



SIES School of Learning and Leadership Development (SIESSLLD)

TRAINING NOTE (015/2026-27)

on

Research Orientation for School Teachers

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Backdrop:

Research is the foundation of innovation, informed decision-making, and continuous improvement. Every major advancement in science, education, technology, and society is rooted in systematic inquiry. In the context of school education, research does not necessarily imply sophisticated laboratory work or highly technical investigations. Rather, it focuses on solving practical problems, improving classroom practices, and guiding students to explore real-life issues.

The National Education Policy (NEP) 2020 strongly advocates the development of inquiry, critical thinking, creativity, and problem-solving skills among learners. Teachers therefore have an important responsibility not only to teach subject content but also to mentor students in undertaking meaningful research projects. This training note provides an overview of the research process and highlights the role of teachers in fostering a research culture in schools.

Understanding Research:

Research is a systematic and objective process of collecting, analysing, and interpreting information to answer a question or solve a problem. School-level research is generally applied in nature, focusing on practical issues relevant to students, classrooms, schools, or communities.

Good research project should possess the following characteristics:

- Clearly defined objectives
- Systematic planning and execution
- Collection of reliable and valid data
- Logical analysis and interpretation
- Useful conclusions and practical recommendations
- Ethical conduct throughout the research process.

Steps in Conducting Research:

Identification of the Research Problem: Every research project begins with identifying a meaningful problem or question. A good research problem should be relevant, feasible, specific, and capable of investigation within available resources and time.

Examples include:

- Factors affecting reading habits among students
- Impact of digital learning on classroom participation
- Waste management practices in the neighbourhood
- Awareness regarding environmental conservation

Teachers should encourage students to select topics connected with their surroundings and personal experiences.

Setting Objectives and Formulating Hypotheses: Research objectives define what the study intends to achieve. They provide direction to the investigation and help maintain focus. For quantitative studies, researchers may formulate hypotheses, tentative statements predicting relationships between variables, which are tested using collected data.

Selection of Research Type: Depending upon the objectives, research may be:

- **Primary Research:** Data are collected directly from respondents through surveys, interviews, observations, or experiments.
- **Secondary Research:** Existing books, reports, journals, government publications, and authentic online resources are analysed.

In school projects, a combination of primary and secondary research often provides richer insights.

Literature Review: Before beginning data collection, researchers should review existing literature to understand previous work on the topic.

A literature review helps to:

- Avoid duplication
- Identify research gaps
- Refine research questions
- Select appropriate methods
- Develop conceptual understanding

Students should be guided to consult authentic and reliable sources rather than depending solely on internet searches.

Research Design: Research design serves as the blueprint of the investigation. It specifies how the study will be conducted.

Important considerations include:

- Selection of respondents
- Sampling technique
- Sample size
- Time schedule
- Budget and available resources
- Ethical considerations.

Sampling methods may include purposive sampling, simple random sampling, systematic sampling, stratified sampling, or cluster sampling depending upon the nature of the study.

Data Collection: The quality of research depends greatly upon the quality of data collected. Therefore, appropriate methods and instruments must be selected.

Common techniques include:

1. Questionnaire:

A questionnaire is one of the most widely used tools for collecting information from a large number of respondents. Questions should be simple, clear, unbiased, and directly related to the research objectives.

2. Interviews:

Interviews provide detailed information and allow the researcher to explore opinions, attitudes, and experiences in depth.

3. Focus Group Discussions:

These involve guided discussions among a small group of participants to understand collective perceptions and viewpoints.

4. Delphi Technique:

This method seeks expert opinion through multiple rounds of structured feedback until a reasonable level of consensus is achieved.

Regardless of the method adopted, attention must be paid to two important concepts:

- **Reliability:** The consistency of the measurement.
- **Validity:** The extent to which the tool measures what it is intended to measure.

Data Analysis:

Once data are collected, they must be organised and analysed systematically.

Quantitative data may be analysed using:

- Frequency tables.
- Percentages.
- Graphs and charts.
- Mean and other basic statistical measures.

Qualitative data involve identifying themes, patterns, similarities, differences, and interpretations based on observations or interview responses.

The analysis should directly address the research objectives and provide meaningful conclusions supported by evidence.

Report Writing:

A research report communicates the findings of the investigation in a systematic manner. A well-organised report generally contains the following sections:

- Title
- Abstract
- Introduction
- Statement of the Research Problem
- Objectives
- Review of Literature
- Research Design
- Methodology

- Data Analysis
- Findings
- Conclusions
- Recommendations
- Limitations of the Study
- References

The report should be written in clear, concise, and objective language. Tables, charts, and figures may be included wherever appropriate to improve clarity.

Role of Teachers as Research Mentors:

Teachers play a crucial role in nurturing research aptitude among school students. Their responsibilities extend far beyond classroom instruction.

A research mentor should:

- Help students identify feasible and relevant research topics.
- Guide them in formulating objectives and selecting appropriate methods.
- Assist in developing questionnaires and other research instruments.
- Support ethical collection and analysis of data.
- Encourage critical thinking and evidence-based conclusions.
- Facilitate interaction with subject experts whenever necessary.
- Ensure originality of work through plagiarism checks.
- Promote responsible use of Artificial Intelligence as a support tool rather than a substitute for independent thinking.
- Provide continuous feedback throughout the research process.

The teacher's role is that of a facilitator, motivator, and guide who enables students to learn through inquiry and discovery.

Moving Ahead:

Research is an indispensable component of quality education and lifelong learning. Developing research skills at the school level helps students become curious, analytical, creative, and responsible citizens. Guided by competent teachers, school research projects can transform classroom learning into meaningful exploration of real-world issues. In alignment with the vision of NEP 2020, schools should strive to cultivate a vibrant research culture. Research and critical mind can only create thinking individuals.
