

TYPES OF SCIENTIFIC RESEARCH ACTIVITY OF STUDENTS AND STAGE OF THEIR ORGANIZATION

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Abstract: *The growth of students' scientific research activity (SRA) skills during their academic careers seems to be a crucial topic. Students learn to conduct research while also developing their general competencies and professional skills during their education. This does not imply that all students will go on to pursue professions in scientific research. The modern world, the labor market, the complexity of technology, etc. all need for at least the bare minimum of competences while conducting research. SRA should be promoted and developed globally. Scientific research is not something to be done for fun; rather, it requires serious labor and a great deal of independence. Students learn how to analyze the information they have gathered, write reports and research presentations, and develop their analytical thinking and information-gathering skills. Graduate students who were preparing to teach science in Lithuanian universities participated in the qualitative research project. The study was carried out in January and February of 2016, and it was founded on the constructivist paradigm, which contends that knowledge is not a finished or uniform thing. When pupils learn new material and this stimulates their active cognitive processes, teaching is a successful strategy. The conducted research has shown that SRA questions are still important, that the organization of such an activity has certain flaws, and that improvement is not always deliberate and intentional because the context, environment, conditions, and requirements for education in general may vary. It is impossible to improve SRA without empirical data based on the current situation. The study has shown how effectively students comprehend SRA, as well as some of its main advantages and disadvantages. It has also made it possible to evaluate the importance of this activity for pre-service teachers' professional development and for enhancing rules.*

Keywords: *qualitative research, scientific research activity (SRA), teacher education, university students, applied research, basic research, correlational research, descriptive research, ethnographic research, experimental research, exploratory research, grounded theory.*

Research is a logical and systematic search for new and useful information on a particular topic. Research is important both in scientific and nonscientific fields. In our life, new problems, events, phenomena, and processes occur every day. Practically, implementable solutions and suggestions are required for tackling new problems that research on them and find their causes, solutions, explanations arise. Scientists have to undertake, and applications.

The research is broadly classified into two main classes: 1. Fundamental or basic research and 2. Applied research. Basic and applied researches are generally of two kinds: normal research and revolutionary research. In any particular field, normal research is performed in accordance with a set of rules, concepts and procedures called a paradigm, which is well accepted by the scientists working in that field. In addition, the basic and applied research can be quantitative or qualitative, or even both (mixed research).

1. Fundamental or Basic research:

Basic research is an investigation of basic principles and reasons for the occurrence of a particular event or process or phenomenon. It is also called theoretical research. The study or investigation of some natural phenomenon or relating to pure science is termed basic research. Basic research sometimes may not lead to immediate use or application. It is not concerned with solving any practical problems of immediate interest. But it is original or basic in character. It provides a systematic and deep insight into a problem and facilitates the extraction of scientific and logical explanations and conclusion on it. It helps build new frontiers of knowledge. The outcomes of basic research form the basis for much-applied research.

Basic research

- Seeks generalization
- Aims at basic processes
- Attempts to explain why things happen
- Tries to get all the facts
- Reports in the technical language of the topic

2. Applied research:

In applied research, one solves certain problems by employing well-known and accepted theories and principles. Most of the experimental research, case studies, and interdisciplinary research are essentially applied research. Applied research is helpful for basic research. Research, the outcome of which has immediate application is also termed applied research. Such research is of practical use to current activity.

Applied research

- Studies individual or specific cases without the objective to generalize
- Aims at any variable which makes the desired difference
- Tries to say how things can be changed
- Tries to correct the facts which are problematic
- Reports in common language

Basic and applied research is further divided into three types of research bearing some characteristics feature as follows:

Quantitative research

- It is numerical, non-descriptive, applies statistics or mathematics, and uses numbers.
- It is an iterative process whereby evidence is evaluated.

- The results are often presented in tables and graphs.
- It is conclusive.
- It investigates the what, where, and when of decision-making.

Qualitative research

- It is non-numerical, descriptive, applies to reason, and uses words.
- Its aim is to get the meaning, and feeling and describe the situation.
- Qualitative data cannot be graphed.
- It is exploratory.
- It investigates the why and how of decision-making.
- Mixed research
- Mixed research- research that involves the mixing of quantitative and qualitative methods or paradigm characteristics. The nature of data is a mixture of variables, words, and images.

- Other types of research

- Exploratory Research

Exploratory research might involve a literature search or conducting focus group interviews. The exploration of new phenomena in this way may help the researcher's need for better understanding, may test the feasibility of a more extensive study, or determine the best methods to be used in a subsequent study. For these reasons, exploratory research is broad in focus and rarely provides definite answers to specific research issues.

- The objective of exploratory research is to identify key issues and key variables.

Descriptive research

The descriptive research is directed toward studying “what” and how many of this “what”. Thus, it is directed toward answering questions such as, “What is this?”.

Explanatory research

- Its primary goal is to understand or explain relationships.
- It uses correlations to study relationships between dimensions or characteristics of individuals, groups, situations, or events.
- Explanatory research explains (How the parts of a phenomenon are related to each other).
- Explanatory research asks the “Why” question.

Longitudinal Research

Research carried out longitudinally involves data collection at multiple points in time. Longitudinal studies may take the form of:

- Trend study- looks at population characteristics over time, e.g. organizational absenteeism rates during the course of a year
- Cohort study- traces a sub-population over time, e.g. absenteeism rates for the sales department;

- Panel study- traces the same sample over time, e.g. graduate career tracks over the period 1990 – 2000 for the same starting cohort.

While longitudinal studies will often be more time-consuming and expensive than cross-sectional studies, they are more likely to identify causal relationships between variables.

Cross-sectional Research

One-shot or cross-sectional studies are those in which data is gathered once, during a period of days, weeks or months. Many cross-sectional studies are exploratory or descriptive in purpose. They are designed to look at how things are now, without any sense of whether there is a history or trend at work.

Action research

- Fact findings to improve the quality of action in the social world

Policy-Oriented Research

- Reports employing this type of research focus on the question ‘How can problem ‘X’ be solved or prevented ?’

Classification research

It aims at categorizing units into groups

- To demonstrate differences
- To explain relationships

Comparative research

- To identify similarities and differences between units at all levels

Causal research

- It aims at establishing cause and effect relationship among variable

Theory-testing research

- It aims at testing the validity of a unit

Theory-building research

- To establish and formulate the theory.

USED LITERATURE

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