Research Methods in Technical Education - Research Problems

Dr. Muhammad Shahid Farooq

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Brief Information about the Author

Dr. Dr. Muhammad Shahid Farooq is Assistant Professor at Institute of Education and Research, University of the Punjab-Pakistan. He earned his First PhD (Special Education) from University of the Punjab and his Second PhD (Educational Sciences) and Post Doctorate from Université Lumière Lyon 2-France. He is the ever first in the world with two PhDs in these disciplines. He has obtained Master degrees in Education as well as in Economics from University of the Punjab. He is also Gold Medalist of University of the Punjab for being first class first in Master of Education. He has also MCS, B.Sc., B.Ed., DHMS and DFL in his credit. He is Approved Supervisor by Higher Education Commission (HEC) Pakistan to supervise awardees of HEC's scholarship and other PhD scholars as well.

He has 21 years of teaching experience as a whole. Before becoming teacher educator in 2004, he entered in professional academic life in 1992, and has a strong practical background of working as an educator for primary, secondary and college students of diverse communities. He accumulated extensive experience throughout the early years not only in developing and delivering professional development but also in tutoring courses, supervising at a range of levels and freelance consultant. He regularly contributes to international and national conferences, seminars, workshops, lectures and research journals. He authored numerous research papers that dealt with primary school, secondary school, university education levels, and distance education in national and international research journals.

Throughout his career he has been committed in improving quality of teaching and learning through his work in teaching, teacher training, professional conference presentation, academic writing, professional lectures and research. His current research interests lie in the areas of Inclusive Education; Mathematics Education; Didactics; Learning Styles/Cognitive Styles; Special Education (Mental retardation, Learning disabilities); Quality Education; Socioeconomic Studies; School Improvement; Educational Leadership; Educational Administration & Supervision, School Management, Leadership for Learning, Child-friendly Schooling, and Schools in challenging circumstances.

Learning objectives

After reading this text you will be able to achieve the following objectives:

- Select and state research problems.

- Identification of research problem sources.

- Define Review of Related Literature.

- Understand the purpose and scope of reviewing the literature.

- Explore a comprehensive and relevant body of knowledge.

- Write a small scale literature review of researches in a systematic manner.

- Identify different sources of locating information and literature.

- Know about analyzing and organizing the related literature orderly.

- Structure and write a summarized report of your own research on the basis of organized literature.

- Have an enhanced appreciation of critical reading.

Literature

Cozby, P. C. & Bates, S. C. (2011): *Methods in behavioural Research.* New York: McGraw-Hill Companies, Inc.

Fraenkel, J. R. & Wallen, N. E. (2009): *How to design and evaluate research in education.* New York: McGraw-Hill Companies, Inc.

Gay, L. R., Mills, G. E., & Airasian, P. (2005): *Educational Research: Competencies for Analysis and Applications.* Upper Saddle, NJ: Prentice Hall.

Hart, C. (1998): *Doing a literature review: Releasing the social science research imagination.* Washington DC: Sage publication.

Lodico, M., Spailding, D. T., & Voegtle, K. H. (2010): *Methods in educational research: From theory to practice.* San Francisco: Jossey-Bass.

Neumann, W. L. (2008): *Social Research Methods: Qualitative and Quantitative Approaches.* New York: Pearson.

Preface

Saima, a pre-school educator wants to explore how activity based teaching enhances the learning opportunities for language learners. Aqila, a technical education elementary school teacher is interested to investigate whether lecture method or demonstration method suits best for teaching to technology students. Rayma, a secondary school mathematics teacher is interested to know about the worth of student centered approach and teacher centered approach for taeching matheatics. The interests or curosity of these three teachers contains a question that needs to be answered and it serves as a foundation for further research. Such questions lead the teachers towards the formulation of research problems. In this chapter we will learn how every teacher will start to select, state and get insight about their problems.

1. Research Problem

Educational research in technology education helps teachers for development and designing of their instruction and finding solutions of educational problems.

> **Definition:**
> A **research problem** is exactly that—a problem that someone would like to research. A problem can be anything that a person finds unsatisfactory or unsettling, a difficulty of some sort, a state of affairs that needs to be changed, anything that is not working as well as it might. Problems involve areas of concern to researchers, conditions they want to improve, difficulties they want to eliminate, questions for which they seek answers (Fraenkel & Wallen, 2009).

The knowledge of research enables the teachers to identify their daily problems encountered in the course of taeching and learning and find solutions in systematic and scientific way. In this chapter we will discuss details about identification of research problems, stating the problems, getting insight from the previous literature about the existing problem, and exploring the sources relating to the problem under consideration.

Generally every problem may not be designated as a research problem, however the initial posing of questions leads the teachers, observers and researchers towards the potential researchable problems. The question infront of us that how we can state researchable questions. This document will provide us answer to this question and help us to get this skill. Some examples of researchable questions and non researchable questions are below.

Non Researchable Questions

Q1: Should we teach geography to the technology students?

Q2: Should the technology students be taught through inductive method?

Q3: Can lecturing be recommended as a best way for personality development of technology students?

Q4: Do good children born good?

In these examples it is evident that these questions do not need any emperical data to answer the questions. For example in the Q1 we can not deal with "Should" emperically. It is the case of choice that should or should not for different persons. Similarly Q3 and Q4 needs answer in "Yes" or "No". So no empirical data is needed to answer this question. These questions do not need collection and analysis of data.

Researchable Questions

Q1: What is the perception of technology teachers about the teaching of geography to technology students?

Q2: What is the opinion of classroom teachers about the effect of inductive teaching method on the academic performance of technology students?

Q3: What are the strategies for personality development of technology students at elementary school level?

Q4: What are the perceptions of educated parents about the good children?

These questions need collection of emperical data and synthesis to answer them. The researchable questions possess clarity, viability, significance and ethical cover in the course to answer them. This type of questions consist of independent and dependent variables that have to be operationally defined.

Research topics are usually derived from four sources that are theory, experiences, replication of previous researches and libraries. The statement of quantitative research topic is always formally stated, consisting of identification of variables of interest, description of relationship of these variables and the nature of participants in that research.

For qualitative research topics, it emerges over time during the study. It starts with a general idea or an issue and becomes focused based on the social culture, context, members of study and the phenomenon of study. This whole exercise leads towards statement of formal topic for condcut of qualitative inquiry.

1.1 Activities

A) Activity 1
Read the material related to research problem and explain the concept of researchable and nonresearchable problems. Enlist the characteristics of reseaechable and non reseaechable questions.

B) Activity 2
Focus on your institutional educational culture, identify five instructional problems and write their statements.

1.2 Review of Related Literature

In this section, the emphasis is on a review of previous research works by other scholars, which are relevant to the subject of the study. It starts with the exploration of different hard and soft sources. This section starts with the definition and purpose of the review of related literature. It is intended to make you know about the various sources to have an access on literature and also to extract the neceassy and relevant information. It also presents the ways to analyze, organize and report your own work on the basis of reviewd litrature. Review is a critical reading process that enables you to locate facts related to the problem under investigation. Theories regarding methodologies (research designs, research methods and research instruments) are also reviewed.

> **Definition**
>
> When the topic of research is to be identified and finalized then researchers need more insight about the variables of interest and the phenomena to be addressed. This insight is obtained by scanning and going through the researches that have been already done.
>
> "The review of the literature involves the systematic identification, location, and analysis of documents containing information related to the research problem" (Gay, 2005).

Purpose

The review of related literature enables the researchers for the following tasks:

1. Provide the basis for narrowing the research topic.

2. Making the topic workable and manageable.

3. Identification of variables of interest.

4. Clarification of expected relationships among the variables.

5. Identification of the potential populations.

6. Justification of the research design.

7. Understanding of the context of study.

8. Identification of flaws and gaps in the existing body of knowledge.

9. Rationale for the proposed study.

10. Description of the significance of the study.

11. Highlighting similarities and differences among the previous studies.

12. Skills for reviewing and interpreting the findings of the previous work done.

13. Linkage of previous experiences with the new experiences.

14. Development of conceptual framework of the study.

15. Guidelines for the proposed instruments.

16. Historical description of the problem under discussion.

17. Description of intended outcomes of the research.

18. Ficilitation for the interpritation of existing researches.

1.3 Sources for Review of Literature

Literature review typically includes scholarly journals, scholarly books, authoritative databases and primary sources. These sources may be from the following:

1. News papers	11. Presentation papers
2. Magazines	12. Conference proceedings
3. Books	13. Reference books
4. Films	14. Monographs
5. Audio tapes	15. Master, M.Phil and PhD theses
6. Video tapes	16. Face to face or telephonic communications
7. Research journals	17. Lectures
8. Scholarly books	18. Interviews
9. Government documents	19. Focus group discussions
10. Policy reports	20. Text books

The sources of literature can be classified as primary source and secondary source. Primary sources are the origin of information generation elsewhere. The basic or fundamental documents relating to any phenomenon are the primary sources of information. The other type of sources are the documents, recordings or information that is presented elsewhere and is reported by any other person or agency. These sources can be accessed physically from libraries or from electronic data bases. It depends upon the researcher how and when to use any type of the source for review in connection to the problem under consideration. The researcher has to verify the autheticity and relevance of the materials and the sources. The journals publishing peer review researches are usually the primary sources because these are based on the emperical research work.

1.4 Functions of Review of Literature

Usually novice researchers are excited that why they are doing literature review and how much they have to write. The main function of review is to know what has been done earlier and what is needed to develop a logical framework for the proposed study. The rationale for development of hypothesis also depends upon

the review of literature. Literature review also provides the details about the stategies and the methods to be adopted for the study. Further it helps the researcher to interpret the results in systematic and scientific manner. It is matter of the fact that bigger literature reviews do not mean better. The quality of the review has its foundations on the relevance, accuracy, usefullness, autheticity, coverage and objectivity of the documents used. To conduct research in the heavily researched areas the most relevant, prominent and significant researches are to be reviewed and for the less researched areas the alike studies are needed to be reviewed and make inferences for the study under consideration.

1.5 Process of Review of Literature

There are four steps for condcuting literature review:

1. Identification of the key words related to the variables of study.
2. Identification of hard and soft sources of information.
3. Development of an outline for the review of literature.
4. Organization of materials.
5. Comprehension of the references found.
6. Abstarcting and writing the details.

This process is to be followed step by step for sound and useable review of the previous work.

Abstracting and Reporting

At this stage of review of literature the reseacher has to follow these steps:

1. Find the article or reviewable material.
2. Read the given abstarct of research article.
3. Scan the whole article.
4. Note the bibliographic information (Name of author, Year/date of publication, title of article, Name of research journal/Name of book/Name of website, Edition, volume and issue number, web address).
5. Classify the article according to your outline.
6. Summarize the read article in your own words.
7. Highlight the key points or arguments.
8. Properly cite/report the material.

Task

Select a topic of research from the area of technical education. Collect materials related to the proposed topic and write a review of literature.

You can get more specific information about this task in the online-seminar on http://els.vu.edu.pk/.