



## ***Day 5***

# ***Community Service Project***

## ***Mentor Trainer Training Manual***

**Sep,2022**



**Day 5 - Offline Training - 7 hours + 1 hour lunch + 2 - 15 mins break**

Welcome	15		
Warm up	15		
Recap	15		
Agenda	5		
Grouping			
Activity 1 - Sharing 3 case studies	15		
Map key stakeholders and Decide the research methodology to be use and design questions according	30		
Sharing their questionnaire	45	135	9 am - 11:15 am
Break	15	15	11:15-11:30
Survey reporting - How to use tech to analyze data + How to analyze data with samples	70		
Activity to analyze data - drawing conclusions or next action items	30	100	11:30 am - 1:10 pm
Lunch Break	60		1:10pm - 2:10pm
Sharing analysis of data - within groups - Part 2	30		
Go through the findings of the case	20		
Warm up activity	15		
Role of a mentor - what student needs/ expectation and mentor interventions are required	30	110	2:10 pm - 4:00 pm
Break	15		4:00 pm - 4:15 pm
Group Sharing	20		
Role of a mentor Log book introduction with grading	30	105	4:00 pm - 5:45 pm



Problem solving for challenges that can arise for both students and mentor and their solutions	45		
Recall + closing	10		

### **Venue set-up**

1. Have the seating in a U shape or 2 layers of U ( to begin with), then teachers can regroup in smaller groups
2. Have posters of the program if possible with stakeholder details
3. Make sure the venue is ready before the participants arrive
4. Have music handy and play during times of thinking activity and when participants enter
5. Have a table with handouts, books, stationary, toffees to lighten the mood ( also can be shared to encourage participants and feedback forms )

### **Stationary required – Please add in more if required**

1. Notebooks
2. Post-it's
3. Chart paper
4. Projector
5. Board to write
6. Ball
7. A4 sheets
8. Prints/Handouts of the case studies
9. Sketch pens
10. Markers
11. Speaker and music

### **Facilitator actions to ensure through the day**

- Tagging
- Thanking responses/ encourage



- Asking open ended questions/probing
- Pausing for responses
- Since it is live, it can get chaotic. Ask a question and request them to raise hands ( follow tagging post that)
- Check for understanding - Thumbs up, rate of 5 etc.

**Session 1 - Welcome + Warm-up activity- recap - agenda**

**Grouping to design survey questions and sharing them whole group**

Outcomes	Participants will be able to <ol style="list-style-type: none"> <li>1. Participants are able to recall the Day 3 and 4 sessions</li> <li>2. Go through a case study and prepare a questionnaire for survey</li> <li>3. Share the survey with the group</li> <li>4. Check on the final survey method used and questions for that particular case study</li> </ol>
Time	135 minutes
Materials/prep	<p>PPT - Link the ppt here</p> <p>Notebook for each teacher</p> <p>A4 sheets , sketch pens, Chart paper, Case student print outs (</p> <ul style="list-style-type: none"> <li>- with all 3 case introduction in a page</li> <li>- individual case study with survey and data received for analysis</li> </ul>

Section	Instruction	Time
Welcome	- Welcome them with a smile	15 mins



	<ul style="list-style-type: none"> <li>- Hello greetings, Welcome and settle all in. Wait for the teachers to come</li> <li>- Teachers might come in late so expect it start maybe about 15 mins late</li> </ul>	
<p><b>Energiser (Mallika - how to facilitate in big number)</b></p>	<ul style="list-style-type: none"> <li>- Ask the participants to make an airplane out of the paper given to them.</li> <li>- Inform them that they have 5 mins to make the plane</li> <li>- Once they make the airplane, ask them to write the following things on the plane-             <ul style="list-style-type: none"> <li>● Their name</li> <li>● 2 questions they want to ask someone they have just met.</li> </ul> </li> <li>- Inform the participants to form groups of 5 in the the count of 1, 2, 3, 4 ,5</li> <li>- Ask the participants to form into the groups of 5 and stand in a circle</li> <li>- Ask them to throw the planes to another member in the circle</li> <li>- Ensure each member catches a plane</li> <li>- Once all the participants get the planes, one by one ask them to respond to the questions mentioned on the plane they caught</li> <li>- Inform them that they have 10 mins to do that</li> <li>- Give them a time check at intervals</li> <li>- Close the activity by thanking them for being so participatory</li> </ul>	<p><b>15 mins - mins</b></p>
<p><b>Recap (Mallika)</b></p>	<ul style="list-style-type: none"> <li>- Inform them that it is wonderful to see them all here.</li> <li>- Ask them since they have been a part of our trainings, what is the first activity we will start with</li> <li>- Collect a few responses</li> <li>- Tell they it is “Recap”</li> <li>- Today since we all are live here, let’s do a small activity for recap</li> </ul>	<p><b>15 mins</b></p>



	<ul style="list-style-type: none"> <li>- We have put out a chart with Day 3 and Day 4 mentioned on it, request you all to take a post it/pen and write one point you remember from Day 3 and 4 of the training sessions and post it in the relevant chart</li> <li>- You have 5 mins to complete this activity</li> <li>- Time check</li> <li>- Once you are done after 5 mins- Go through what the others have written on the chart.</li> <li>- Add in if any points strike you</li> </ul> <p>Summarize if required</p> <p>Day 3</p> <ul style="list-style-type: none"> <li>- Why You and Why are you here?</li> <li>- Your Expectations of the program</li> <li>- 8 weeks of the program for the students</li> <li>- Experience a section of the student curriculum</li> <li>*Identifying issues around us through observation and experience</li> <li>* Shortlisting problems</li> <li>*Mapping it to SDGs</li> <li>* Problem tree analysis, Framing the problem statement and research question</li> </ul> <p>And</p> <ul style="list-style-type: none"> <li>- Introduction to who is a facilitator and some facilitator actions</li> </ul> <p>Day 4</p> <ul style="list-style-type: none"> <li>● Go through Second half of the week 1 curriculum</li> <li>● Types of Research &amp; Survey Methods</li> <li>● Identifying Key Stakeholders for your survey</li> <li>● Introduction to tools for data collection</li> <li>● Identify key questions and tools for data collection</li> <li>● Facilitator Actions</li> <li>● Look at topics for Week 1 and 2 of student curriculum</li> </ul>	
<p><b>Agenda</b></p>	<ul style="list-style-type: none"> <li>- What do you think is next?</li> </ul>	<p><b>5 mins</b></p>



	<ul style="list-style-type: none"> <li>- Yes the agenda</li> <li>- Look at case studies, read them - Map the key stakeholders and prepare a survey questionnaire based on the research methodology decided</li> <li>- Look at tools needed for data analysis for Survey reporting</li> <li>- How to analyze data and draw conclusions or next action items</li> <li>- Role of a mentor , requirements of students</li> <li>- Introduction to grading system and log book design</li> <li>- Problem solving mentor issues/challenges</li> </ul>	
<p><b>Grouping the Activity 1 - Sharing 3 case studies</b></p>	<ul style="list-style-type: none"> <li>- Let's begin with the first session of the training today, inform the participants that we will be going through a case study and build on a research survey for the same</li> <li>- For this activity request you all to form groups of ( decide as per the classroom strength, ensure that there are not more than 6 groups</li> <li>- Read out the intro for each case study so the teachers are aware of the different types of case studies</li> <li>- Give each group a choice to choose from Arts, Commerce, Science cases</li> <li>- Check for understanding</li> </ul> <p><b><u>Case Study 1:</u></b></p> <p><b>Type: For Arts Students - Qualitative Focus Group Study</b></p> <p><b>Topic: Employing CBPR to Understand the Well-Being of Higher Education Students During Covid-19 Lockdown in India</b></p> <p><b>Task:</b></p> <ul style="list-style-type: none"> <li>- <b>Design research survey questions for participants</b></li> <li>- <b>What challenges did students face during this time?</b></li> </ul>	<p><b>15mins</b></p>



Link to Case: [CaseStudy1\\_Arts.pdf](#)

### **Case Study 2: Commerce**

**Type: Quantitative + Qualitative Study including Stakeholder Management**

**Topic: Tourism as an Additional Source of Rural Livelihoods: An Experience from Two Villages of Rajasthan**

**Task:**

- Design research survey questions for participants
- Who are the key stakeholders for this study?

Link to Case: [CaseStudy2\\_Commerce.pdf](#)

### **Case Study 3: Science**

**Type: Quantitative + Qualitative Study including educational intervention**

**Topic: The Effect of Community-Based Health Education Intervention on Management of Menstrual Hygiene among Rural Indian Adolescent Girls**

**Task:**

- Design research survey questions for participants





	<p>- <b>What education awareness campaign/strategy measures would you take?</b></p> <p><b>Link to Case:</b> <a href="#">CaseStudy3_Science.pdf</a></p>	
<p><b>Design survey question</b></p>	<p>- In this activity, you will be</p> <ol style="list-style-type: none"> <li>1. As a group review this '<a href="#">Socio Economic Survey Sample</a>'</li> <li>2. As a group come design the survey / interview questions</li> <li>3. You have 25 mins to complete the activity - mention end time</li> <li>4. Answer to question 2</li> <li>5. Check for understanding by asking a teacher to repeat</li> <li>6. Questions if any</li> <li>7. Begin! - Give time checks in between</li> <li>8. Time is up</li> </ol> <p><b>Facilitator note: Go around the classroom to hear what the teachers are discussing and probe them if required</b></p>	<p><b>30 mins</b></p>
<p><b>Group sharing</b></p>	<ul style="list-style-type: none"> <li>- At the end of 25 minutes, ask each group to present</li> <li>- Inform them that they have 5 mins each to complete the sharing</li> <li>- They have to share stakeholders, research methodology and the questions asked in the type of survey ( briefly the ones they think that stood out)</li> <li>- Ensure they are timed and participants do not exceed 5 mins</li> <li>- At the end of the session, thank the participants for participating and provide the entire case study for their study. Also, inform them that the case studies will also be shared with the students for their reference and learning</li> <li>- Let's take a quick 15 mins tea break, we will see you at _____</li> </ul>	<p><b>45mins</b></p>



**Session 2 - How to use tech to analyze data + How to analyze data received + Drawing conclusions/ check for hypothesis solutions / next action steps and report findings**

Outcomes	<p>Participants will be able to</p> <ol style="list-style-type: none"> <li>5. Participants learn/ get introduced to how tech is used to analyze data</li> <li>6. Participants understand how to analyze data</li> <li>7. Learn how to Draw conclusions, solutions or draw next steps for the case and report findings</li> </ol>
Time	90 minutes
Materials/prep	<p>PPT - Link the ppt here</p> <p>Notebook for each teacher</p> <p>A4 sheets , sketch pens, Chart paper, Case student print outs</p> <ul style="list-style-type: none"> <li>- individual case study with survey and data received for analysis</li> </ul>

Section	Instruction	Time
<p>Survey reporting - How to use tech to analyze data, draw conclusions or develop next steps + How to analyze data with samples (VAMSHI)</p>	<ul style="list-style-type: none"> <li>- Welcome back teachers</li> <li>- How are you feeling right now rate on a scale of 1-5, 1 being low and 5 being super charged</li> <li>- Now let's get back to the groups we were a part of before we went for the break</li> <li>- Are you all settled into your groups?</li> <li>- What is the next step?</li> <li>- Gather a few responses</li> <li>- Yes to conduct a survey, unfortunately since we are</li> </ul>	70mins



	<p>short of time we will not be practically conducting a survey in our sessions but the students will and they will be conducting this survey for 1 full week.</p> <ul style="list-style-type: none"><li>- Week 2 - the students will have to dedicate for actually going on ground and conducting the survey</li><li>- We will in the next activity go through the survey conducted for the case study we were discussing earlier.</li><li>- The next step after completing the survey is to ?</li><li>- Collect all data and analyze it</li><li>- This will help in a step called 'Survey reporting'</li><li>- What do you think is survey reporting ?</li><li>- Gather responses and share &lt; A survey report is a document with important metrics gathered from survey.. The goal of a survey report is to present the data in full, its analysis and presents all the results that were collected. .</li><li>- There are different methods and tools which we can use for analyzing data and reporting the survey with next steps or conclusions and your findings</li></ul> <p><b>Theory on Data Analysis:</b></p> <p>Your data analysis methods will depend on the type of data you collect and how you prepare it for analysis. The information mentioned here is for your reference, as per your interest and</p> <p>Data can often be analyzed both quantitatively and qualitatively. For example, survey responses could be analyzed qualitatively by studying the meanings of responses or quantitatively by studying the frequencies of responses.</p>	
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Research Method	Qualitative or Quantitative?	When to use?
Statistical Analysis	Quantitative	To analyze data collected in a statistically valid manner from surveys, and observations)
Thematic Analysis	Qualitative	To analyze data collected from interviews, focus groups or textual sources.

### A) Statistical Analysis

Statistical analysis means investigating trends, patterns, and relationships using quantitative data. It is an important research tool used by scientists, governments, businesses, and other organizations.

To draw valid conclusions, statistical analysis requires careful planning from the very start of the research process. You need to specify your hypotheses and make decisions about your research design, sample size, and sampling procedure.

After collecting data from your sample, you can organize and summarize the data using descriptive statistics. Then, you can use inferential statistics to formally test hypotheses and make estimates about the population. Finally, you can interpret and generalize your findings.

Now, we will understand how to perform Statistical Analysis through a 5 step process with a simple example.

Step 1: Write your hypotheses and plan your research design (examples below for your reference)

Research Question	Hypothesis	Null Hypothesis
What are the health benefits of eating an apple everyday?	Increasing apple as part of every day diet will result in decreasing frequency of doctor visits	Increasing apple as part of every day diet will have no effect on frequency of doctor visits
Which mobile networks have the worst signal quality?	Low-cost mobile networks are more likely to have bad signal quality	Low-cost and high-cost mobile networks are equally likely to have bad signal quality

Step 2: Choose Sample and estimate sample size

Step 3: Summarize your data with descriptive statistics

Step 4: Test hypotheses or make estimates with inferential statistics

Step 5: Interpret your results

**Example Research Question:**

Is there a relationship between parental income and college grade point average (GPA)?

**Step 1: Write your hypotheses and plan your research design**

The goal of research is often to investigate a relationship between variables within a population. You start with a prediction, and use statistical analysis to test that prediction.

A statistical hypothesis is a formal way of writing a prediction about a population. Every research prediction is rephrased into null and alternative hypotheses that can be tested using sample data.

	<p>While the null hypothesis always predicts no effect or no relationship between variables, the alternative hypothesis states your research prediction of an effect or relationship.</p> <p><b>Example Hypothesis:</b></p> <p><b>Null Hypothesis:</b> Parental income and GPA have no relationship with each other in college students</p> <p><b>Alternative Hypothesis:</b> Parental income and GPA are positively correlated in college students</p> <p><b>Plan your Research Design:</b></p> <p>A research design is your overall strategy for data collection and analysis. It determines the statistical tests you can use to test your hypothesis later on.</p> <p>First, decide whether your research will use a descriptive or correlational design.</p> <ul style="list-style-type: none"><li>• In a correlational design, you can explore relationships between variables (e.g., parental income and GPA) without any assumption of causality using correlation coefficients and significance tests.</li><li>• In a descriptive design, you can study the characteristics of a population or phenomenon (e.g., the prevalence of self-confidence amongst college students in Andhra Pradesh) using statistical tests to draw inferences from sample data.</li></ul> <p><b>Example Research Design:</b></p> <p><b>Null Hypothesis:</b> To collect your data, you will ask participants to fill in a survey and self-report their parents' incomes and their own GPA.</p> <p><b>Step 2: Choose Sample and estimate sample size</b></p> <p>Before recruiting participants, decide on your sample size either by looking at other studies in your field or using statistics. A sample that's too small may be unrepresentative of the sample, while a sample that's too large will be expensive.</p>	
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	<p>As a rule of thumb, a minimum of 30 units or more per subgroup is necessary. Additionally, there are many sample size calculators online available for you to explore.</p> <p><b>Step 3: Summarize your data with descriptive statistics</b></p> <p>Once you've collected all of your data, you can inspect them and calculate descriptive statistics that summarize them.</p> <p>Descriptive Statistics summarize and organize characteristics of a data set.</p> <p>There are 3 main types of descriptive statistics:</p> <ul style="list-style-type: none"><li>● <b>Distribution:</b> the frequency of each value/variable in numbers or %</li><li>● <b>Measures of Central tendency:</b> the averages of the values, the mean, median and mode are 3 ways of finding the average.</li></ul> <p><b>Mode:</b> the most frequent value.</p> <p><b>Median:</b> the middle number in an ordered dataset.</p> <p><b>Mean:</b> the sum of all values divided by the total number of values.</p> <li>● <b>Variability or dispersion:</b> how spread out the values are - the range, standard deviation and variance each reflect different aspects of spread.</li> <p><b>Range:</b> the highest value minus the lowest value of the data set.</p> <p><b>Interquartile range:</b> the range of the middle half of the data set.</p> <p><b>Standard deviation:</b> the average distance between each value in your data set and the mean.</p> <p><b>Variance:</b> the square of the standard deviation.</p>	
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The below table has a summary of formulas required for descriptive statistics

<i>Sample Mean, <math>\bar{x}</math></i>	$\frac{\sum x}{n}$
<i>Population Mean, <math>\mu</math></i>	$\frac{\sum x}{N}$
Sample Standard Deviation, (s)	$\sqrt{\frac{\sum(x-\bar{x})^2}{n-1}}$
<i>Population Standard Deviation, <math>\sigma</math></i>	$\sigma = \sqrt{\frac{\sum(x-\mu)^2}{N}}$
<i>Sample Variance, <math>s^2</math></i>	$s^2 = \frac{\sum(x_i-\bar{x})^2}{n-1}$
<i>Population Variance, <math>\sigma^2</math></i>	$\sigma^2 = \frac{\sum(x_i-\mu)^2}{N}$
Range, (R)	Largest data value – smallest data value

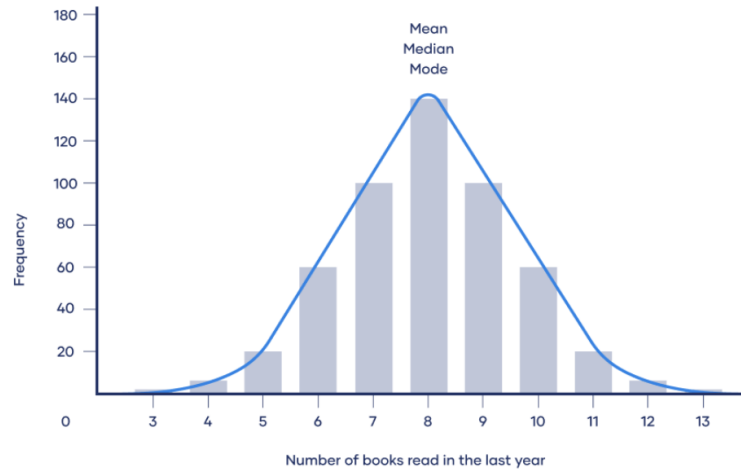
In addition to central tendency, the variability and distribution of your dataset is important to understand when performing descriptive statistics. The shape of the distribution and level of measurement should guide your choice of variability statistics. The interquartile range is the best measure for skewed distributions, while standard deviation and variance provide the best information for normal distributions.

#### **Normal Distribution:**

In a normal distribution, data is symmetrically distributed with no skew. Most values cluster around a central region, with values tapering off as they go further away from the center. The mean, mode and median are exactly the same in a normal distribution.



**Normal distribution: Number of books read in the last year**

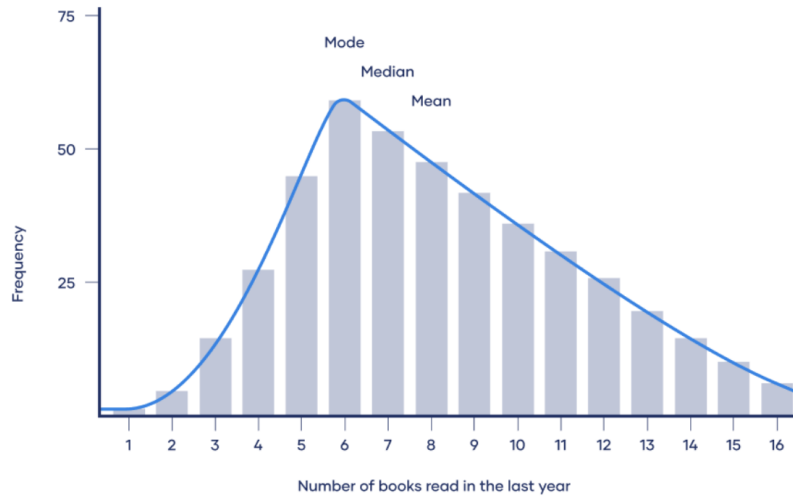


**Skewed Distributions:**

In skewed distributions, more values fall on one side of the center than the other, and the mean, median and mode all differ from each other. One side has a more spread out and longer tail with fewer scores at one end than the other. The direction of this tail tells you the side of the skew.

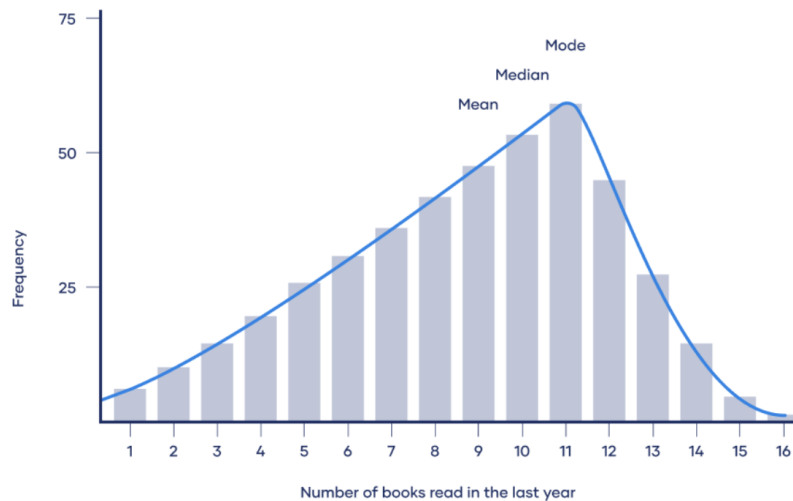
In a positively skewed distribution, there’s a cluster of lower scores and a spread out tail on the right. In a positively skewed distribution, mode < median < mean.

### Positively skewed distribution: Number of books read in the last year



In a negatively skewed distribution, there's a cluster of higher scores and a spread out tail on the left. In a negatively skewed distribution, mean < median < mode.

### Negatively skewed distribution: Number of books read in the last year



### Example Descriptive Statistics:

After collecting data from 653 students, you tabulate descriptive statistics for annual parental income and GPA.

It's important to check whether you have a broad range of data points. If you don't, your data may be skewed towards some groups more than others (e.g., high academic achievers), and only limited inferences can be made about a relationship.

	Parental Income (INR)	Student G
<b>Mean</b>	62,100	3.12
<b>Standard deviation</b>	15,000	0.45
<b>Variance</b>	225,000,000	0.16
<b>Range</b>	8,000–378,000	2.64 –4.00
<b>N</b>	653	

Next, we can compute a correlation coefficient and perform a statistical test to understand the significance of the relationship between the variables in the population.

	<p><b>Step 4: Test hypotheses or make estimates with inferential statistics</b></p> <p>Inferential statistics help you come to conclusions and make predictions based on your data. With inferential statistics, it's important to use random and unbiased sampling methods. If your sample isn't representative of your population, then you can't make valid statistical inferences.</p> <p>Using inferential statistics, you can make conclusions about population parameters based on sample statistics.</p> <ul style="list-style-type: none"><li>• A statistic is a measure that describes the sample (e.g., sample mean).</li><li>• A parameter is a measure that describes the whole population (e.g., population mean)</li></ul> <p>Sampling error is the difference between a parameter and a corresponding statistic. Since in most cases you don't know the real population parameter, you can use inferential statistics to estimate these parameters in a way that takes sampling error into account.</p> <p>There are two important types of estimates you can make about the population: point estimates and interval estimates.</p> <ul style="list-style-type: none"><li>• A point estimate is a single value estimate of a parameter. For instance, a sample mean is a point estimate of a population mean.</li><li>• An interval estimate gives you a range of values where the parameter is expected to lie. A confidence interval is the most common type of interval estimate.</li></ul> <p>Both types of estimates are important for gathering a clear idea of where a parameter is likely to lie.</p> <p>A confidence interval uses the variability around a statistic to come up with an interval estimate for a parameter. Confidence intervals are useful for estimating parameters because they take sampling error into account.</p>	
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	<p>A confidence level tells you the probability (in percentage) of the interval containing the parameter estimate if you repeat the study again.</p> <p><b>Example:</b> A 95% confidence interval is usually used, you can use the same. It means that if you repeat your study with a new sample in exactly the same way 100 times, you can expect your estimate to lie within the specified range of values 95 times.</p> <p><b>Hypothesis Testing:</b></p> <p>Using data from a sample, you can test hypotheses about relationships between variables in the population. Hypothesis testing starts with the assumption that the null hypothesis is true in the population, and you use statistical tests to assess whether the null hypothesis can be rejected or not.</p> <p>Statistical tests determine where your sample data would lie on an expected distribution of sample data if the null hypothesis were true. These tests give two main outputs:</p> <ul style="list-style-type: none"> <li>• A test statistic tells you how much your data differs from the null hypothesis of the test.</li> <li>• A <math>p</math> value tells you the likelihood of obtaining your results if the null hypothesis is actually true in the population.</li> </ul> <p>Statistical tests come in three main varieties:</p> <ul style="list-style-type: none"> <li>• <b>Comparison tests:</b> assess group differences in outcomes.</li> <li>• <b>Regression tests:</b> assess cause-and-effect relationships between variables.</li> <li>• <b>Correlation tests:</b> assess relationships between variables without assuming causation.</li> </ul> <p>Your choice of statistical test depends on your research questions, research design, sampling method, and data characteristics.</p> <p><b>Introduction to t-test:</b></p> <p>A t-test is a statistical test that is used to compare the means of two groups. It is often used in hypothesis testing to determine whether a process or treatment actually has an effect on the</p>	
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	<p>population of interest, or whether two groups are different from one another.</p> <p>When choosing a t-test, you will need to consider two things: whether the groups being compared come from a single population or two different populations, and whether you want to test the difference in a specific direction.</p> <p><b>One-sample, two-sample, or paired t-test?</b></p> <ul style="list-style-type: none"><li>• If the groups come from a single population (e.g. measuring before and after an experimental treatment), perform a paired t-test.</li><li>• If the groups come from two different populations (e.g. two different species, or people from two separate cities), perform a two-sample t-test (a.k.a. independent t-test).</li><li>• If there is one group being compared against a standard value (e.g. comparing the acidity of a liquid to a neutral pH of 7), perform a one-sample t-test.</li></ul> <p><b>One-tailed or two-tailed t-test?</b></p> <ul style="list-style-type: none"><li>• If you only care whether the two populations are different from one another, perform a two-tailed t-test.</li><li>• If you want to know whether one population mean is greater than or less than the other, perform a one-tailed t-test.</li></ul> <p><b>Performing the t-test:</b></p> <p>Excel is a great tool to perform the t-test, this link can be followed to understand and perform the step-by-step process - <a href="https://statisticsbyjim.com/hypothesis-testing/t-tests-excel/">https://statisticsbyjim.com/hypothesis-testing/t-tests-excel/</a>. Additionally, you can google search for 'how to perform t-tests on excel' and learn from what suits you best.</p> <p>If you want to explore the test manually, you can see below:</p> <p>The formula for the two-sample t-test is shown below.</p> $t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{(s^2(\frac{1}{n_1} + \frac{1}{n_2}))}}$	
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	<p>In this formula, <math>t</math> is the <math>t</math>-value, <math>x_1</math> and <math>x_2</math> are the means of the two groups being compared, <math>s_2</math> is the pooled standard error of the two groups, and <math>n_1</math> and <math>n_2</math> are the number of observations in each of the groups.</p> <p>A larger <math>t</math>-value shows that the difference between group means is greater than the pooled standard error, indicating a more significant difference between the groups.</p> <p><b>Example: t-test Result</b></p> <p>Since you expect a positive correlation between parental income and GPA, you use a one-sample, one-tailed <math>t</math> test. The <math>t</math> test gives you:</p> <p><math>t</math> value of 3.08 and a <math>p</math> value of 0.001</p> <p><b>Step 5: Interpret your results</b></p> <p><b>Statistical significance</b></p> <p>The significance level, or alpha (<math>\alpha</math>), is a value that the researcher sets in advance as the threshold for statistical significance. In a hypothesis test, the <math>p</math> value is compared to the significance level to decide whether to reject the null hypothesis.</p> <ul style="list-style-type: none"><li>• If the <math>p</math> value is higher than the significance level, the null hypothesis is not rejected, and the results are not statistically significant.</li><li>• If the <math>p</math> value is lower than the significance level, the results are interpreted as rejecting the null hypothesis and reported as statistically significant.</li></ul> <p>Usually, the significance level is set to 0.05 or 5%. That means your results must have a 5% or lower chance of occurring under the null hypothesis to be considered statistically significant.</p> <p><b>Note: Statistically significant results are considered unlikely to have arisen solely due to chance. There is only a very low chance of such a result occurring if the null hypothesis is true in the population.</b></p>	
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	<p><b>Example: Result Interpretations</b></p> <p>You compare your p value of 0.001 to your significance threshold of 0.05. With a p value under this threshold, you can reject the null hypothesis. This indicates a statistically significant correlation between parental income and GPA in college students.</p> <p>Note that correlation doesn't always mean causation, because there are often many underlying factors contributing to a complex variable like GPA. Even if one variable is related to another, this may be because of a third variable influencing both of them, or indirect links between the two variables.</p> <p><b>B) Thematic Analysis</b></p> <p>Thematic analysis is a method where you're trying to find out something about people's views, opinions, knowledge, experiences or values by analyzing qualitative data. It is usually applied to a set of texts from surveys, interviews or focus groups. You will closely examine the data to identify common themes – topics, ideas and patterns that come up repeatedly.</p> <p>Some types of research questions you can use thematic analysis to answer:</p> <ul style="list-style-type: none"><li>• How do patients perceive doctors in a government hospital?</li><li>• What are young women's experiences about inequality in their daily life?</li><li>• How is the support system for financial assistance from banks?</li></ul> <p>Thematic analysis is subjective and relies on the researcher's judgement, so you have to reflect carefully on your own choices, beliefs and interpretations.</p> <p>There are two types of approaches for Thematic Analysis:</p> <ol style="list-style-type: none"><li>1) <b>Inductive Approach:</b> is a method of drawing conclusions by going from the specific to the general or bottom-up reasoning. It is a logical approach to making inferences, or conclusions. People often use inductive reasoning informally</li></ol>	
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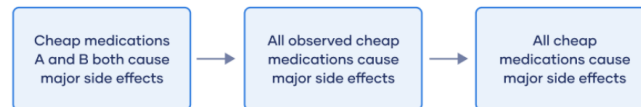


in everyday situations.

### Inductive reasoning



#### Example



### Examples: Inductive Approach

Stage	Example 1	Example 2
Specific Observation	Charlie is a brown dog and he barks loudly	Baby Riya said her first word at the age of 12 months
Pattern Recognition	Every brown dog I met barks loudly	Every girl baby I saw says their first word at 12 months
General Conclusion	All brown dogs bark loudly	All girl babies say their first word at the age of 12 months

**2) Deductive Approach:** is a method where you progress from general ideas to specific conclusions or top-down reasoning.

In deductive reasoning, you'll make an argument for a certain idea. You make an inference, or come to a conclusion, by applying different premises.

### Deductive reasoning

Existing theory

→

Formulate hypothesis

→

Collect data

→

Analyze data

→

Do/don't reject hypothesis

Example

All biological life depends on water to exist

→

All land mammals depend on water to exist

→

Study all land mammal species to see if they depend on water

→

All land mammal species depend on water

→

Null hypothesis does not get rejected

A premise is a generally accepted idea/fact/rule. It's a statement that lays the groundwork for a theory/idea. Conclusions are statements supported by premises.

In a simple deductive logic argument, you'll often begin with a premise, and add another premise. Then, you form a conclusion based on these two premises. This format is called "premise-premise-conclusion."

**Examples: Deductive Approach**

Stage	Example 1	Example 2
Premise	All insects have exactly 6 legs	Blue Litmus paper turns red in the presence of acid
Premise	Spiders have eight legs	The blue litmus paper turned red when I poured some liquid on it
Conclusion	Therefore, spiders are not insects	Therefore, the liquid is acidic

Now we will understand how to perform ‘Thematic Analysis’ with a six-step process:

1. Familiarization
2. Coding
3. Generating Themes
4. Reviewing Themes
5. Defining and Naming themes
6. Summary

### 1. Familiarization

The first step is to get to know our data. It’s important to get a thorough overview of all the data we collected before we start analyzing individual items.

This can involve transcribing audio, reading through the text and taking initial notes, and generally looking through the data to get familiar with it.

### 2. Coding

Next up, we need to code the data. Coding means highlighting sections of our text – usually phrases or sentences – and coming up with shorthand labels or “codes” to describe their content.

Let’s take a short example text. Say we’re researching perceptions of safety in online payments (UPI, Netbanking) among participants aged 50+. We have collected data through a series of interviews. An extract from one interview looks like this:

Interview Extract	Codes
<p>Personally, I’m not sure. I think many people are using it, but I don’t know why or how. People say you should trust the system and it’s safe, but what if they have hidden benefits in this? I’m not saying they’re wrong, I’m</p>	<ul style="list-style-type: none"> <li>● Uncertainty</li> <li>● Acknowledgement and awareness</li> <li>● Lack of trust in system</li> <li>● Difficult to</li> </ul>

	<p>just saying there's reasons not to 100% trust them. The rules keep changing – I can't do any transactions outside banks.</p> <p>accept change</p>							
<p>In this extract, we've highlighted various phrases in different colours corresponding to different codes. Each code describes the idea or feeling expressed in that part of the text.</p> <p>At this stage, you should be thorough: go through the transcript of every interview and highlight everything that jumps out as relevant or potentially interesting. As well as highlight all the phrases and sentences that match these codes, we can keep adding new codes as we go through the text.</p> <p>After going through the text, collate all the data together into groups identified by code. These codes will give a condensed overview of the main points and common meanings that recur throughout the data.</p> <p><b>3. Generating Themes</b></p> <p>Next, look over the codes you've created, identify patterns among them, and start coming up with themes.</p> <p>Themes are generally broader than codes. Most of the time, you'll combine several codes into a single theme. In our example, we can combine codes into themes like this:</p>								
<table border="1"> <thead> <tr> <th data-bbox="441 1537 899 1608">Codes</th> <th data-bbox="899 1537 1247 1608">Theme</th> </tr> </thead> <tbody> <tr> <td data-bbox="441 1608 899 1747"> <ul style="list-style-type: none"> <li>• Uncertainty</li> <li>• Lack of knowledge</li> <li>• Alternative explanations</li> </ul> </td> <td data-bbox="899 1608 1247 1747"> <ul style="list-style-type: none"> <li>• Uncertainty</li> </ul> </td> </tr> <tr> <td data-bbox="441 1747 899 1898"> <ul style="list-style-type: none"> <li>• Fear of being cheated by system</li> <li>• Lack of trust in system</li> </ul> </td> <td data-bbox="899 1747 1247 1898"> <ul style="list-style-type: none"> <li>• Lack of trust in system</li> </ul> </td> </tr> </tbody> </table>			Codes	Theme	<ul style="list-style-type: none"> <li>• Uncertainty</li> <li>• Lack of knowledge</li> <li>• Alternative explanations</li> </ul>	<ul style="list-style-type: none"> <li>• Uncertainty</li> </ul>	<ul style="list-style-type: none"> <li>• Fear of being cheated by system</li> <li>• Lack of trust in system</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of trust in system</li> </ul>
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	<ul style="list-style-type: none"> <li>• Distrust of technology</li> </ul> <p>Some codes are too vague or not relevant enough (for example, because they don't appear very often in the data), they can be grouped with similar codes as themes. Create potential themes that tell something helpful about the data.</p> <p><b>4. Reviewing Themes</b></p> <p>Now make sure that the themes are useful and accurate representations of the data. Review the data set and compare themes against it. Check if you are missing anything? Are the themes really present in the data? What can you change to make the themes work better? If you encounter problems with the themes, split them up, combine them, discard them or create new ones: whatever makes them more useful and accurate.</p> <p><b>5. Defining and naming Themes</b></p> <p>Now that you have a final list of themes, it's time to name and define each of them.</p> <p>Defining themes involves formulating exactly what you mean by each theme and figuring out how it helps you understand the data.</p> <p>Naming themes involves coming up with a succinct and easily understandable name for each theme.</p> <p><b>6. Summary</b></p> <p>Finally, synthesise your analysis of the data using the below key points:</p> <p>Follow the report format provided, ensure you also include a methodology section, describing how you collected the data (e.g. through structured interviews or open-ended survey questions or focus groups and explaining how you conducted the thematic analysis itself.</p> <p>The results or findings section usually addresses each theme in turn. Describe how often the themes come up and what they mean,</p>	
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	<p>including examples from the data as evidence. Finally, in the conclusion explain the main takeaways and show how the analysis has answered the research question.</p>	
<p><b>drawing conclusions or next action items</b></p>	<ul style="list-style-type: none"> <li>- Now that we have gone through how to report a survey</li> <li>- Let’s look at the case study we were working on this morning</li> <li>- Share the case study survey questions and the data collected</li> <li>- In this activity you will be             <ul style="list-style-type: none"> <li>● Spend the First 10 mins looking at the stakeholders identified, survey conducted and the data collected during the survey</li> <li>● Next look at the tools used to collect data and for analysis</li> <li>● Analyze the data</li> <li>● State your findings and what the next steps should be</li> </ul> </li> <li>- You have 20 mins to complete the task</li> <li>- Give time checks</li> <li>- Add an additional 5 mins if required</li> </ul> <p><b>Facilitator note: Go around the classroom to hear what the teachers are discussing and probe them if required</b></p>	<p><b>30 mins</b></p>

Session 3 - Warm up activity, Group sharing,



Outcomes	<p>Participants will be able to</p> <ol style="list-style-type: none"> <li>8. Participants keenly observe the case studies and it's findings</li> <li>9. Participants understand the role of a mentor and the interactions/interventions required</li> </ol>
Time	110 minutes
Materials	<p>PPT -Will be shared</p> <p>Notebook for each teacher</p>

Section	Instruction	Time
<b>Group sharing</b>	<ul style="list-style-type: none"> <li>- Inform them that we will continue with the group sharing activity</li> <li>- Share your findings and what steps should be taken next</li> <li>- Add in any other points you found interesting or struck you</li> <li>- Ensure the participants stick to a time limit</li> <li>- Congratulate and thank them for being a part of this activity</li> </ul>	<b>30 mins</b>



<p><b>Go through the actual survey and it's findings</b></p>	<ul style="list-style-type: none"><li>- Inform them that Now let's spend the next 10 mins go through what were the actual findings of the case and the next steps they took.</li><li>- Do a group discussion on</li><li>- What are some similarities and differences between the actual findings and the one they made as a group</li></ul> <p>Debrief</p> <ul style="list-style-type: none"><li>- Ask the participants how they felt doing this activity</li><li>- What are somethings that stood out for them</li><li>- How was working with your group so far</li></ul> <p>&lt;Inform them that the students will get an opportunity to go through these surveys in their student curriculum and go through a similar process of learning individually&gt;</p> <p>With this we have completed the cycle of Socio Economic survey and it's reporting</p> <p>This is the completion of week 1 and 2 for the students. We will be looking at the rest in Day 6 session</p>	<p><b>20</b></p>
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<p><b>Warm up activity</b></p>	<ul style="list-style-type: none"> <li>- Inform them we will doing a fun activity, let's form new groups of 6-7 members</li> <li>A. Challenge: "I have a challenge for you all!"</li> <li>B. End Goal: "The goal of this activity is to bring this pipe down from the shoulder length of the tallest person in the group to the ground. &lt;Show the pipe&gt;</li> <li>C. Guideline: "There are some guidelines for you to follow:             <ul style="list-style-type: none"> <li>a. The pipe must only rest on your index fingers</li> <li>b. Your index fingers should only be parallel. Not up-down- facing down or up, and neither should you hold the pipe at any point &lt;Show all of this without the pipe&gt;</li> <li>c. The pipe must stay in contact with index fingers of ALL the members ALL the time till the task is delivered.</li> <li>d. Every time you digress or catch yourself from not following the guidelines: "you start the task again.."</li> </ul> </li> <li>D. Expectation: "I expect you to correct yourself without me calling out.."</li> <li>E. Time: Option 1: "How much time do you think you will take to complete this challenge?" Option 2: "I give you 7 mins: Do you need more or less?" Facilitator can extend the time by 3 more mins which would make it 10 mins collectively.</li> <li>F. Questions: "Do you have any questions about this challenge?"</li> </ul> <p><b>Debrief</b></p> <ul style="list-style-type: none"> <li>a. How was the experience?Talk to me about it a little.</li> <li>b. What did you personally have to do to make sure the pipe did not drop?</li> <li>c. What did you need the others to do?</li> </ul> <p><i>Facilitator Note: Look out for responses that talk about cooperation, communication, coordination and most importantly how each members' presence was important to make this happen.</i></p> <ul style="list-style-type: none"> <li>a. We are starting on an adventure together.</li> </ul>	<p><b>15</b></p>
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	<p>b. Just like in the exercise, if we do not work together as one team, we won't get much done . Each of us have a role to play and the program will not go forward without your complete cooperation, coordination and help. You all play a very important role.</p>	
<p><b>Introduction the role of a mentor</b></p>	<ul style="list-style-type: none"> <li>- Inform them that as they are aware, a group of 15 students will report to a mentor who is a faculty from the college or region the students belong to</li> <li>- They will be updating their project's progress to the mentors</li> <li>- Let's now look at the role of a mentor and the activities he/she has to do for a successful completion of this project</li> <li>- In this activity we want you to map two things</li> <li>- In first half the sheet write down all the support and help a student will need from a mentor</li> <li>- In the second half side write down all the things a mentor can do to help the student from his/her side</li> <li>- Let's think of all the minutest help required or can be done to ensure this project can be a success</li> <li>- You have 20 mins to work on this ( 10 minutes on each side)</li> <li>- Inform them that their responses will help us plan the project better and set a role for the mentors</li> <li>- Give a time check at 10 mins</li> <li>- Give an additional 5-10 mins if required</li> <li>- Thank them for being a part of this activity and inform them that we will be taking a 15 min break now</li> <li>- Once we are back we will noting down your responses</li> </ul>	<p><b>30</b></p>



**Session 4 - Understanding the roles of mentors, student expectations and challenges faced.**

Outcomes	<p>Participants will be able to</p> <ol style="list-style-type: none"> <li>10. Participants will be able to identify issues or challenges that could come up</li> <li>11. Share solutions for the problems or challenges</li> <li>12. Understand the log book and grading</li> </ol>
Time	105 minutes
Materials	<p>PPT - <a href="#">Link the ppt here</a></p> <p>Notebook for each teacher</p>

Section	Instruction	Time
<b>Group sharing</b>	<ul style="list-style-type: none"> <li>- We will now look at the responses</li> <li>- While sharing request you all to share top 3 needs from the students</li> <li>- 3 things the mentors can do to fulfill the needs</li> <li>- Thank you teachers for sharing</li> <li>- We will go back to our team and discuss how some of these needs can be met by the mentors or be added in the curriculum</li> </ul>	<b>20-30</b>



<p><b>Role of a mentor</b> <b>Log book introduction with grading</b></p>	<ul style="list-style-type: none"> <li>- Here's a quick summary of what we think you as mentor will have to do</li> <li>- Meet the students before they begin their projects</li> <li>- Handover the student curriculum and the log book template</li> <li>- Be available on calls for the students to ask questions/doubts</li> <li>- Meet them mid project to see progress</li> <li>- Check on log completions</li> <li>- Approve project completion</li> <li>- Grade the project</li> </ul>	<p><b>10</b></p>
<p><b>Detailed project grading</b></p>	<ul style="list-style-type: none"> <li>- Let's go through in detail how you will be grading the project</li> <li>- Share the 3 pager shared by the govt</li> <li>- Let the teachers go through it in detail</li> <li>- QnA if there are any questions</li> </ul>	<p><b>15 mins</b></p>
<p><b>Introduction to log book design</b></p>	<ul style="list-style-type: none"> <li>- Here's how the logs will look like</li> <li>- After each milestone the student is suppose to log it in a format mentioned in their student curriculum</li> <li>- For example after they begin their project approximately on Day 2 they are suppose to log in - <b>Log in the 5 top personal issues in the environment identified, mapping to SDG and their solutions</b></li> <li>- Similarly there are different milestones they have to log in</li> <li>- Let's spend the next 5 mins going through the logs</li> <li>- Please feel free to ask questions after we have gone through it for the next 5 mins</li> <li>- QnA</li> </ul>	<p><b>10 mins</b></p>



<b>Problem and solving</b>	<ul style="list-style-type: none"><li>- Mentors now that you know what the student expectations or requirements are and what all is needed from your end ?<ul style="list-style-type: none"><li>- Do you foresee any challenges that could be there from the mentors end and the students end</li></ul></li><li>- Let's first focus on what challenges you think you will be facing</li><li>- Second write down the challenges students will be facing</li><li>- You can refer to the previous chart, look at the tasks the mentors have to do and what we shared</li><li>- Put down challenges you think will be there</li><li>- You have 10 mins to work on the challenges</li><li>- CFU, Time check</li><li>- Now let's look at solving those challenges</li><li>- You have 10 mins to work on the solutions for the challenges you listed down</li><li>- Time's up</li><li>- Can each group share top 3 challenges you think will be there and the solutions for it</li><li>- Get each group to share</li><li>- Note down their responses</li></ul>	<b>45mins</b>
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	<ul style="list-style-type: none"><li>- Thank you the teachers and inform them that this part is very important for us as we can use the problems they shared and come up with better planning for the project.</li></ul>	
<b>Recall + Closing</b>	<p>We are towards the end of the session today.</p> <p>Let's quickly see what all we did</p> <ul style="list-style-type: none"><li>- Look at case studies, read them - Map the key stakeholders and prepare a survey questionnaire based on the research methodology decided</li><li>- Look at tools needed for data analysis for Survey reporting</li><li>- How to analyze data and draw conclusions or next action items</li><li>- Role of a mentor , requirements of students</li><li>- Introduction to grading system and log book design</li><li>- Problem solving mentor issues/challenges</li></ul> <p>Poll - Ask them how are their energy level rate from 1-5, 1 being low and 5 being high</p> <ul style="list-style-type: none"><li>- Inform them that - Before we let you go please fill in the feedback form.</li><li>- See you all for the next session - inform details</li></ul>	<b>10 mins</b>

