

Session 1

Introduction to Research Methodology

1.1 What is research?

- Research can be simply conceived as a creation/advancement of (new) knowledge.
- Researching also can be conceived as forming expectations about reality & testing them against the reality
- Research can also be thought as moving from “known” to “unknown”

1.2 Why research is important?

- A way of obtaining information
- Other methods;
 - Consult Experts
 - Review Books & Articles
 - Ask Questions
 - Observe
 - Own Experience
 - Intuition

But they can be incorrect!

- This is why knowledge of “Scientific Research Methodology” can be of value.
- The information obtained through this method is accurate and reliable, always.

1.3 Types of research

- Experimental Research

Most conclusive type of research and is conducted by directly attempting to influence a particular variable. Experimental research can really test hypotheses about cause and effect relationships. Researcher decides;

- Nature of the treatment
- To whom it is applied &
- To what extent

Eg: Effect of teaching method on teaching effectiveness

- Correlation Research

Relationships among two or more variables are studied without any attempt to influence them. This method helps to make accurate predictions about the variables that were studied. There is no manipulation / intervention from the researcher and the relationship between the variables can be either positive or negative. Helps to either explain important human behaviours or to predict likely outcomes

Eg: Performance at math & family background

- Causal – Comparative Research

Attempts to determine the cause or consequences or differences that already exist between or among groups of individuals. This method is comparable with co relational research

Eg: Effect of diet on very young children

- Survey Research

Information is collected from a group of people in order to describe some aspect / characteristic of the population of which that group is a part. The main technique that is being used for data collection is questionnaire. Normally data are collected from a sample.

Eg: Department Head wants to find out how students feel about a new degree programme

- Qualitative Research

This method provides more holistic impression. Mostly the data are presented as a narrative description. Data are always collected at the natural setting without making any changes or manipulations to the subjects. Data is collected in qualitative form, eg: as words / pictures rather than numbers. The collected data are analyzed using inductive methods.

Eg: Teaching English in primary grades

Different types of qualitative research methods that are available are;

- Case Studies
- Ethnography
- Anthropology

1.4 Scientific process

Below given steps can be included into the scientific process;

- Define a problem
- Gather data and information
- Formulate an explanatory hypothesis
- Test the hypotheses by performing an experiment and collecting data in a reproducible manner
- Analyze the data
- Interpret the data and draw conclusions

Session 2

Compiling the Research Proposal

2.1 What is a research proposal?

“A research proposal is a written account of the research topic you have chosen and why, a plan of your future research and an explanation of how you will achieve it” (Hussey and Hussey, 1997: 130).

From the above definition of a research proposal it is clear that it addresses 3 major questions:

| No. | Question | Focus | Area |
|-----|----------|----------------------|-----------------------------|
| 1. | What | What am I doing? | Research topic |
| 2. | Why | Why am I doing this? | Research justification |
| 3. | How | How am I doing it? | Research method/methodology |

The classification discussed above will form the basis for including specific information in the proposal. This information can be identified using the main questions you will try to answer when drafting your project proposal:

2.1.1. What?

- (a) What is my proposal about?
- (b) Is my proposal interesting, important and relevant?
- (c) What are the aims, objectives and research questions?
- (d) What outcomes and benefits do I expect from the research?

2.1.2. Why?

- (e) Why is my research (proposal) special or unique?
- (f) Has anyone else done work in this area?

2.1.3. How?

- (g) How do I intend doing the research?

(h) What is my timeframe?

2.2. Why is a proposal important?

(a) Funding

A sound research proposal forms the basis for funding in many organizations. Such a proposal is often presented orally and as a document in the presence of a panel of experts in the relevant field.

(b) Qualification for entry into academia

In most research degrees, in addition to mainstream academic qualifications, a research proposal is an important document to verify the suitability of the candidate's credentials to the University or research organization. In addition, the admission of an applicant can be decided on the basis of the availability of suitable research supervisors in that organization/University.

(c) Progress and monitoring

In highly focused and specialist research settings, the research proposal serves as a mechanism for checks and balances.

(d) Drawing the line for research

Most research proposals have a specific domain or area of study and application. Such a domain or scope can be easily identified in the research proposal. In the event of a convergence of two areas or fields, such a convergence can also be identified clearly. In other words the reader of any proposal can identify what the research intends doing and what its boundaries would be.

(e) Communication

The research proposal is also the official document that communicates the intention of the researcher. In cases where ethics clearances and other formalities have to be adhered to, the research proposal is considered to be the key document for verification.

2.3. How is a proposal structured?

The following table shows the major components of the proposal:

| Chapter | Percentage of proposal |
|----------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Purpose of research; research question; hypotheses; justification; research problem or issue; definitions of key words and limitations | 10% |
| Theoretical framework and literature review | 30% |
| Research methodology; sources of data collection and methods of | 40% |

| | |
|---------------------------------|-----|
| analysis | |
| Expected outcomes and timeframe | 10% |
| References | 10% |

2.4. Contents and Hints for writing a proposal

(a) Title:

Be brief, specific and easily understandable

Avoid a title exceeding 12 words

Avoid articles and prepositions

(b) Executive summary

A summary is a summary – not an essay

It should put the proposal document in a nutshell

(c) Proposed research problem

Should be very clear and very specific

Try to state this in 1-2 sentences maximum

If you are unsure, highlight the level of interest

(d) Proposed research questions/hypothesis

Should be logical and related to the previous section

Avoid impressive questions and have meaningful ones

(e) Proposed theoretical framework

Should be related to the research question or problem and lead to or stem out of the literature review

(f) Literature review

Include the major studies only

Include leading journal articles

(g) Proposed research design

Specify the methods you have adopted in the research

Justify why these have been adopted for the research

Outline the data analysis methods/techniques

Specify the limitations or weaknesses of the research design and how you are addressing it

(h) Timeframe

Should be realistic to meet the timelines for an award of a degree

Should allow for contingencies

Should balance the need for time in keeping with different activities

(i) References

ALL citations must be properly referenced

It must be checked meticulously

Develop the discipline to do so from the start

2.5. Dos and don'ts for a good research proposal

Dos

Be realistic

Be simple

Share with friends for feedback

Revise your proposal

Use the proposal as a plan

Reflect on the proposal

Don'ts

Don't ignore the trivial rules for the proposal such as word limits

Don't forget to tie up the different sections of the proposal together

Don't make the reader ask any questions – specially the 'so what?' question

Don't forget to clarify the methodology

Don't make the proposal look mundane – make it special

Don't mess the objectives up

Don't be unrealistic

Don't be too brief or have repetitions

Don't make the research undoable

Don't ignore the importance of the theoretical underpinnings of the research proposal

Session 3

3.0 Critically Review of Literature

3.1 What is literature review?

“The literature review is a critical look at the existing research that is significant to the work that you are carrying out...”

Language Centre, Asian Institute of Technology

3.2 But remember literature review is NOT

- A “laundry list” of everything written on a topic, where each source gets its summary paragraph
 - Lacks organization guided by thesis or research problems
 - Lacks synthesis of literature
 - Lacks critical evaluation of literature
- An annotated bibliography
- A literary or book review

3.3 What is the requirement of a literature review?

- To identify gaps in the literature

- To avoid reinventing the wheel (at the very least this will save time and it can stop you from making the same mistakes as others)
- To provide you with some ideas you might not have thought of yourself
- To demonstrate you can access and evaluate others work
- To spark off ideas for future projects (cause they probably know less than you think)
- To provide a resource they can refer to when wanting more information on the topic

3.4 When to start the literature review?

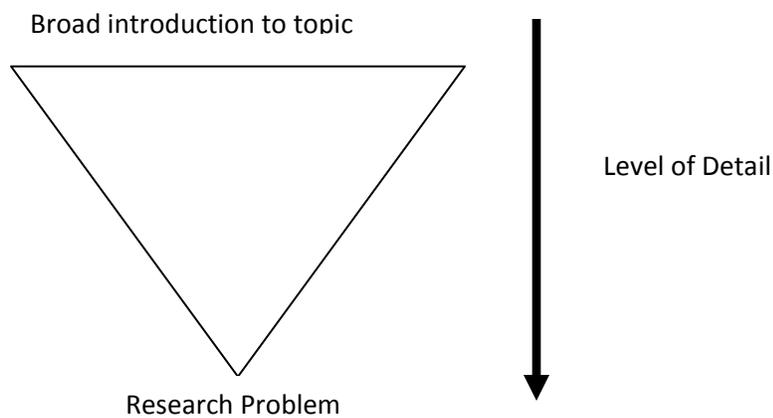
- **NOW:**
 - Because it takes a lot of time
- **After your first major set of results or findings:**
 - Because your results may change the direction of your project slightly or suddenly make other literature relevant
- **At the end:**
 - Because a good literature review sets up the rest of the report, which you have only just finished writing
 - It doesn't hurt to look at it a few more times in between these as well

3.5 The constituents of a literature survey

- An overview of the subject, issue or theory under consideration, along with the objectives of the literature review

- Division of works under review into categories (e.g. those in support of a particular position, those against, and those offering alternative theses entirely)
- Explanation of how each work is similar to and how it varies from the others
- Conclusions as to which pieces are best considered in their argument, are most convincing of their opinions, and make the greatest contribution to the understanding and development of their area of research

3.6 Structure of the literature review



- At the end of your literature review the reader must have only one thought in their heads, ***that this research problem must be answered!***

3.7 How to conduct the literature survey

- Search for Resources
 - Look for books
 - Use the Research Databases to find articles, dissertations, conference proceedings, etc.
 - Search the World Wide Web for government sites, publishers, technical reports, etc.
 - Stay informed, get Alerts
- Critical Review of the Literature

Provenance:

- What are the author's credentials? Are the author's arguments supported by evidence (e.g. primary historical material, case studies, narratives, statistics, and recent scientific findings)?

Objectivity:

- Is the author's perspective even-handed or prejudicial? Is contrary data considered or is certain pertinent information ignored to prove the author's point?

Persuasiveness:

- Which of the author's theses are most/least convincing?

Value:

- Are the author's arguments and conclusions convincing? Does the work ultimately contribute in any significant way to an understanding of the subject?

Session 4

Research Strategy

4.1. Different approaches to research

Research can basically be approached in two ways; inductive approach and deductive approach. In deductive approach a theory and hypothesis are developed and using research these will be tested, whereas in the inductive approach, data are collected and develop theory as a result of the data analysis.

4.1.1. Deduction: Testing theory

This involves the development of a theory that is subjected to a rigorous test. As such it is the dominant research method in natural sciences, where 'laws provide the basis of explanation, permit the anticipation of phenomena, predict their occurrence and therefore allow them to be controlled' (Hussey and Hussey, 1997).

4.1.2. Induction: Building Theory

With the emergence of the social sciences in the 20th century led social science researchers to be wary of the deductive approach. They were critical of an approach that enabled a cause and effect link to be made between particular variables without an understanding of the way in which humans interpreted their social world.

| Deduction | Induction |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------|
| Based on scientific principles | Gaining an understanding of the meanings humans attach to events |
| Move from theory to data | Move from data to theory |
| There is the need to explain causal relationship between variables | A close understanding of the research context |
| The collection of quantitative data | The collection of qualitative data |
| A highly structured approach | More flexible structure to permit changes of research |
| Necessity to select samples of sufficient size in order to generalize conclusions | Less concern with the need to generalize |

4.2. The need for a clear research strategy

The research strategy spells the general plan of the research. This should contain clear objectives deriving from the research problem that has been selected; specify the sources of data collection and also the constraints that has to be faced. Simply this strategy should indicate that the researcher has a clear idea about the particular strategy that has been selected for the research and should have valid reasons for selecting an organization for data collection, method of data collection and also a given sample.

o The different research strategies

There are different strategies that can be employed by a researcher when conducting a research. Some of these belong to the inductive tradition while others belong to the deductive tradition. When selecting the strategy the primary concern of the researcher is its suitability for finding answers to the selected research problem. Some of the most commonly used strategies are given below.

a) Experiment

Experiment is a classical form of research that owes much to the natural sciences, although it features strongly in much social research, particularly psychology. This involves;

- Definition of a theoretical hypothesis
- Selection of samples of individuals from known populations
- Allocation of samples to different experimental conditions
- Introduction of planned change on one or more of the variables
- Measurement on a small number of the variables
- Control of other variables

b) Survey

The survey strategy is usually associated with the deductive approach. It is a popular and common strategy in business and management research. Surveys are popular because they allow the collection of large amounts of data and from a sizeable population in a highly economical way. Often obtained by using a questionnaire, these data are standardized, allowing easy comparison.

Questionnaire is not the only way that can be used for data collection using a survey. Structured observation, of the type most frequently associated with organization and methods research, and structured interviews, where standardized questions are asked from all the interviewees, also fall into this category.

c) Case Study

Robson (2002) defines case study as 'a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence'. This strategy is specially useful for gaining rich understanding of the context of research and the process being enacted.

d) Grounded Theory

Grounded theory is often thought of as the best example of the inductive approach, although this conclusion would be too simple. Actually this can be interpreted as 'theory building' through a combination of induction and deduction.

Here, data collection starts without the formation of an initial theoretical framework. Theory is developed from data generated by a series of observations. These data leads to the generation of predictions that are then tested in further observations which may or may not confirm the predictions. Constant reference to the data to develop and test theory leads to call grounded theory an inductive/deductive approach, theory being grounded in such continual reference to the data.

e) Ethnography

Ethnography is also firmly rooted in the inductive approach. This is a very time consuming research strategy which takes place over an extended time period. The purpose is to interpret the social world the research subjects inhabit in the way in which they interpret it. The research process needs to be flexible and responsive to change since the researcher will constantly be developing new patterns of thought about what is being observed.

f) Action Research

Lewin used the term 'Action Research' in 1946. Subsequently this term has been interpreted by various management researchers in numerous ways, but there are three common themes within the literature. They are;

- Purpose of the research: management of a change
- Involvement of practitioners or close collaboration between the practitioners and the researchers
- Should have implications beyond the immediate project

The most remarkable feature of action research is that it focus on action, in particularly promoting change within the organization.

- **Using multi methods**

Although these different approaches have their own characteristics, it is perfectly alright to combine these two approaches in the same research project and gain the advantages of both these.

There are two major advantages of using multi methods in the same study. First, different methods can be used for different purposes in a study and the second advantage is, that it enables triangulation to take place. Triangulation refers to the use of different data collection methods within one study to ensure that same conclusion can be taken through all the methods.

Session 5

Research Ethics

5.1 What is meant by ethics?

The social sciences researcher has to be in line with ethics that require social scientists to ensure the confidentiality of data collected for research purposes. Both the rights of respondents and their continued willingness to voluntarily provide answers to scientific inquiries underlie this professional ethic. The ethic applies to all participants in the research enterprise, from data collectors to archivists to secondary analysts who use such data in their research.

5.2 Ethics: appropriateness of the behaviour of researcher in relation to the rights of those who become a subject of his work or get affected by it

- Ethical concerns will emerge at;
 - Planning stage
 - Seeking access to organizations / individuals
 - Collecting data
 - Analyzing data
 - Reporting data

5.3 General ethical guidelines for a researcher

a) You are responsible for your own work, and for your contribution to the whole project.

“Researchers must accept individual responsibility for the conduct of the research and, as far as foreseeable, the consequences of that research.”

b) You must be open and honest in dealing with other researchers and research subjects.

c) You must not exploit subjects by changing agreements made with them.

d) You must obtain informed consent from any subjects

e) You must ensure that all subjects participate voluntarily.

f) Plagiarism

5.4 Levels of consent

5.4.1 Lack of consent

- Participant lacks knowledge
- Researcher uses deception to collect data

5.4.2 Implied consent

- Participant does not fully understand his rights
- Researcher implies consent about use of data from fact of access / return of questionnaire

5.4.3 Informed consent

- Participant consent given freely and based on full information about participation rights and use of data

An example for the informed consent components in introduction for a survey

1. Introduce ourselves – interviewer’s name and institute

2. Briefly describe the survey topic (e.g. barriers to health insurance).
3. Describe the geographic area you are interviewing (e.g. people in Colombo) or target sample (e.g. Teachers)
4. Tell who the sponsor is (e.g. UNICEF)
5. Describe the purposes of the research (e.g. satisfaction with services received/provided by a local agency).
6. Give a “good – faith” estimate of the time required to complete the interview.
7. Promise anonymity and confidentiality (when appropriate)
8. Tell the respondent that participation is voluntary
9. Tell the respondent that Item-no response is acceptable
10. Ask permission to begin.

5.3 Ethical Research codes and guidelines

A selection of references to some of the professional ethical codes, guidelines and standards are given below.

Anthropology

[Association of Social Anthropologists \(ASA\) of the UK and the Commonwealth: Ethical Guidelines for Good Research Practice](#)

[American Anthropological Association: Code of Ethics](#)

Computing

[Association for Computing Machinery \(ACM\): Code of Ethics and Professional Conduct](#)

[Australian Computer Society: Code of Ethics](#)

Education

[British Educational Research Association \(BERA\): Research Guidelines](#)

[American Educational Research Association: Ethical Standards of AERA](#)

Statistics

[American Statistical Association: Data Access and Personal Privacy: Appropriate Methods of Disclosure Control](#)

[International Statistical Institute: Declaration on Professional Ethics](#)

Activity

Instruct the participants to analyze the below given two case studies. Then discuss with them whether the action taken by the relevant person is correct, and the alternative actions which can be taken when faced with a similar situation.

Case study 01

The research protocol for a study of a drug on hypertension requires the administration of the drug at different doses to 50 laboratory mice, with chemical and behavioral tests to determine toxic effects. Tom has almost finished the experiment for Dr. Q. He has only 5 mice left to test. However, he really wants to finish his work in time to go to Florida on spring break with his friends, who are leaving tonight. He has injected the drug in all 50 mice but has not completed all of the tests. He therefore decides to extrapolate from the 45 completed results to produce the 5 additional results.

Case study 02

Dr. T has just discovered a mathematical error in a paper that has been accepted for publication in a journal. The error does not affect the overall results of his research, but it is potentially misleading. The journal has just gone to press, so it is too late to catch the error before it appears in print. In order to avoid embarrassment, Dr. T decides to ignore the error.

There are many other activities that are not categorized as misconduct, but are considered as unethical by most researchers. These are called as other deviations from acceptable research practices, and some of the m are;

- Publishing the same paper in two different journals without informing the editors
- Including a person who did not make a significant contribution as a co-author
- Trimming outliers from a data set without discussing the reasons
- Using inappropriate statistical techniques in order to enhance the significance of the research

- Overworking, neglecting, or exploitation of research students
- Wasting animals in research
- Making unauthorized copies of data, papers, or computer programmes

Session 6

Data Collection Methods I

- Observation method
 - The researcher attempts to observe population, sometimes become a member of their group, organization, or community
 - Initiated with Social Anthropology
 - Much less use in management & business research
 - This method can be used ,if you are studying about your own organization
 - Useful when the researcher is interested in finding out what people do
 - Observation involves;
 - Systematic observation
 - Recording
 - Description
 - Analysis &
 - Interpretation
- Advantages
 - Anyone can do once trained
 - Highly reliable results
 - Data is collected in their natural setting
 - Include all relevant information

- Disadvantages
 - Has to be in the setting
 - Limited to surface activities
 - Slow and expensive method

6.1.1 Categories of observations;

- Complete participation

Researcher attempts to become a member of the group in which the research is being done on. The researcher does not reveal the true purpose of the research to the group members. But this method may not be acceptable when you consider the ethics since this may look like spying on people without their knowledge.

- Complete observer

Here too the researcher does not reveal the purpose of the research to those people whom being observed. However, unlike in the complete participation, researcher does not take part in the activities of the group.

- Observer as participant

Here the researcher is identified by the members of the group and they would know your purpose.

- Participant as observer

Both the researcher and the subjects are aware of the fact that it is field work relationship.

6.2 Interview method

6.2.1 Steps to be followed when conducting an interview

Step 1:

Define the purpose of the study. Determine the nature of the interview.

Step 2:

Select the sample using a suitable sampling technique.

Step 3:

Interview guideline needs to be prepared. Normally in structured interviews all the interviewees get the same interview; therefore all data can be compared. Here all variables are specified prior to the interview.

In the unstructured interview, the researcher gets more flexibility as the objective is to gather information about the views and ideas of the interviewees regarding specific phenomena. Here questions are not specific, but are broader in nature.

Step 4:

Selection and training the interviewers. The most important criteria are the interviewer's ability to relate to respondents positively, using variables such as social class, gender, race and age to match interviewers with respondents will produce more valid responses.

Training should familiarize the interviewers with the interview guide so that they will be able to conduct the interview in a conversational manner without being too dependent on the guide. Next they need to know how to get feedback in an objective and reliable manner.

Step 6:

Pilot testing the interview. This will ensure to yield reasonably unbiased data. Questions may need to be rephrased or procedures may need to be revised. Threatening questions need to be altered, while opening statements and methods of recording should be evaluated to ensure rapport is maintained.

Step 7:

Conducting the interview. Decide how to present yourself, establish the required level of rapport, gaining trust when sensitive topics are being discussed, understanding the respondent's culture and language, being sensitive to non verbal language and recording interview data.

Taking personal notes will facilitate analysis later but it may disrupt the effectiveness of the communication. Audio recording provides a more accurate record of the interview but it may inhibit the responses.

Step 8:

Analyzing interview data. Structure interview data can be easily analyzed using quantitative techniques. For unstructured interviews need to use coding method for analyzing data.

Session 7

Data Collection Methods II

7.1 Questionnaire method

- Widely used technique
- Design is very important
- Validity & reliability can be optimized by
 - Careful design of individual questions
 - Clear layout
 - Explanation about purpose
 - Pilot testing
 - Planned administration

7.1.1 Things to consider when designing a questionnaire

- Use a creative envelop:
- Provide a well-written covering letter.
- Give a questionnaire a title that is short and meaningful to the respondent.
- Include clear and concise instructions.
- Begin with a few non-threatening and interesting questions.
- Use simple and direct language.
- Leave adequate space for respondents to make comments.
- Place the most important items in the first half of the questionnaire.
- If possible, be present while a respondent is completing the questionnaire and help to clarify any item.

7.1.2 Advantages

- Questionnaires are very cost effective
- Questionnaires are easy to analyze.

- Questionnaires are familiar to most people.
- Questionnaires reduce bias.
- Questionnaires are less intrusive

7.1.3 Disadvantages

- Possibility of low response rates.
- Inability to probe responses..
- Nearly ninety percent of all communication is visual.

7.1.4 When preparing a questionnaire

- The vocabulary used should be simple, direct and familiar to all respondents.
- The words of the question should not have vague or unambiguous meaning.
- Instructions of the questions should be clear.
- The questions must be applicable to all the respondents in the sampling frame.
- Keep the number of words of each question as minimal as possible.

7.1.5 Types of questions

Name: Likert scale

Description: Statement with which respondent shows the amount of agreement / disagreement

Example: Assessment by course-work is easier than assessment by examination

1.Strongly agree 2.Agree 3.Neither agree nor disagree 4.Disagree 5.Strongly disagree

Name: Semantic differential

Description: Scale is inscribed between two bipolar words and respondent selects the point that most represents the direction and intensity of his / her feelings

Example: The degree I am taking is.....

- Interesting : _____ : _____ : _____ : _____ : _____ : _____ : _____ : Boring
- Useful : _____ : _____ : _____ : _____ : _____ : _____ : _____ : Useless
- Easy : _____ : _____ : _____ : _____ : _____ : _____ : _____ : Difficult

Name: Unstructured

Description: Question that respondents can answer in an unlimited number of ways

Example: Why did you come to us for your research requirements?

.....
.....

7.2 Secondary data

- Data collected by some other person for another reason
- Data collected through this method also can be useful
- Include both raw data and published data
- Eg: Payroll details, Letters, Meeting minutes, Survey reports, etc.

7.2.1 Advantages;

- Resource saving (time & money)
- Unobtrusive
- Permanent & available
- Can result in unforeseen discoveries
- Wide coverage

7.2.2 Disadvantages

- Not cater to your needs 100%
- Access may be difficult / costly
- No control over data quality
- Aggregations and definitions given may be unsuitable

Session 8

Analysis of quantitative data

8.1 Data preparation & presentation techniques

8.1.1 Raw data

Data sheets are where the data are originally recorded. Original data are called raw data.

8.1.2 Data presentation

The purpose of putting results of research into graphs, charts and tables is two-fold. First, it is a visual way to look at the data and observe what happened and make interpretations. Second, it is usually the best way to show the data to the reader. Reading lots of numbers in the text will not be interesting to the reader and does little to convey information.

- Tables

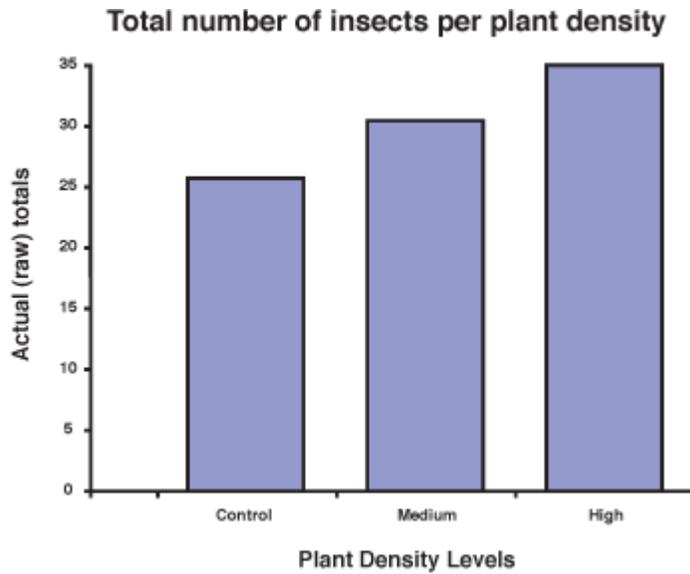
Tables present a synopsis of your raw data.

- Graphs

Graphs can be drawn by hand or on a computer. Programs such as Microsoft Excel, AppleWorks produce graphs and perform some statistical calculations. Statistics programs such as SAS and SYSTAT are higher-powered programs that perform many statistical tests as well as producing graphs. All of these programs vary in the types of graphs they will produce and the individual features. Playing with the program and reading the help files are usually necessary exercises to become proficient with them. Below are samples of the most commonly used graphs.

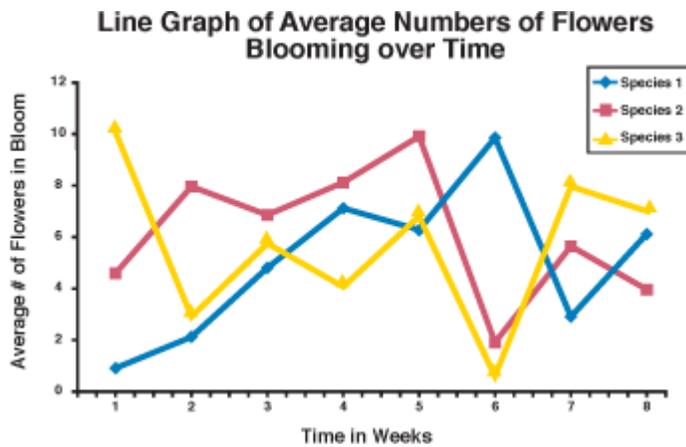
- Bar Graph

A bar graph compares values across categories or treatments. The x-axis gives the treatment values (independent variable), while the y-axis depicts the values of the dependent variable.



o Line Graph

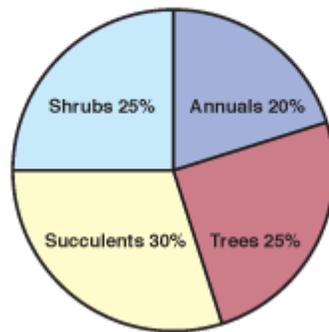
Line graphs are used to show data points over time. Each line is for a single treatment (independent variable). The x-axis shows the time interval and the y-axis depicts the values of the dependent variable.



o Pie Charts

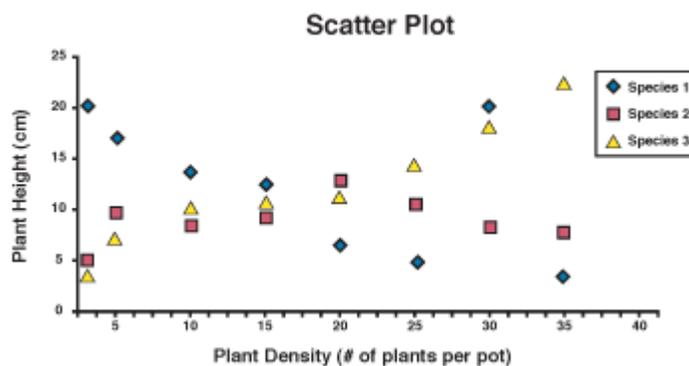
Pie charts are used to show the contribution of each item to the whole. The values are commonly given as a percent or a proportion.

Pie Chart of Percentage of Plant Species in Habitat



- o Scatter plot

This graph depicts the relationship between two variables namely dependent variable and independent variable.



8.2 Examining relationships

There can be three types of relationships.

- Both variables are categorical

This can be analyzed by comparing conditional probabilities and graphically represent data using contingency tables.

- Both variables are quantitative

This data can be analyzed by observing how the changes in the independent variable cause changes in the dependent variable. Scatter plots can be used to present these data graphically.

c) One variable is categorical and the other one is quantitative

This type of a relationship can be compared using boxplots to display any similarities or differences in the center and variability of the quantitative variable across the categories.

Session 9

Analysis of Qualitative Data

9.1 Understanding qualitative data

Qualitative data come in various forms; interview transcripts, recorded observations (video and participatory), focus groups, texts, photographs and documents. Most of the time aim of qualitative research is to identify the reality as far as human experience is concerned. Therefore it can be subjective, thus qualitative researchers are often more concerned about uncovering knowledge about how people think and feel about the circumstances in which they find themselves than they are in making judgments about whether those thoughts and feelings are valid.

9.2 Strategies of qualitative analysis

Most of the time qualitative research relies on inductive reasoning to interpret and structure the meanings that can be derived from data.

- Steps to be followed

9.2.1 Categorization

9.2.2 Unitising

9.2.3 Recognizing relationships

Session 10

Writing & Presenting the Report

10.1 Structuring the report

Writing is a powerful way of learning" (Griffiths,1993)

- You have to explain a highly complex set of ideas and facts to an audience assumed to have little or no knowledge on the subject

- Do not wait until the last moment to start writing
- Writing needs much thinking and planning

10.1.1 Objective of writing a report

- Clear understanding of the research problem
- How data were collected
- Present all data precisely and completely
- Interpret the data so as to resolve the research problem

10.2 Organizing the content

10.2.1 Structure of the report

- Title Page
 - The research title
 - The programme of study
 - Name of the institute
 - Full name of author
 - Date of submission
- Abstract
 - State the research question
 - Describe the method used
 - Describe the subjects/participants
 - Mention the research procedures
 - State findings
 - Include implications
- Introduction
 - Provide historical background

- Argue for significance of the topic
- Review relevant research and identify gaps/flaws
- State your research questions
- Literature review
 - Review important relevant sources
 - Identify
 - Theoretical background
 - Methodological or conceptual gaps/flaws of previous research
 - Leads to your research questions
- Methodology
 - Sample
 - Demographics
 - Age
 - Gender
 - Location
 - Race
 - Socioeconomic status
 - Number (sample size)
 - Maintain confidentiality
 - Data Collection Method
 - Describe how the data were collected
 - Describe each step in sequence
 - Provide enough details for replication
 - Data Analysis

Two types:

- Qualitative data analysis
- Quantitative data analysis

Two ways:

- Manually with charts, graphs and correlations
- Using software packages
- STATA, SPSS, MINITAB, EXCEL
- ATLAS.ti, QSR N6, NUD*IST, QSR NVivo 1.3

- Results (Data Analysis)

For qualitative research

- present organized or categorized data in order to answer the research question
- present newly discovered consideration or variables (if applicable)

For quantitative research

- restate the hypothesis
- state whether you were able to support it
- present a summary of the results for the statistical tests
- use tables, figures, graphs or charts to present the results if necessary
-

- Discussion & Conclusions

- Summarize and interpret the results
- Answer your research question
- Discuss your findings in the context of previous research
- Discuss implications
- Identify limitations
- Suggest directions for future research

- References and Appendix

- References:
 - start on a separate page
 - follow APA / Harvard style
- Appendix:
 - consent form
 - survey
 - charts, figures, graphs

10.3 Preparing the report

- Create time for your writing
- Write when your mind is fresh
- Find a regular writing place
- Set goals and achieve them
- Use a word processor

10.3.1 Give a good impression

- Give a good first impression
- Remember your report will be read and evaluated
- It is important to catch the attention of the examiner with a good first impression
- A good beginning will make the evaluator read the rest with a positive frame of mind
- A well-formatted, crisp-looking report always has an edge over a one that is not

10.3.2 Write to the target audience

- Write to the target audience
- What is the right level of detail for a student project report
- Write as if it is meant for a person with little or no knowledge on the subject
- Not too detailed & not too high level

- "Accurate and complete" is not enough; do NOT think, "as long as it's accurate and complete, it's up to the reader to make sense out of it"
 - Use diagrams
 - Use examples
 - Use simple, direct explanations
 - Get rid of statements that do not add value