Chapter 3 Research Methodology

3.1 Introduction

Research Methodology refers to the systematic framework or blueprint that guides a researcher in conducting a study. It includes the strategies, techniques, tools, and procedures used to collect, analyse, and interpret data in order to answer a specific research question or achieve the objectives of the study. According to John W. Creswell, "Research methodology is the plan, structure, and strategy of investigation conceived so as to obtain answers to research questions or problems". The present chapter deals with the population, sample, tools used for data collection and statistical techniques used for the study.

3.2 Research Design

This study uses a descriptive research design to explore how mathematics teachers in Ranchi district of Jharkhand feel about the DIKSHA app, a digital platform developed by the Ministry of Education to support teaching and learning with e-content and teaching resources. A descriptive approach was well-suited for this kind of research because it helps present a clear and accurate picture of the current attitudes of teachers without trying to change or control any part of their environment.

To gather this information the study uses the survey method which was a common and effective way to collect data from a large group of people. By using standardized tools like questionnaires or attitude scale the survey ensures that data collected was consistent and comparable. This makes it easier to identify general trends and patterns in how teachers perceive and use the DIKSHA app. The method also allows for a wide reach across different types of schools and teacher backgrounds, helping to provide a well-rounded and reliable understanding of their views.

3.3 Population

The population of a study includes all individuals who share certain characteristics relevant to the research and from whom the researcher intends to draw conclusions. For this investigation, the population comprised mathematics teachers working in various schools within Ranchi district, Jharkhand.

3.4 Sample

A sample is a representative subset of the population, selected for the purpose of conducting the study. In the present study, a total of 32 mathematics teachers were

selected using simple random sampling. The sample included teachers from state government school to ensure diverse representation in terms of institutional settings and technological access.

3.5 Research Tools and Techniques

To study the attitude of mathematics teachers towards the DIKSHA App, a combination of quantitative and qualitative research tools and techniques can be employed. A structured questionnaire using a Likert scale was used to observe the usefulness, effectiveness and overall satisfaction of mathematics teacher towards DIKSHA App.

3.6 Tools Description

In the present study, researcher was studied about the attitude of Mathematics teacher towards DIKSHA App. The researcher had developed a self-made questionnaire with closed-ended questions to quantify attitudes of teachers which consists of Likert scale items regarding usability, effectiveness, and overall satisfaction with the DIKSHA app and name tool as Attitude Scale Regarding DIKSHA App. For the construction of the Attitude Scale researcher had selected 25 items consisted of both open ended and close ended were satisfy the objective of usability, effectiveness and overall satisfaction regarding DIKSHA App and these items clearly satisfy the objective for collecting the information related to the Attitude of Mathematics Teacher towards DIKSHA App.

3.7 Data Collection

Data had been gathered using both online (using google forms) and offline mode depending on availability of the teachers and their access to the internet. Before starting the data collection permission had been taken from school authorities to ensure smooth coordination. All participating teachers had been informed about the purpose of the study and their consent had been obtained. They were also been assured that their responses has been kept confidential and used strictly for research purposes.

3.8 Statistical Techniques of Data Collection

3.8.1 Meaning of Statistical Techniques

Statistical technique refers to a method or procedure used to collect, organize, analyze, interpret, and present numerical data in a systematic manner. These techniques help researchers draw meaningful conclusions, identify patterns, test hypotheses, and make informed decisions based on data. Common statistical techniques include measures of

central tendency (mean, median, mode), measures of dispersion (range, variance, standard deviation), correlation, regression, and tests of significance. In research, statistical techniques was essential for ensuring that the findings were accurate, reliable, and valid.

3.8.2 Statistical Techniques used in Present Study

In the present study following statistical techniques were used-

1. Standard Deviation – To measure the dispersion or spread of responses around the mean, helping understand the variability in teachers' attitudes.
2. Pie Charts- To show the proportion of responses in a clear and interpretable format.