



Using the E-Mind Map in the Educational Research Methodology Course for Post-Graduate Students in the Faculty of Education

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Abstract:

Mind map is an expression of radiant thought, a collaborative thought process that proceeds or connects from a central point and so it is a normal function of the human mind. It is a powerful graphic technique that can be applied to improve learning and clear thinking. Mind map is an effective and meaningful teaching and learning tool. Mind maps attract and enhance students' understanding of concepts, information, facts and more.

The objective of this article is to study results of using the e- mind map for the teaching and learning in educational research methodology course of Master's degree students in the Faculty of Education, Jadavpur University, West Bengal by using mixed -method study. 25 post- graduate students were taken as the sample of the study. For collection of data from the sample the investigator used an attitude assessment tool – pre-study and post-study – form, a questionnaire, and unstructured interview technique. Researchers used t-test for quantitative data analysis and content analysis for qualitative data analysis. The results from both studies show that their fears and misconceptions about research have been dispelled after using the mind mapping technique. They understand the whole research subject well, and they have developed a positive attitude towards research methodology. Their knowledge, intelligence and organisational thinking have all increased. Students enjoy reading the subject and the classroom becomes fun when the teacher teaches.

Keywords: Mind map, Research methods, Research design, Research ethics, Mixed method study.

Introduction:

Research is an important subject for master's degree students. Applies the knowledge gained theoretically about research during dissertation in master's degree. In addition, this knowledge will help them in future research.

Portney and Watkins (2008) said that, descriptive, exploratory and observational designs are quantitative research designs. Where no experimentation, intervention and treatment can be performed. Although research is an important subject for students, there is a negative attitude towards research of most students. They think that research is a very difficult subject and to them research is an abstract subject. Students feel that the scope of this subject is very wide and difficult to understand. As an instructor in research methodology, the

researcher has applied e-mind maps for the teaching-learning sessions of the pedagogical research methodology course of the graduate students of the Faculty of Education. Mind mapping techniques can be used to dispel negative attitudes towards research among students as it is a creative technique and organizational thinking tool. Which will improve students' learning. According to Buzan (1989) It is used for teaching-learning thinking, planning, creativity, associated thinking, and recall. Jones, Pierce & Hunter (1989) observed that, A good mind mapping can create a sub-concept relationship with the main concept which helps the students to easily understand a subject and they can easily represent that subject and improve their verbal fluency. Several researchers have shown that using this technique increases students' memory, motivation, creativity and imagination (Mento, et. al. 1999).

Mind takes two ways to create one hand made mind map and the other is electronic mind map. Handmade Mind Map is very old and traditional where it takes a lot of time and students cannot easily create but electronic Mind Map can be easily created by students on their computer and they can easily save it to the brain and review or revise it every year.

Research objectives:

Research to study the results of the use of mind maps for teaching and learning courses of educational research methods of postgraduate degree students.

Sample and sampling technique:

Study samples used in this research are master degree students of the Faculty of Education, Jadavpur University. Samples are selected by using stratified random sampling technique. Sample 25 master degree students.

Tools:

In this study researcher used both qualitative and quantitative method. Here is the tool that the researcher has used as a quantitative method (1) A pre – study attitude assessment form (2) A post- study attitude assessment form. Used semi – structured interview technique as a qualitative method.

The researchers did this through three methods. Those are- 1. Before giving the instruction, the instructor measured the attitude of the students towards the research subject. 2. During the instruction, the instructor represents the mind map of each concept to the students in order to explain and summarize each concept under the educational research methodology. Using all mind maps, the researcher gave advice on how to read and increase the knowledge of the students. The following are the e-mind maps used by the researcher on research topic. 3. After instruction instructor measures students' attitudes towards research subjects and takes students' opinions through questionnaire.

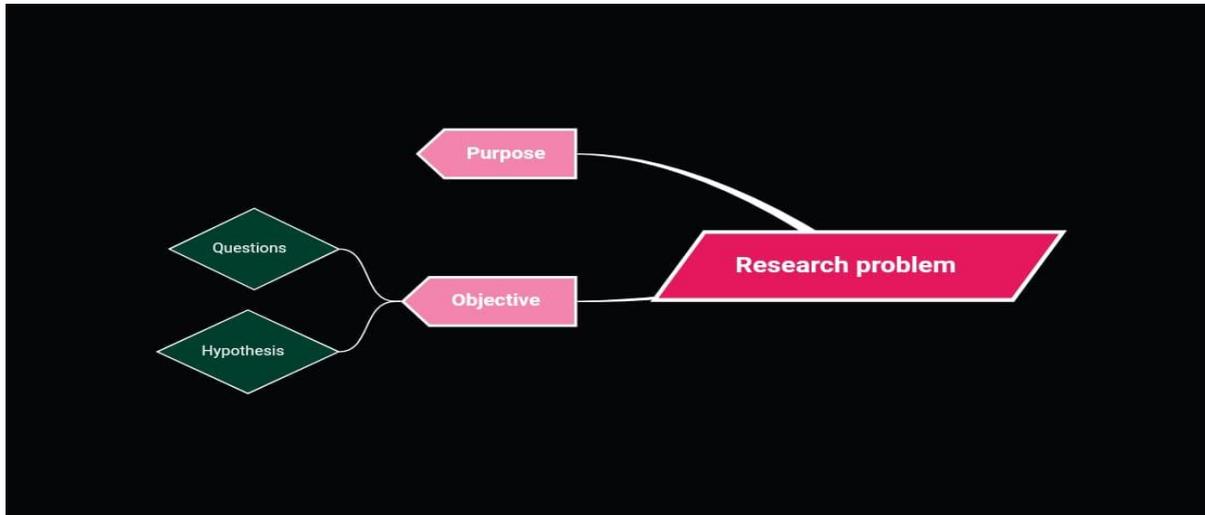
Mind maps that have been used for students:

A. Research problem:

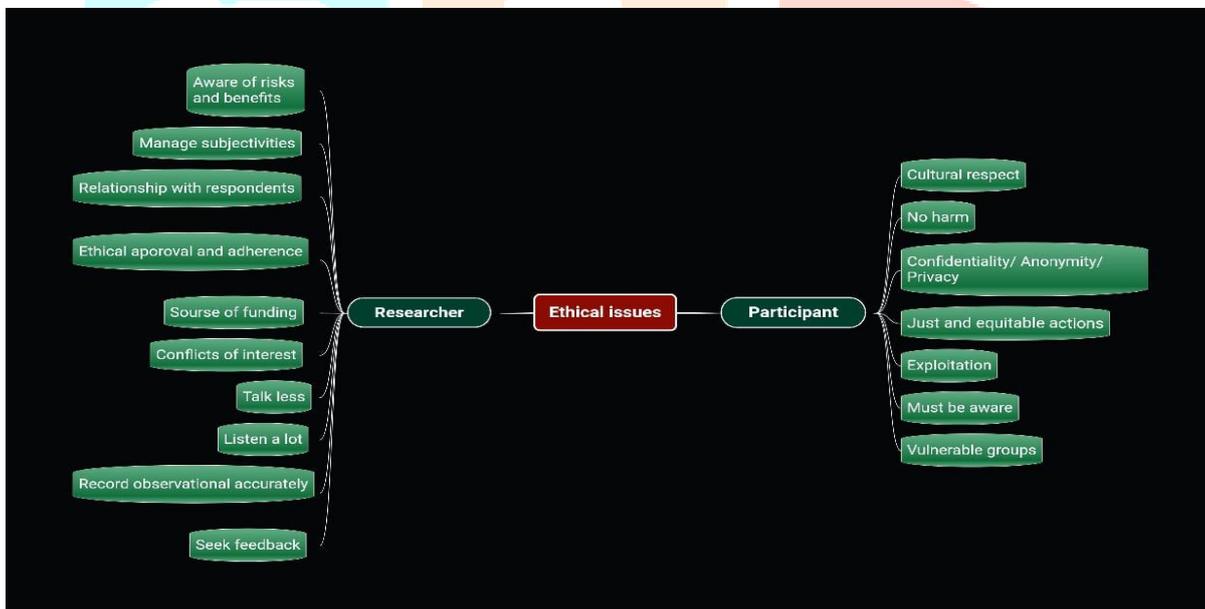
Every researcher usually starts his/her research work with a research problem. According to Creswell, research problems are the educational issues, controversies, or concerns that guide the need for conducting a study. This helps the researcher to narrow down the research topic. There are two aspects in a research problem (Miller and Salkind 2002; Onwuegbuzie and Leech 2005).

- I. Purpose (i.e., Why is the research question important?); and
- II. One or more objectives (i.e., how will I know if I have satisfactorily addressed the research problem?)

We can use a mind map with research problems.

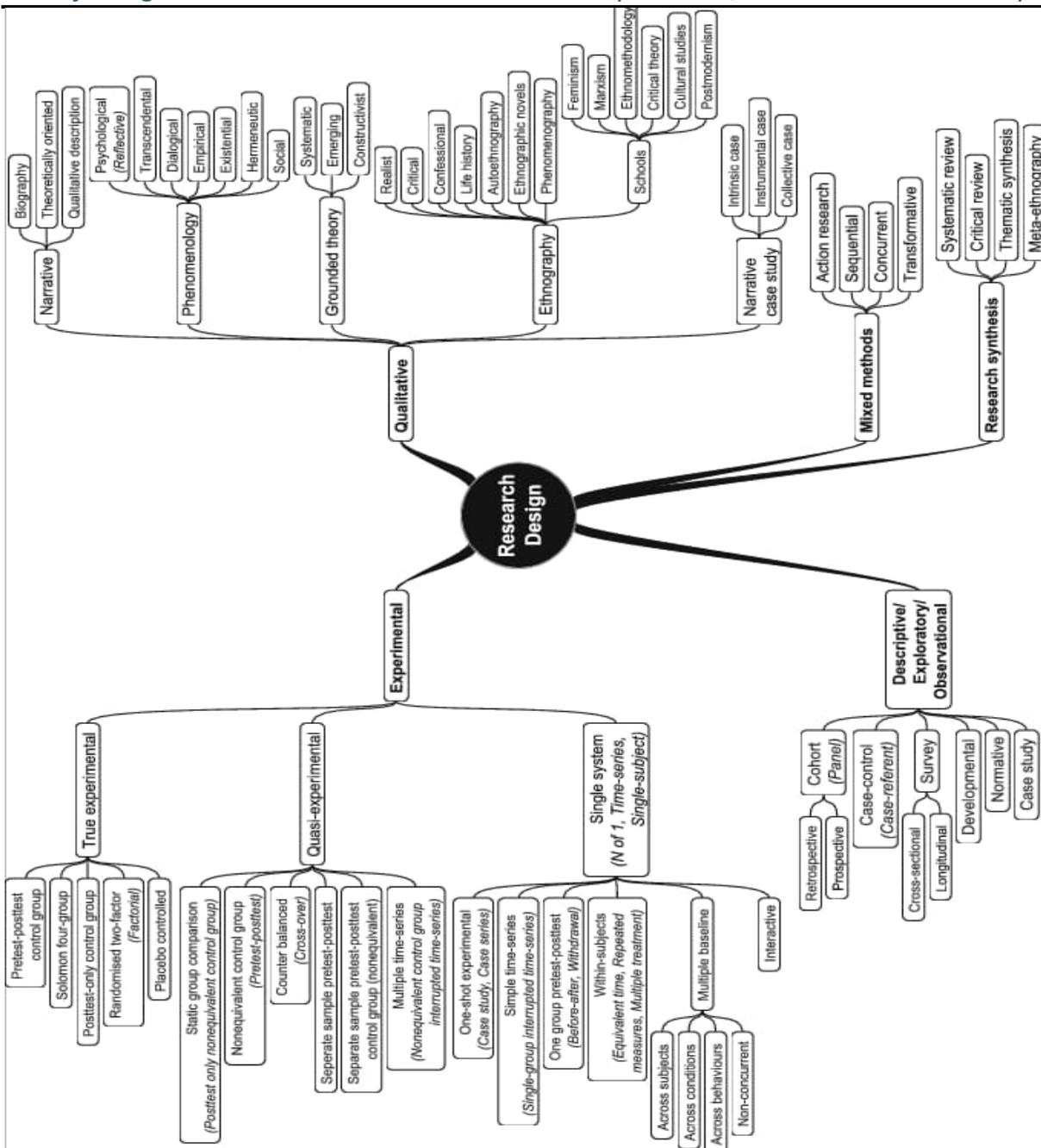


B. Research ethics: Research ethics are those moral principles that govern the research process or the behavior of researcher. Research ethics have a significant effect on the credibility, objectivity, integrity etc., of research. Ethics help in bringing out the real facts about the research problem. Also, these help in reducing the chances of errors in a study. It helps in protecting the interest of respondents.

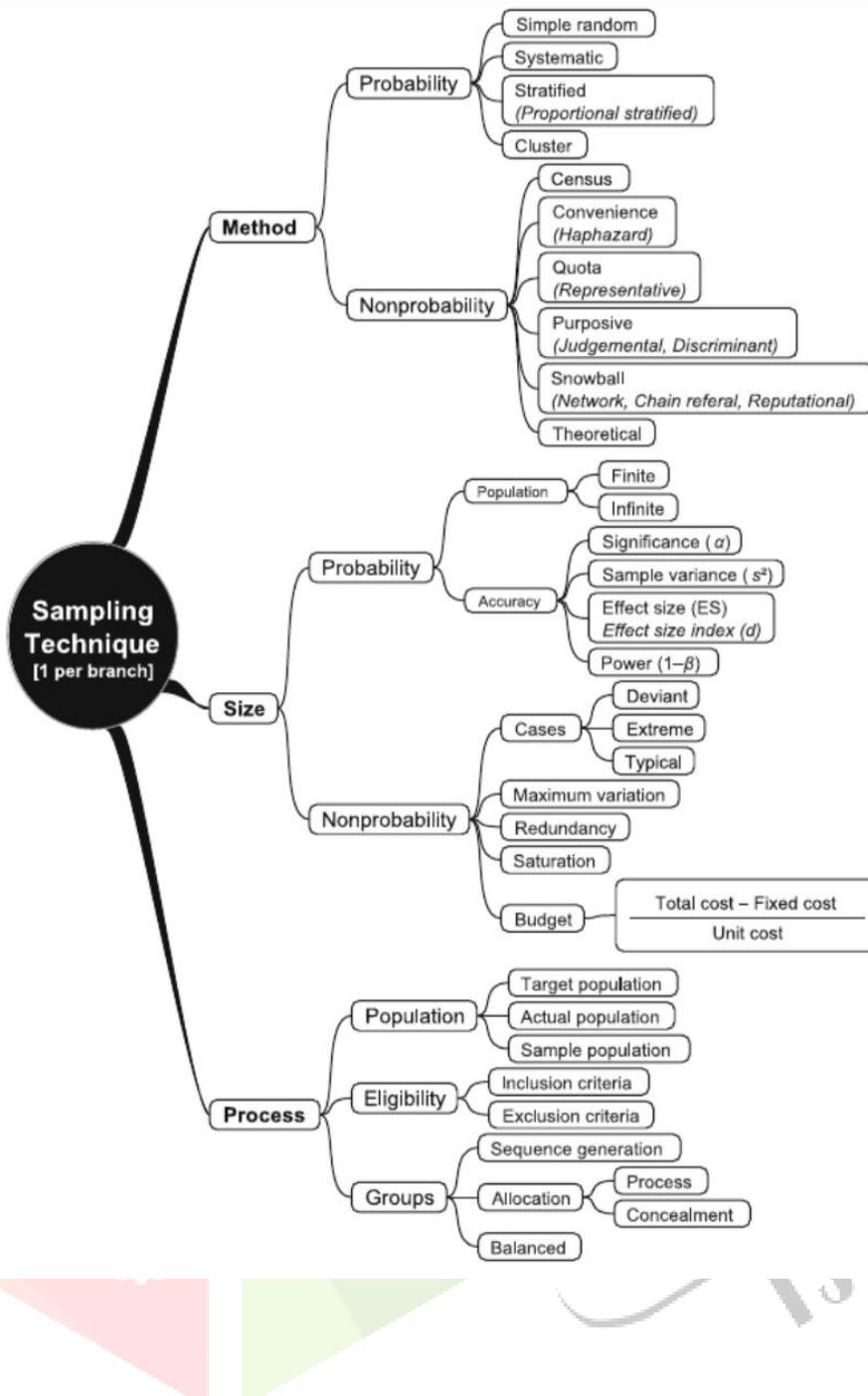


C. Research design:

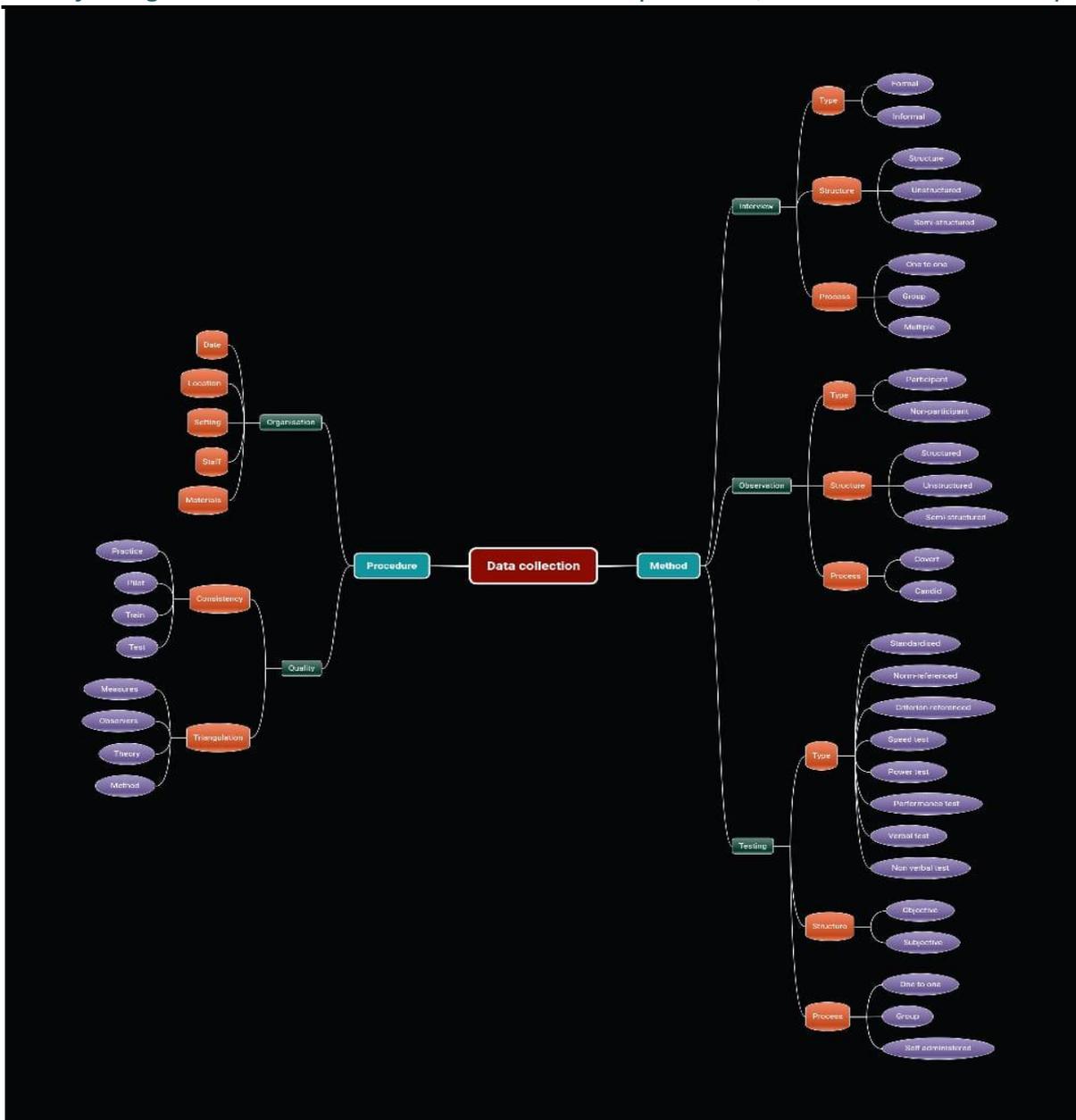
A research design is the strategy for a study and the plan by which the strategy is to be carried out. It specifies the methods and procedures for the collection, measurement, and analysis of data. Different research design frequently used in educational research. Campbell and Stanley (1966) told that experimental research design is divided into two parts e.g., 1. True experimental and 2. Quasi experimental designs. According to Creswell, an experimental design is the traditional approach to conducting quantitative research.



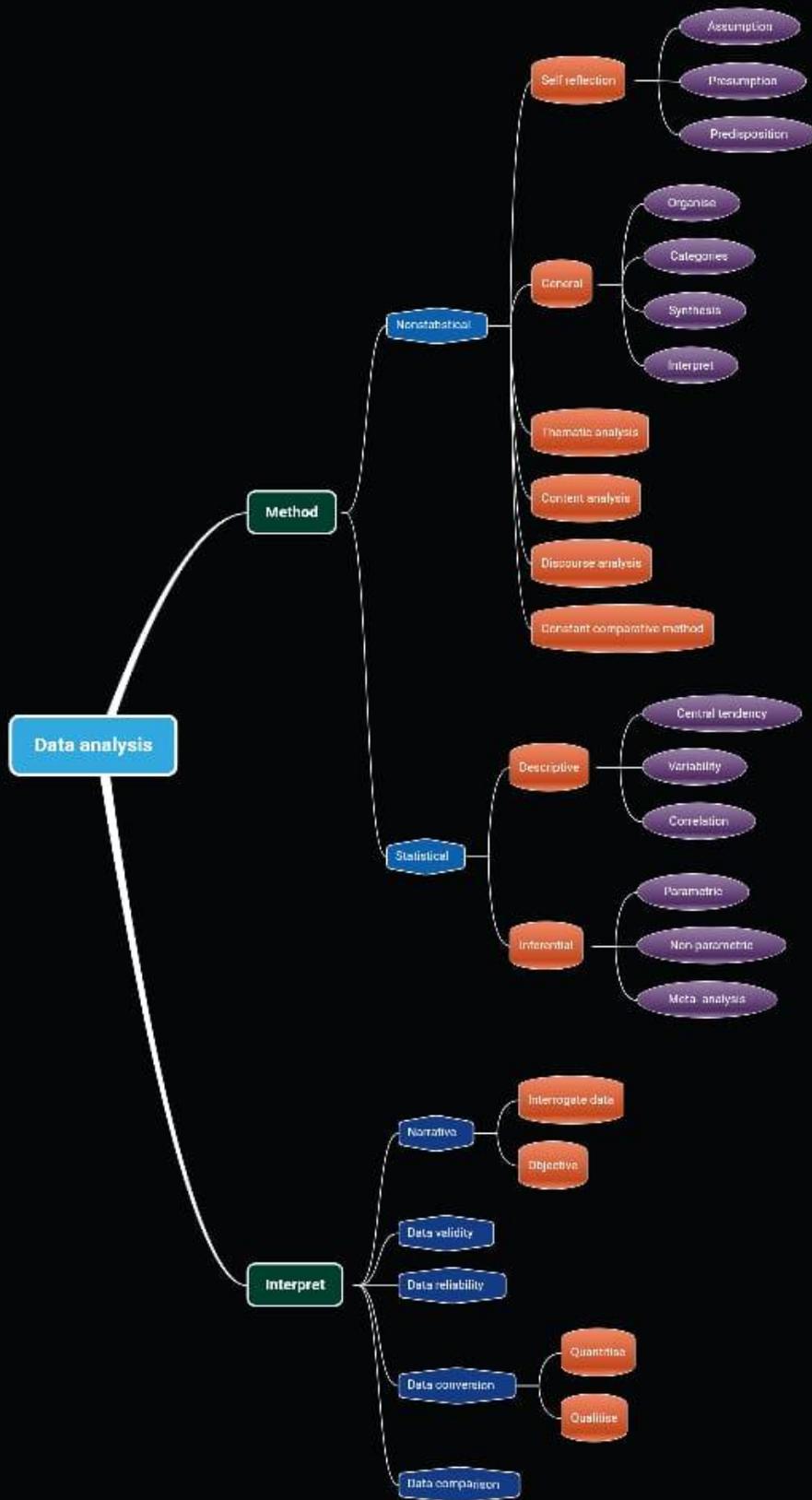
D. Sampling technique: Quite often we select only a few items from the universe for our study purposes. The items so selected constitute what is technically called as a sample. The researcher must decide the way of selecting a sample or popularly known as the sampling technique. Samples can be either probability samples or non-probability samples.



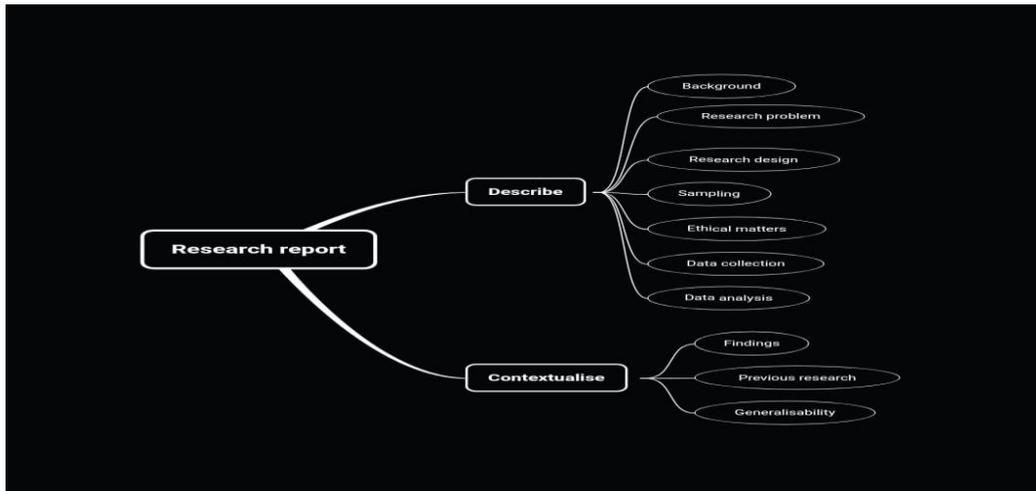
E. Data collection: To carry out any type of research, data must be gathered for which tools or techniques are employed. The nature, purpose and scope of a research study greatly determine the choice of method to be adopted for collecting data. The method group focuses on the actual collection of information (Cresswell, 2008). Data are obtained i) from opinions of the people, ii) based on the observation or experience, iii) based on recorded facts and iv) based on the internal logic of the researcher.



F. Data analysis: The collected data are to be put into some definite form because raw data are in most jumbled form and cannot use to render this haphazard, complex, unintelligible form. The definite forms are called classification and tabulation. Classification is the process of arranging data in related facts into groups, say, according to similarity or dissimilarity. The technique of presenting data, either qualitative or quantitative in columns and rows is called tabulation. A plan of analysis can and should be prepared in advance before the actual collection of data. Objectives of the study are the basis for analysis. There are many analysis techniques of qualitative and quantitative methods for data analysis which it is not possible to present everything in one mind map.



G. Research report: Before report findings the researcher precedes to interpret the results. For wider circulation of research study findings, a report is a must. It would serve as a reference material for another researcher on that topic. Onwuegbuzie and Leech (2005) noticed that research report has two dimensions. 1)The first is to describe what the researcher has done. 2) Releasing the results based on the results of the current study, whether the results of previous research and the results can be further generalized.



Analysis and interpretation:

Table:1 Before using mind mapping technique

Items	Options	Students	Percentage
Research subject	Interesting	21	75%
	Boring	4	25%
Difficulty in understanding research methodology	Yes	17	65%
	No	8	35%
Lengthy syllabus and abstract concept	Yes	23	85%
	No	2	15%

Table no: 1

From the table no. 1, it shows 85% students find research subject have lengthy syllabus and abstract concept

Table :2 After using mind mapping technique

Items	Options	Students	Percentage
Research subject	Interesting	24	95%
	Boring	1	5%
Difficulty in understanding research methodology	Yes	4	18%
	No	21	82%
Lengthy syllabus and abstract concept	Yes	9	35%
	No	16	65%

Table no:2

From the table 2, it shows 95% students find learn research methodology in visual mind map very interesting.

Table :3 Attitudes towards research subjects of students by pre-test and post-test

	N	Mean	SD	't' test	P value
Pre-test	25	3.70	0.45	5.68*	0.000
Post- test	25	4.23	0.33		

(*Statistical Significance Level of 0.05) **Table no :3**

Based on the data shown in Table 3, the researcher found that the value of t-test is greater (5.68) compared with the value of t-critical (1.96). Therefore, the null hypothesis is rejected. The results for the first post-test were significant. Researcher determined that there is difference in knowledge level of research subject for master degree students before and after using mind mapping. The higher mean value (4.23) after using mind mapping as shown in Table 3 shows that, master's degree students' knowledge of research methodology and understanding level has improved using mind mapping technique.

B. Results of Qualitative study:

1) Students have used of Visual Mind Map in learning research methodology.

		Yes	No
1.	I like to learn research through mind map	22	3
2.	Mind map is difficult for me to learn research methodology	2	23
3.	I like to practice using mind maps	22	3
4.	A mind map makes me love the subjects of research	22	3
5.	Each student must use a mind map to make a study review	19	6
6.	I like to use mind maps to make lessons review	23	2
7.	I draw a mind map before doing research work	7	18
8.	Mind map helps me to remember what teachers are teaching	22	3
9.	Mind maps are less useful for the learning process	1	24
10.	Learning based on simple and fun visual mind map	22	3
11.	I can improve of concepts and facts when using mind maps	22	3
12.	Teacher teaching using mind map is more effective	22	3
13.	Mind map helps me to remember research design	23	2
14.	I can easily remember the notes teachers teach when using the mind map	23	2
15.	The mind map makes me fond of research subjects	22	3
16.	The mind map helps me to revise it	21	4

Table no.4

Shows that the majority of students like to use Visual Mind Maps in reviewing and recalling research subjects.

2) Researcher collected data interview with 15 students. They all said that their fear of research was gone, that they understood the subject, that they could relate to the main content, remember the subject for a long time, and an overall of the whole research. Using this technique, the teacher has increased their efficiency, increased their knowledge and created a positive attitude towards the research subject. The opinions of some of the participants are illustrated below which were obtained from the interview.

Participant 1

mind map It is possible to create a sheet of a4 paper. A lot of things can be learned simultaneously from that one set, helping to understand, remember and summarize the content. Students can easily explain the whole thing with keywords. As a result, my fear of research subjects has been dispelled. I think I will be able to use this knowledge related to research when I do my future PhD work.

Participant 2

Mind mapping is a way of thinking organization. Helps to understand difficult issues easily. Using this technique while teaching in the teacher classroom makes the subject more interesting and fun. I think I will use this technique to prepare for exams as well as to plan for the future and to study other subjects.

Participant 3

After first reading the research subject, I thought this subject is very complex and abstract. But when I took the help of mind map to understand the subject, the subject became much easier and more interesting to me. I can easily pass the research methodology test and easily present the research knowledge to the classmates. I think I can easily get involved in any research work in the future.

Participant 4

I think if every instructor transfer knowledge related to research through the use of mind maps then the complexity that is in every student will be removed. In addition, the instructor plays the biggest role in teaching students. This technique helps in the development of creativity. I will teach my students using this technique as a future teacher.

Participant 5

When I saw the mind mapping on different concepts of research, the whole thing became tangible to me. An overall idea about the research topic is formed. I will use this knowledge in various research works in the future. Students are very relaxed and not stressed. I can easily answer research related questions. I can easily explain the whole idea to my friends.

Conclusion:

From the above discussion researcher can say that mind mapping techniques has helped students to increase their knowledge. Results of quantitative study revealed that, since learning this technique the subject has become much more tangible and interesting to them. After using the mind mapping technique in the teaching session, the negative attitude of the students towards the research subject has changed to a positive attitude and overall, the students have changed in various aspects like their knowledge in research methodology has increased, behaviour and thinking pattern has changed, when compared with the pre-test study. While considering the opinions of the students regarding the creation of the mind map, it was found that the students find the mind map very useful for teaching and learning sessions (post- test mean score is 4.23). when they did not know about mind mapping techniques, they had much lengthy, abstract and boring in the subject then when they learned to use mind mapping techniques in the research then the subject matter became much easier and more interesting to them. The results from the qualitative study show that after applying the mind mapping technique to teach research methodology, students can easily understand research related topics, able to establish association in each content, and easily remember, recall and present research related topics. Crowe and Sheppard (2012) found that this technique is used in the field of teaching as an advanced method of teaching-learning and transfer of knowledge, resulting in better knowledge and talent of the students.

The hand-made and e-mind map method of presentation can be used to teach, understand and research teachers. For researchers, the mind map shows a variety of research methods. For research supervisors, the mind map can be used to guide students through the research process. Research methods for teachers, mind maps can be used to explain research methods from beginning to end. By using these mind maps as a guide through the research process, they can help researchers create more powerful. High- quality research.

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