Chapter 3
Research Methodology

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3.1 Introduction

The theoretical background of the study is presented along with the significance, objectives and hypotheses in chapter 1. A review of related literature along with research findings and rationale of the study is written in the previous chapter. The present chapter is devoted to the description of the methodology given in the present study. In this chapter the discussion will be in detail about the variables, population, sample, tool used for the collecting the data, steps for tool construction, the procedure of the data collection, and statistical techniques used for the given study.

3.2 Research methodology

The research methodology is basically supervising the research in a specific manner so that the problem can be solved effectively and efficiently. It is a format through which the researcher is aware how to proceed with the research problem and arrive at the result. It includes the entire process that is involved in the research part from the initial process of planning, execution, drawing interpretations and promulgating the results.

3.3 Research design

The research design is done for the purpose of following conditions

1. Collection and analysing of the data in a manner that aims to merge it in a proper manner.
2. It is a decision-making process as the plan of action is prepared by the researcher before taking over any study.
3. It is an arrangement of the conditions for the collecting and analysing data in a well-organized manner.

4. It is a conceptual framework within which the research is conducted and it constitutes the blueprint for the collection, measurement and analysing of data in a meaningful and structured way.
5. It enables the researcher to save a great deal of time, resources and labour.

3.4 Variables of the study

Variables are basically the periphery in the research part. It is basically the entity that can take any value and can vary. The dependent variable is the factor that is measured to determine the effect of the independent variable. It is on which the research is being studied. A dependent variable is one about which a researcher makes a prediction on. Here in this, Use of ICT Tools are the independent variables in this study. Understanding of science is the dependent variable in this study.

3.5 Population of the study

Population is the collection of groups of human beings or non-living entities like objects, institutions, areas, time units…etc. It is also called the universal set (Koul, 2014). All the Upper-Primary students in Bhopal district will be included as the target population of the study. The accessible population of this study is Upper-Primary students of Bhopal.

3.6 Sample of the study

It is not always possible to collect all the data from the population for a research study because it involves more time, money, labour and access. The purpose of an experimental research is to make generalizations about the population. A small representation of the population will be considered for a research study called a sample. The sample represents the same characteristics of the population where it is drawn from. A researcher gets confidence in doing experimentation when the sample truly reflects the entire population (Dash, 2008).

3.7 Tools used

In research, data gathering tools are called research tools. The advantage and importance of research is totally dependent on the relevancy of the tools used to extract

the information from the sample population. The tool should be relevant, reliable and valid.

As the study deals with the use of ICT tools in relation with the understanding of science of secondary school students. The tool for present research were-

- Questionnaire developed by Preeti Ujjaineeya (2022). This questionnaire consists of 20 multiple questions.

Questionnaire

A questionnaire is a research instrument consisting of a series of questions for the purpose of gathering information from respondents through survey or statistical study. The investigator selected 'Questionnaire' as a tool for collection of responses of students to check their awareness about ICT tools towards the understanding of science

The development of the Questionnaire passed through following stages

- Selection of Questions.
- Formation of Questions.
- Try-out Questionnaire.
- Item analysis
- Final draft of Questionnaire.

The questionnaire consists of 20 items. The scoring of correct response of the questionnaire was done by assigning score 1 and the scoring of incorrect response of the questionnaire was done by assigning score 0.