

CHAPTER3: RESEARCH METHODOLOGY

Methodology in research is defined as the systematic method to resolve a research problem through data gathering using various techniques, providing an interpretation of data gathered and drawing conclusions about the research data. Essentially research methodology is the blueprint of a study.

According to Advance Oxford Dictionary, the word 'Method' is a way of doing something especially a systematic way in an orderly or logical way.

Research Methodology starts initially by identifying the problem and ends by reaching the conclusion. It may follow a Quantitative, Qualitative or Mixed method.

In this study the researcher used Descriptive method where she collected the data quantitatively with the help of a questionnaire. Later she coded the responses and analysed the data.

3.1 Area of Study:

This study was focused on attitude of secondary level students towards mathematics in Balangir district. Balangir district is one among the 30 districts of Odisha. It is situated in the western region of Odisha, in India.

Balangir district was selected to be an area of study for this title because there was barely any study conducted on attitude of secondary students towards mathematics in Balangir district. This district had diversity of schools where the government, public, privately owned schools where the researcher got enough data to analyse.

3.2 Research Design & Approach:

Research design is the framework of research methods and techniques chosen by researcher. The design allows researcher to hone in on research methods that are suitable for the subject matter and set up their studies up for success. According to Jahoda, Deutch& Cook “ **A research design is the arrangement of conditions for the collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy and procedure**”. Creswell (2003) &Kerlinger(1978) defined research design as “**the plan, structure and strategy of investigation conceived so as to obtain answers to research questions and control variance**”.

A survey research design is applied in this study where the researcher employed **cross-sectional survey**.

A cross-sectional survey design involves the collection of information from any given sample of population elements only once at a particular time period.

The researcher has applied **Qualitative research approach**.

Qualitative research relies on data obtained by the researcher from first-hand observation, interviews, questionnaires, focus group etc. The data are generally non-numerical.

3.3 The Study Population:

A population is the pool of individuals from which a statistical sample is drawn for the study. The population targeted in this study was the students of secondary classes of Balangir district.

3.4 Variable:

Dependent Variable- If one variable depends or is a consequence of other, it is called dependent variable.

In this study **Attitude towards mathematics** is the dependent variable. Because it is the one which is getting influenced by the other variables.

Independent Variable-The variable that is antecedent to the dependent variable is termed as independent variable.


In this study, the researcher has taken 2 variables as independent variable. Those are:


 **Gender**

 **Management of the school**


These are the two variables that affect the attitude of the students in this study.

3.5 Sample of the study:

 A Sample is a small proportion of a population selected for the observation and analysis.

 According to Best & Kahn (1993) a sample can be defined as a subset of the total populations selected for observation and analysis.

In this study the researcher has taken the students of secondary class i.e. 9th& 10th including both boys and girls of Balangir district as the sample. They were selected from 5 different schools (3 Government and 3 private) through Simple Random Sampling. The sample size is 160.

 **Simple random sampling** method is used in this study.


 The sample of this study is as follows:

Table 1: *Sample of the study*

Variable			Total
Gender	Female	98	160
	Male	62	
Management	Government	102	
	Private	58	

3.6 Hypothesis:

“**Hypo**” means tentative & “**thesis**” means statement about the solution of the problem. Thus the literal meaning of the term Hypothesis is a tentative statement about the problem that is to be verified empirically and based on some rationale.

The definitions given are:

“A hypothesis is a tentative generalization the validity of which remains to be tested. In its most elementary stage the hypothesis may be any hunch, guess, imaginative idea which becomes basis for further investigation.”

Lundberg

“Hypothesis is an assumption whose testability is to be tested on the basis of the compatibility of its implications with empirical evidence and previous knowledge”

Gorge J. Mouly

“Any supposition which we make in order to endeavour to deduce conclusions in accordance with facts which are known to be real under the idea that if the conclusions to which the hypothesis leads are known truths, the hypothesis itself either must be or at least likely to be true.”

J. S. Mill

Hypothesis may be of 2 kinds.

Directional Hypothesis

Non-Directional or Null Hypothesis

A Directional hypothesis connotes an expected direction in the relationship or difference between variables.

A Null hypothesis is an assertion that no relationship or no difference exists between or among the variables. It is a non-directional form of hypothesis. Statistical tests of significance are used to accept and reject the null hypothesis. If it is rejected, the general hypothesis is accepted.

A null hypothesis is an appropriate form in order to accommodate the object of inquiry for extracting the information.

The following null hypotheses were formulated by the above objectives:

There is no significant difference in attitude of secondary school students towards mathematics in relation to their gender.

There is no significant difference in attitude of secondary school students towards mathematics in relation to the types of management of their schools i.e. Government or Private.

3.7 Tools & Techniques:

Anything that becomes a means of collecting information for the study is called a Research tool. It helps to collect, measure, and analyze data related to the research. It is very important to develop a research instrument to collect data if the plan is to collect data specifically for this research. It is called the primary data. Secondary data can be collected from an already collected data for other purposes.

The researcher applied primary data collection tool for this study. Primary data was collected through **Questionnaire**.

A Questionnaire is list of questions related to one topic. It may be defined as;

“A questionnaire is a systematic compilation of questions that are submitted to a sampling of population from which information is desired.”

Barr, Davis & Johnson

The reference of the questionnaire was taken from Dr.S.C.Gakhar’s standardised tool **ATTITUDE TOWARDS MATHEMATICS SCALE(ATMS)**.

Questionnaire was to be answered by the students of IX & X. The teacher made tool had 5 dimensions in it i.e. **Usefulness of mathematics, Development of skills, Interest, Understanding of mathematics & Anxiety.**

Under these dimensions, there were 20 statements in it, each dimension having 4 statements. The students had to put a tick mark on one of the three columns i.e. Agree, Neutral & Disagree depending upon their thinking and attitude.

Table 2: List of dimensions in research tool

Dimensions	No of State ments
Usefulness of Mathematics	04
Development of Skills	04
Interest	04
Understanding of Mathematics	04
Anxiety	04
Total	20

All the respondents filled the questionnaire from their free will without any external influence.

Research techniques are the strategies or processes utilised in the collection of data or evidence for analysis in order to uncover new information or create better understanding of a topic.