworks and perspectives
  - WHY to use – expand on theoretical foundation of specific topic

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- HOW to analyze – superior conceptual thinking, purposive selection of papers, more creative collection of data
  - WHAT is it – a new conceptual framework
  
  - **Non-systematic / Scoping Reviews**
    - Policy directed
    - WHEN to use – broad based identification and mapping of studies on a topic
    - WHY to use – preliminary research mapping
    - HOW to analyze – summarize and disseminate research, cover a vast range of grey literature
    - WHAT is it – whether a certain topic needs further systematic review

She concluded her presentation by giving an exercise where all the students were given some time to read a paper, which was an abstract of some other paper. She asked the students to read it thoroughly and come up with words which they feel are 'concepts' which have been used to develop a framework given in the paper.

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#### KEY TAKEAWAYS

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- Need and purpose of the review
- More focus to the existing knowledge by cross-referencing, expert advice, etc.
- Identify the question
- Methods and results
- Whether it is relevant
- Map the situation
- Finalization
- Transparent methods
- Knowing when to step review and start writing simultaneously


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#### REFERENCE MANAGEMENT FOR SCIENTIFIC WRITING

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Dr. Sreenita continued the lecture with explaining about the basics of referencing. Referencing is needed to enhance the presentation of one's work and demonstrate that a thorough and appropriate literature search and reading has been the base of the research. It also helps in tracing back the work with the help of the sources mentioned and if not referenced accurately, one's work can be punishable for plagiarism. There are various styles like MLA, Chicago style, APA, etc. for which Dr. Sreenita said, an altogether different lecture would be required to teach in detail.

Manual referencing can be very time-consuming and chaotic and thus, it is better to use online reference management tools. She took a poll and realized that almost 50% of the participants are using 'Mendeley' software and rest 50% are doing it manually. The software helps in better organization and future use is made much easier. Also, there can



be lots of chances of human mistakes in case of manual referencing. She further enlightened the participants that the software tools are designed to organize the citations in specified formats for the preparation of manuscripts and bibliographies and make the whole process much simpler and user-friendly.

Zotero and Mendeley are freely available software tools, which she explained to use in detail with demonstration and other many softwares like Reference Manager, EndNote, ProCite, RefWorks, etc. are subscription based. She elaborated more on the two freely available softwares and provided links where these could be downloaded.

She demonstrated how to install the softwares, create accounts, create and manage library, and ultimately get help for citation and bibliography management. She also described the different pros and cons of using the two softwares.

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## DAY 2: OCTOBER 1<sup>ST</sup>, FRIDAY:

### COMMUNICATING SCIENCE TO COMMUNITIES AND POLICY MAKERS

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The second session of the second module was hosted by Dr. Samskruta Talupula who is a senior project officer at ICLEI South Asia and Dr. Poulomi Banerjee, who is a senior consultant at SaciWATERS. Both of them have experience in working on watershed management.

Dr. Poulomi started her presentation and enlightened the participants with the importance of policy engagement and connection of the research with it. It is very important to be aware of the current societal needs, government proposals to avoid the disconnect between the research and the ground realities. The funders also would prefer a research which is more connected, meaningful and beneficial to the community as well as the concerned authorities in power. Engagement with government is a very complex work and it keeps going on throughout the research process. She gave example of a particular state government and explained that the current government in power is more inclined towards rural development while 3-4 years back, the previous government in power was more concerned about the urban development. This way she de-coded the policy engagement that it is a two-way process.

She explained the complexities concerned with communicating and extracting information from government authorities and all the line departments within the relevant ministry because of the sensitive nature of the information to be passed on, which can sometimes be very confidential.

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### COMMUNICATION STRATEGY

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She explained the importance of communicating with the target audience for the target agenda, with specific tools and activities and within appropriate time.

- **Whom**
  - Different tiers of administration
  - Line departments
  - Specific officers
  - Elected representatives
- **What**
  - Output nuggets aligned with state/ government priorities
- **How**
  - Interviews, dialogues, workshops, training, print and electronic media connection
- **When**
  - throughout the project at strategic intervals

She then further explained the community and government engagement with the examples of two projects where she herself is engaged i.e. 'Cocoon' and 'Maniyari Canal Irrigation'. She elaborated on the process involved in engaging with the



government which starts from field visits, networking with executives, developing and pitching ideas, presentations, tendering, close liaisoning, conflict resolution, community participation, trust development among the local government to gain awards, etc.

One of the students had a query about the changing government in power and thus, changing directions for development. Dr. Poulomi explained the critical nature of dealing with the authorities in power. She agreed that government will keep changing but the researcher has to be very smart in getting the work done by giving them solutions and not just talking about the issues. A very good documentation of the work undertaken can help in encouraging the government as well as a good way of keeping track of the research work.

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### MOCK EXERCISE - 1

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All the participants were divided into different breakout rooms or groups and asked to work on the mock exercise. They were asked to do role play where they had to pitch an idea to ask for funding by presenting their case after formulating the entire research work in 2-3 discussion points. She informed them that the government officials usually do not have time and thus, just few minutes will be given for presentation. One representative from each breakout room will present the work to government secretary and a dummy person from SaciWATERs can be that government secretary for this exercise. Challenges involved can be listed for further discussions.

They came up with various discussion points on which Dr. Sreenita and Dr. Poulomi gave feedback. Dr. Sreenita imposed importance on the right approach to be followed while pitching the idea to the government. Dr. Poulomi gave importance to being very specific and approaching the government by talking more about solutions instead of focusing much on the problems. She again suggested the participants to be very clear and specific about the points because usually government officials have very less time to give. One student gave example of an evidence-based approach, which was given appreciation as feedback.

Dr. Poulomi encouraged hitting the right cord by talking about points which are already sectors of concern for the specific government. It is important to smartly sell the right product to the concerned government or official.

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### COMMUNICATION SCIENCE TO COMMUNITIES

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The second part of the session was presented by Dr. Samskruta who showed a video clip from the movie 'Sherni' with which she explained the dilemma involved within community, local government, and the ecological environment around. In the video clip, local government tried to barge away the tigers by laying shock wires which will kill them because according to him, it is the land of humans and not tigers.

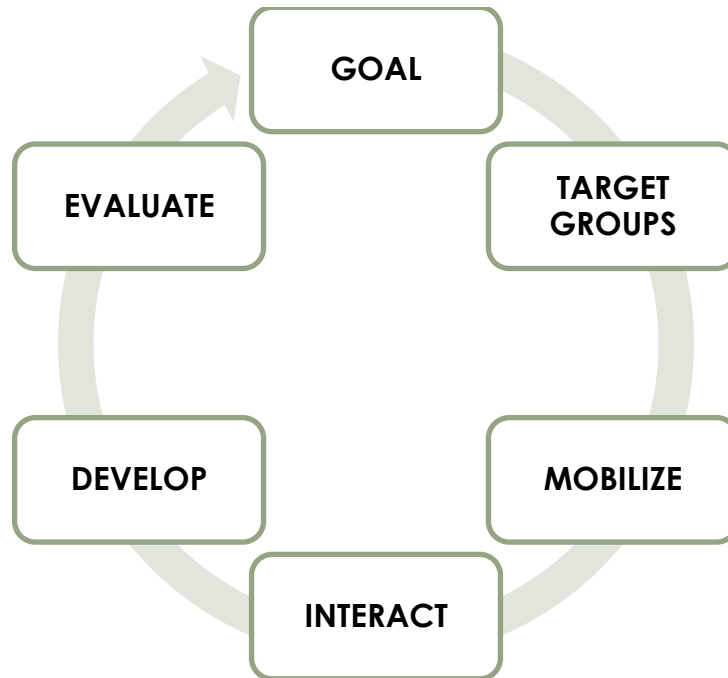
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### PUBLIC ENGAGEMENT

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She defined it as intentional and meaningful interactions that provide opportunities for mutual learnings between scientist and members of the public.

She further explained the framework which should be followed and that it should be engaging, consulting the beneficiaries and with appropriate partnership. It is important to understand the context of the community through personal interviews, FGDs, etc. to understand better the goal and the background.

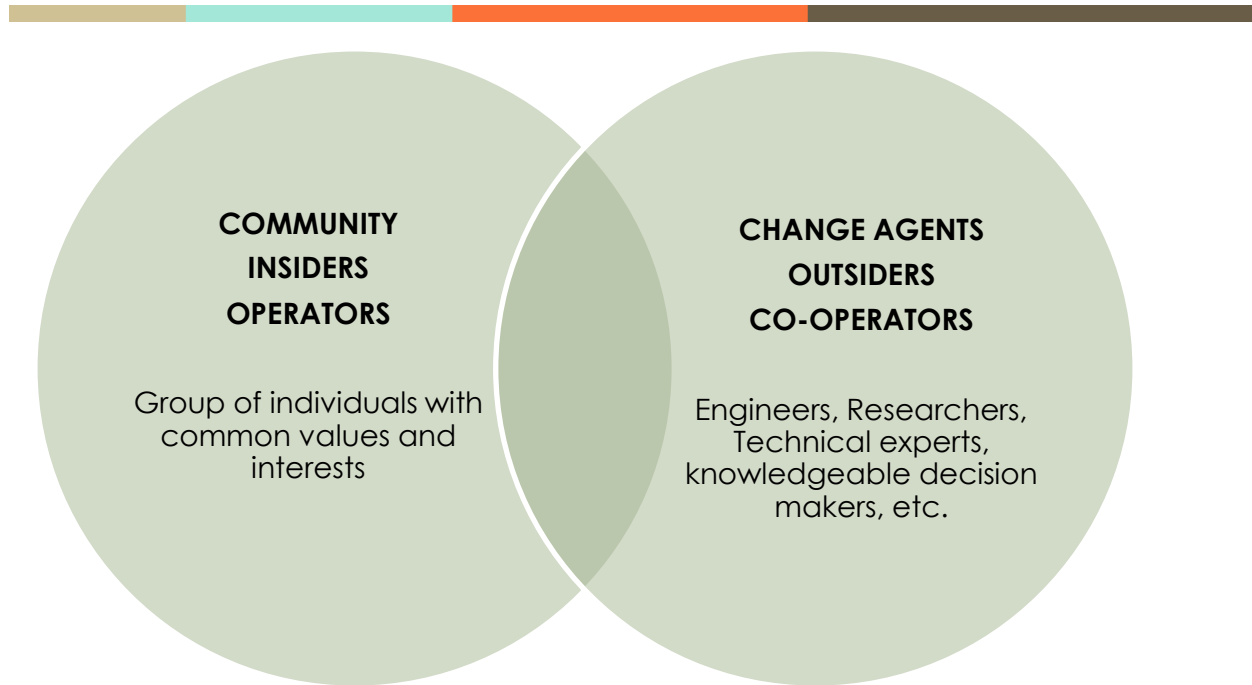


She enlightened by illustrating that in order for '**DEVELOPMENT**' to happen, the **SOCIETY** governs the important questions like 'Why', 'Who will do what', 'How', etc. and the decision makers use their knowledge or **SCIENCE** to confirm facts, give evidences, reasons, etc.

She further talked about the different stakeholders which can be at different levels:

- Central level
  - Policy makers
- State level
  - Policy makers
  - Implementors
  - Executors
- Local level
  - Local nodal points and beneficiaries

The target groups can be based upon politics, religion, caste, location, ethnicity, income levels, rural or urban backgrounds, etc. and the development choices are governed by politics, law, economics, public opinion, and scientific evidence.



She gave example of a case study where community participation and mobilization were worked upon for Hyderabad Birla mandir. Within a month, single-use plastic bags' numbers reduced tremendously and the locals were helped with introduction of local scaled cottage industries.

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### MOCK EXERCISE - 2

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Two videos were shared by her from which the participants were asked to identify the following:

- Vision and Aim
- Target group
- Mobilization and Engagement
- Output or Outcome

The first [video](#) was on 'slums' in a part of Delhi and it highlighted the power of public awareness and engagement which could move the concerned government authorities to work for development in the concerned areas.

Another [video](#) was shown for the same exercise, which talked about a river rejuvenation project in Latur, Maharashtra, through community participation. The video showed the journey of the rejuvenation project from the state the river was dry till water came back to it with the help of the motivated people.





All the participants got engaged in the exercise by breaking into rooms and discussing about what they could observe from both the videos. Representatives from the rooms then shared their varying observations.

Both the case studies' vision was long-term and they were talking about a continued process because both the videos' issues were not short-term solution-based, instead, prolonging. Both the videos gave the similar message that the strategy might change but the work continues and will need to continue.

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## DAY 3: OCTOBER 2<sup>ND</sup>, SATURDAY:

### POPULAR SCIENCE COMMUNICATION

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The third session of the second module was presented by Mr. Omair Ahmad, who is the Managing Director of the south Asia region at 'The Third Pole', which deals with trans boundary water issues, and other similar scale water matters in specific regions.

He started by explaining the essence of story writing and said that the first thing you see is the title, which gives you an initial idea what the story is all about. He asked the students about topics which interest or excite them. He also enlightened the participants by saying that a same story will be told differently to different audiences and will require different skill sets. The participants can tell their research story to their parents in a very informal way using even slangs but while presenting to any government official or a funder, they need to be very precise, grammatically correct, full of reliable and impactful facts as basis and confident while pitching the ideas.

Every story can be dull, it is the enthusiasm and excitement with which the story is told, that makes it interesting. Other very important thing is to have a perfect data set with all sources well mentioned. There can be fascinating facts but must be taken from reliable references. There can be a convincing article but if the data is not good and doesn't make sense, the article will not work.

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### COMMUNICATION TIPS


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- Your interest is the foundation of the communication.
- Audience, whom you wish to convince and tell the story.
- What mode should be chosen to tell the story.
- Data to support all the facts to be conveyed through the story, with reliable reference sources.
- Actors working in the particular study need to be identified.

He further interacted individually with all the participants and asked them what drives them towards their research stories and what medium they are planning to use to spread the word. There can be a broad communication like a YouTube video, social media post, etc. and there can also be a particular group-targeted communication through personal conversation.

He individually listened to each of the participants and asked them their stories and advised them how they can improve the communication. He told the importance of talking to people who are or have been working in the similar field as the research topic. It will be a good idea to approach people from similar geographical regions as they will have a better idea.

He also enlightened them all with the different ways of presenting their ideas, which can be compilations, articulated essays, newspaper or academic article, graphics, etc.



He suggested them to be as precise as possible in conveying their message and idea through their research. He also refined each of their topics and advised on the different ways they can make their ideas more impressive and interesting to listen to. Different methods can also be used to showcase the analysis of the data. Data from successful stories or case studies can be taken up for comparison and analysis can be done related to success, cost, time, etc.

Documentation can be done through personal interviews, small videos, illustrations to show the impact to the people. Field visits can also be very helpful in expressing the impactful stories.

Demonstration can be done to impose more impact on the listeners. Community can be involved to show the ground realities. Public participation is always helpful in imbuing more strength to the story.

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## CONCLUSION

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All the participants received a new perspective about their research topics, studies, ways of communicating, demonstrating, documenting, etc. They learnt different new ways of conversing with the academicians, experts, community, people's representatives, etc. Each of their topics were taken in detail by Mr. Omair who advised them ways of improving their communication skills and making their research more convincing and impressive.



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# INTERDISCIPLINARY RESEARCH TOOL-SHOP (VIRTUAL)

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**REPORT ON MODULE 3: QUANTITATIVE RESEARCH TOOLS**

04 - 06 OCTOBER.2021

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## MODULE 3: QUANTITATIVE RESEARCH METHODS

DAY 1: OCTOBER 04<sup>TH</sup>, MONDAY:

### USING GIS FOR INTERDISCIPLINARY MAPPING

The first session of the third module was presented by Ms. Suchita Jain, who is a GIS expert at SaciWATERs. She taught about the GIS software for inter-disciplinary mapping.

#### GIS – DESCRIBING OUR WORLD

We can describe any element of our world in two ways:

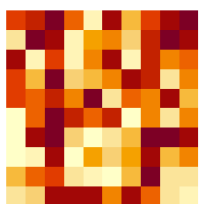
- Location information – Where is it?
- Attribute information – What is it?

With a spatial data, GIS can not only answer all questions related to 'W's, it can also answer questions about history like how a situation was earlier and how it is now. It can also tell about future like what will happen when there is no water left.

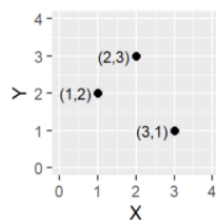
*'A picture tells a thousand words and a map tells a million – Alex Leith'*

Spatial (attribute data) and non-spatial data (spread sheets) together in one place can help in mapping. A clean and good database is required and an effective visualization of the same can help in an effective manner. The two data sets can be merged together using the location coordinates and can help in understanding the trends.

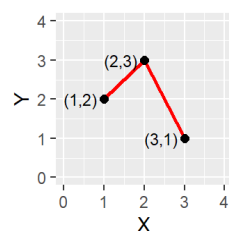
#### DATA REPRESENTATION FORMATS



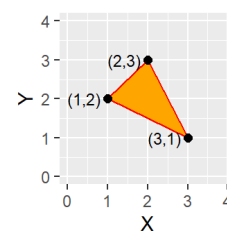
**Raster data**



**Point**



**Polyline**



**Polygon**

**Vector data**

- Raster data
  - Each pixel has some information
- Vector data
  - Point (when only vertices are there)
  - Polyline (when vertices are joined through paths)
  - Polygon (when a closed shape is formed by combining all paths and vertices)

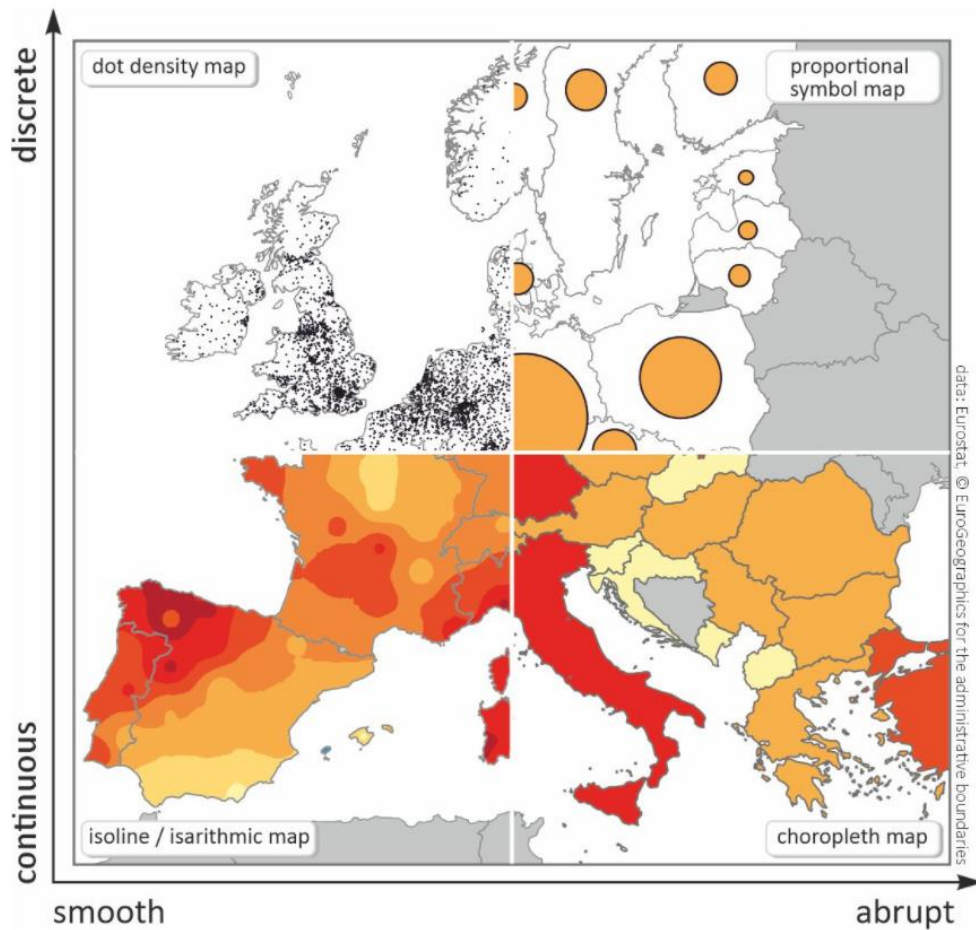
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### SINGLE VARIABLE MAPPING

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Different types of maps commonly used:

- Choropleth maps
  - Most widely used maps
  - 'Choro' – area and 'Pleth' – multitude
  - Colors are used to represent status of attributes
  - Better to use a single variable because the focus is on the distribution and not the size
- Proportionate/ Graduated symbol maps
  - Varying sized symbols representing relevant quantitative values
- Dot density maps
  - Exact locations are unavailable
  - 1 dot equals 1 information as mentioned in the map
  - Denser dots means more value and vice versa
- Isoline maps
  - Lines connecting data points of same values
  - Lighter shades universally mean less and vice versa



### MULTIVARIATE/ BIVARIATE MAPPING

These can also be called relationship mapping. If there are multiple variables, all can be combined together in a single map instead of making multiple maps. It is critical to decide how to combine the different variables.

- Bivariate choropleths
  - Combination of two single variable choropleths
  - Two variables shown in a single map
  - Complex to read
- Inter symbol
  - Combination of isoline map and dot map
- Intra symbol
  - Related information shown through symbols on a single map
- Labels
  - Different labels with different information shown on a single map

She then informed participants about some open source data available like 'bhuvan' i.e. <https://bhuvan.nrsc.gov.in/home/index.php> and other references like, <https://gistbok.ucgis.org/bok-topics/common-thematic-map-types> and

<https://alg.manifoldapp.org/read/introduction-to-cartography/section/31abbc19-43ec-4795-9b08-4d735d4b7e4b>

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### EXERCISE

She further gave an exercise to all the participants where she asked all of them to fill in some data like location, latitude and longitude coordinates, area, etc. in a shared excel sheet. She showed through google maps, how this filled information can be shown in a map. In the tab of 'your places', if one clicks on 'create map' the information can be imported from various sources. She imported the data from the excel sheet filled by all participants and the google map showed all the information filled on the map. Various other ways were also shown how the information can be displayed. She further enlightened that the google map just made can also be shared live with others, it can also be printed.

She then informed them about the various platforms available for downloading maps like 'Bhuvan' and WRIS, which is specifically for water resource information.

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### SPSS SOFTWARE

The presentation was continued by Dr. Manoj Jatav who is an associate fellow at VV Giri National Institute of Labor. He showed basics about IBM SPSS Statistics Data Editor. There are variables on x-axis and sample units or data or cases on y-axis in the dataset e.g. one row will be representing one household and all the different information will be in the columns as variables. He showed the different types of variables too and explained the ways of representing and using different datasets for further data analysis.



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DAY 2: OCTOBER 5<sup>TH</sup>, TUESDAY:

**SPSS I**

The second session of the third module was hosted by Dr. Manoj Jatav, who is an associate fellow at VV Giri National Institute of Labor and Dr. Arvind Pandey, who is a professor at TISS, Hyderabad.

He continued explaining the participants about the use of SPSS software. He used that syntax window is an advanced format of using the software for rigorous data analysis.

He suggested avoiding using dash, space, etc. which can be read as a special character in the variable name. He also suggested that the qualitative data can be converted into numeric data for better analysis. Qualitative data variables can be codified. Data can also be imported from other formats like csv, xlsx, etc.

The presentation was continued by Dr. Arvind Pandey, who is a professor at TISS, Hyderabad. He further explained how the software can be utilized for research and analysis.

Each of the labels have to be assigned and values need to be assigned for each of the variable, which have already been codified in the questionnaire. There is some 'missing' data too and if no value or label is assigned, the cell with missing data will be shown with a dot.

For detailed analysis, different options can be used in the output window to obtain different results from the same dataset. Three different output cases which can be used for output frequencies are:

- Filter out unselected cases
  - If one wishes to work in same dataset
- Copy selected cases to a new dataset
  - If one wishes to create a separate dataset
- Delete unselected cases
  - Only if very sure of deleting unnecessary dataset

Resetting after filter is very important otherwise the filtered data will be stuck in further analysis.

Coding can be done in case one wishes to analyze in respect to data intervals and data ranges. Even recoding is possible in case one wishes to choose a different range. Example for this kind of output is age group data analysis.

It is very important to assign IDs to all the variables. Computations can be done with the variables to come up with detailed analysis.

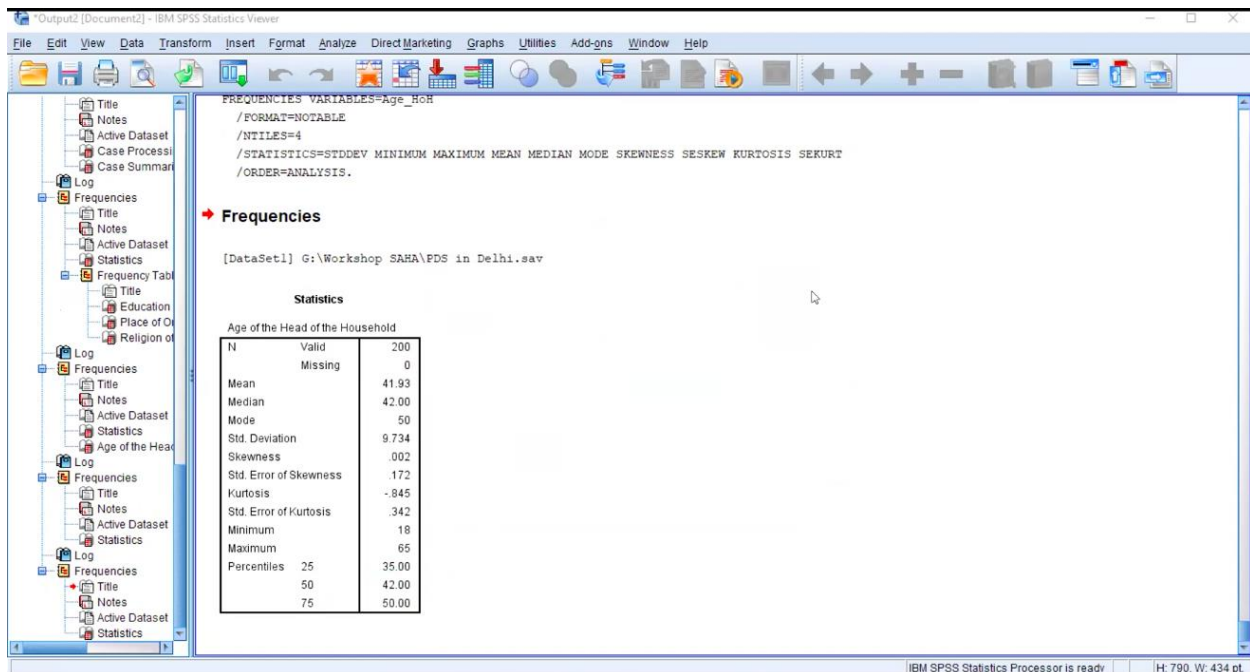
DAY 3: OCTOBER 6<sup>TH</sup>, WEDNESDAY:

SPSS II

The third session of the third module was presented by Dr. Manoj Jatav, who is an associate fellow at VV Giri National Institute of Labor and Dr. Arvind Pandey, who is a professor at TISS, Hyderabad.

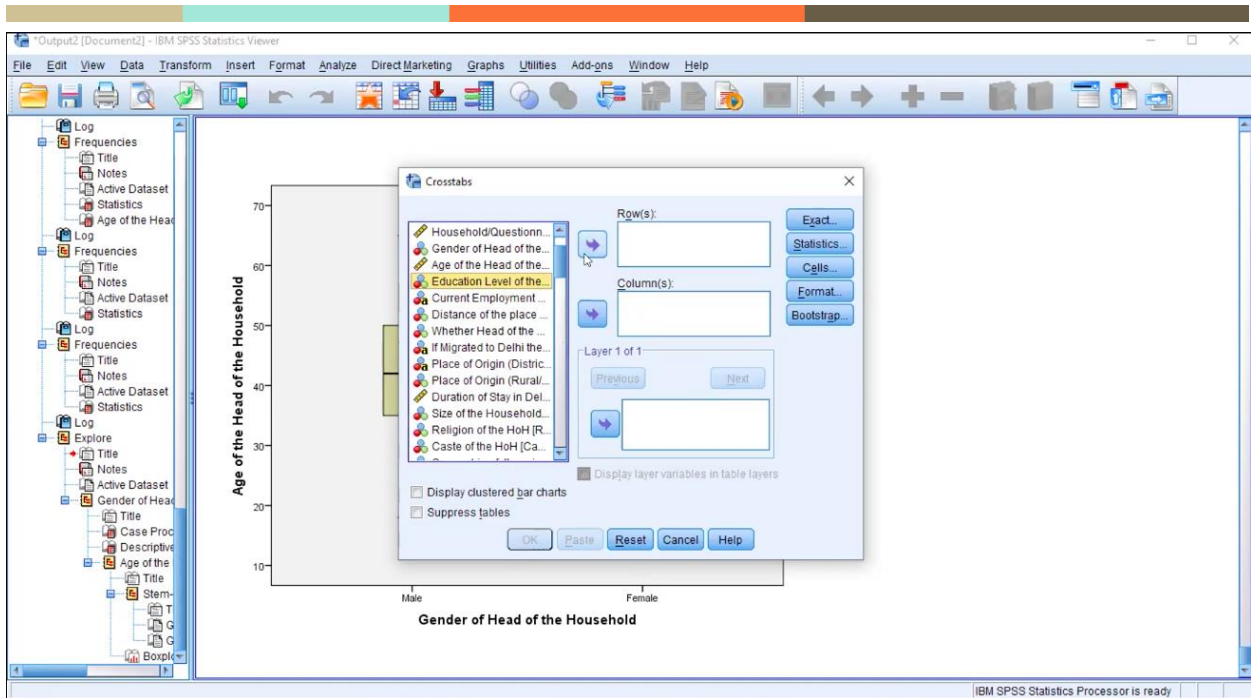
The session was initiated by Dr. Arvind Pandey who continued demonstrating the use of SPSS Statistics Data Editor software.

Codebook comes under reports and contains categorical and continuous variables. Assumption is that the data is normally distributed and there is a simple bell curve. Case summaries provide selected information for a particular variable. Other variables can also be grouped together to compare and analyze more information. There can be correlation done or regression or any other analysis depending upon the kind of output desired.



He further explained about the descriptive statistics which has four important functions:

- Frequencies – this gives a frequency table containing various variables
  - frequency, percent, valid percent, and cumulative percentages
- Descriptives
  - Detailed in nature
- Explore
  - get information and even plot it
- Crosstabs
  - Two different variables in rows and columns



These are many different ways of analyzing data through the following formulas or ways:

- Mean
- Median
- Mode
- Std. Deviation
- Skewness
- Std. Error of Skewness
- Kurtosis
- Std. Error of Kurtosis
- Minimum
- Maximum
- Percentiles

He further explained how the statistics helps in analyzing the data and checking if recoding is required.

He concluded by giving access to all the participants of a dataset, which he has created himself and will help them all guide with steps and detailed explanations.

## AGENDA

### INTERDISCIPLINARY RESEARCH TOOL-SHOP (Virtual)

Time: 4 pm to 6.00 pm IST\*

MODULE 1 – QUALITATIVE RESEARCH TOOLS  
2021

DATE: 27th Sep to 29th Sep

DATE	PROGRAM	RESOURCE PERSON
27th September 2021	Doing In-depth interviews and FGDs	Dr. Laxmi Vadapalli Thummuru, Senior Fellow, SaciWATERS
28th September 2021	Qualitative data coding and introduction to qualitative analysis software	Dr Premalatha Packirisamy, Professor, TISS-Mumbai
29th September 2021	Translation, Transcription, and Qualitative data management	Dr. Sreenita Mondal & Ms Shreya Chakraborty, Senior Fellows, SaciWATERS

MODULE 2: SCIENCE COMMUNICATION TOOL

DATE: 30th Sep to 2nd Oct 2021

30th September 2021	Methods for Reviewing, Citing, and Managing Literature and References	Dr. Sreenita Mondal & Ms Shreya Chakraborty, Senior Fellows, SaciWATERS
1st October 2021	Communicating Science to Communities and Policy makers	Ms Samskruta Talupula, Senior Project Officer, ICLEI Dr. Poulomi Banerjee, Senior Consultant, SaciWATERS
2nd October 2021	Popular Science Communication	Mr. Omair Ahmad, Managing Director, The Third Pole

MODULE 3: QUANTITATIVE RESEARCH TOOLS

DATE: 4th Oct to 6th Oct 2021

4th October 2021	Using GIS for interdisciplinary mapping	Ms Suchita Jain, GIS Expert, SaciWATERS
5th October 2021	SPSS – I	Dr. Manoj Jatav, Associate Fellow, VV Giri National Institute of Labour Dr. Arvind Pandey, Professor, TISS Hyderabad
6th October 2021	SPSS – II	Dr. Manoj Jatav, Associate Fellow, VV Giri National Institute of Labour Dr. Arvind Pandey, Professor, TISS Hyderabad

\*Time in Sri Lanka: 4 pm to 6 pm; Time in Nepal: 4.15 pm to 6.15 pm; Time in Bangladesh: 4.30 pm to 6.30 pm