



**Course Name: Research Method In Education (8604)**

**Autumn 2023**

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**Total Marks: 100**

**Pass Marks: 50**

**ASSIGNMENT No. 1**  
**(Units 1-5)**

**Q.1 Define Educational Research and its usefulness in the field of education. Also elaborate the steps involved in the process of scientific inquiry. (20)**

**\*\*Educational Research:\*\***

Educational research is a systematic investigation into educational issues, problems, or questions. It involves the application of scientific methods to gather, analyze, and interpret data related to educational phenomena. The goal of educational research is to contribute to the understanding and improvement of educational practices, policies, and outcomes.

**\*\*Usefulness of Educational Research in the Field of Education:\*\***

**1. \*\*Informed Decision-Making:\*\***

- Educational research provides evidence that informs decision-making at various levels, from classroom practices to educational policy development.

**2. \*\*Continuous Improvement:\*\***

- Research helps identify areas for improvement in educational systems, teaching methods, and curriculum design, fostering a culture of continuous improvement.

**3. \*\*Policy Development:\*\***

- Policymakers use educational research findings to develop evidence-based policies that address issues such as student achievement, teacher effectiveness, and educational equity.

**4. \*\*Professional Development:\*\***

- Teachers and educators use research to enhance their professional development, incorporating effective instructional strategies and staying informed about current educational trends.

5. **\*\*Accountability and Assessment:\*\***

- Research contributes to the development of reliable and valid assessment tools, aiding in the evaluation of student learning and the accountability of educational institutions.

6. **\*\*Understanding Learning Processes:\*\***

- Educational research helps uncover insights into how students learn, providing a basis for designing effective instructional methods and interventions.

7. **\*\*Addressing Educational Inequities:\*\***

- Research can highlight disparities in educational outcomes and identify strategies to address inequities, promoting a more equitable education system.

8. **\*\*Innovation and Technology Integration:\*\***

- Research informs the integration of innovative teaching methods and technology in education, enhancing learning experiences and outcomes.

**\*\*Steps in the Process of Scientific Inquiry:\*\***

1. **\*\*Identifying the Research Problem:\*\***

- The process begins with identifying a specific research problem or question. This step involves reviewing existing literature, observing educational practices, and considering gaps in knowledge.

2. **\*\*Review of Related Literature:\*\***

- Conduct a comprehensive review of existing literature to understand what is already known about the research problem. This helps in refining the research question and identifying potential gaps.

3. **\*\*Formulating a Hypothesis or Research Question:\*\***

- Develop a clear and testable hypothesis or research question that guides the research study. This step involves defining variables and establishing the scope of the study.

#### 4. **\*\*Designing the Research:\*\***

- Determine the research design, which includes selecting the research method (e.g., experimental, correlational, qualitative), choosing the sample, and developing data collection instruments.

#### 5. **\*\*Data Collection:\*\***

- Collect data according to the chosen research design. This may involve administering surveys, conducting experiments, collecting observational data, or using other methods depending on the nature of the study.

#### 6. **\*\*Data Analysis:\*\***

- Analyze the collected data using appropriate statistical or qualitative analysis techniques. This step helps draw conclusions and identify patterns or trends.

#### 7. **\*\*Interpreting Results:\*\***

- Interpret the results of the data analysis in the context of the research question or hypothesis. Consider the implications of the findings for theory and practice.

#### 8. **\*\*Drawing Conclusions:\*\***

- Based on the interpretation of results, draw conclusions about the research problem. Assess the validity and generalizability of the findings.

#### 9. **\*\*Communicating Results:\*\***

- Share the research findings through research papers, presentations, or other means. Effective communication of results is essential for contributing to the broader educational community.

#### 10. **\*\*Reflection and Future Directions:\*\***

- Reflect on the research process, considering its strengths and limitations. Identify avenues for future research and ways to build upon the study's findings.

By following these steps in the scientific inquiry process, educational researchers can conduct rigorous and systematic investigations, contributing valuable insights to the field of education and informing evidence-based practices.

## **Q.2 Differentiate the following with the help of examples from the field of education:**

**(a). Pure and Applied research (b). Evaluation and action research. (20)**

**\*\* (a) Pure and Applied Research: \*\***

**\*\* Pure Research: \*\***

- **\*\* Objective: \*\*** Pure research, also known as basic or fundamental research, is conducted to expand knowledge and understanding in a particular field. It is driven by curiosity and the pursuit of knowledge without immediate practical application.
- **\*\* Focus: \*\*** The primary focus is on theoretical principles, exploring fundamental concepts and phenomena.
- **\*\* Example in Education: \*\*** Conducting research to understand the neurological processes involved in learning without an immediate intention to apply the findings in educational practices.

**\*\* Applied Research: \*\***

- **\*\* Objective: \*\*** Applied research is directed towards solving specific, practical problems or addressing real-world issues. Its goal is to provide practical solutions or innovations.
- **\*\* Focus: \*\*** The focus is on the application of existing knowledge to address practical problems or improve practices.
- **\*\* Example in Education: \*\*** Research aimed at evaluating the effectiveness of a specific teaching method in improving student learning outcomes in a practical classroom setting.

**\*\* (b) Evaluation and Action Research: \*\***

**\*\* Evaluation: \*\***

- **\*\* Objective: \*\*** Evaluation is a systematic process of assessing the design, implementation, and outcomes of a program, project, or educational intervention. It aims to determine the effectiveness and efficiency of the intervention.
- **\*\* Focus: \*\*** The focus is on assessing the overall impact and success of an existing program or project.
- **\*\* Example in Education: \*\*** Conducting an evaluation of a school's literacy program to assess its effectiveness in improving students' reading skills.

### **\*\*Action Research:\*\***

- **\*\*Objective:\*\*** Action research is conducted by practitioners (teachers, administrators) within their own context to solve specific problems or improve their practice. It involves a cyclical process of planning, acting, observing, and reflecting.
- **\*\*Focus:\*\*** The focus is on bringing about immediate, positive change in a specific educational setting.
- **\*\*Example in Education:\*\*** A teacher conducting action research in their classroom to address a particular issue, such as student engagement, by implementing and reflecting on different instructional strategies.

### **\*\*Key Differentiators:\*\***

- **\*\*Time Frame:\*\*** Pure and applied research can both have long-term implications, while evaluation is typically focused on assessing outcomes at a specific point in time. Action research, on the other hand, emphasizes iterative cycles of reflection and improvement.
- **\*\*Initiator:\*\*** Evaluation is often initiated by external evaluators, while action research is initiated by practitioners within the field who actively participate in the research process.
- **\*\*Scope:\*\*** Pure research has a broad scope, contributing to theoretical knowledge, while applied research, evaluation, and action research have more immediate and practical applications within specific contexts.

In summary, pure research seeks theoretical knowledge, applied research addresses practical problems, evaluation assesses the overall impact of interventions, and action research is a practitioner-driven process focused on improving specific practices within a context.

## **Q.3 What is descriptive research? Write its five characteristics. Elaborate the steps involved in conducting a descriptive research (design). (20)**

### **\*\*Descriptive Research:\*\***

Descriptive research is a type of research design that is primarily concerned with describing the characteristics, behaviors, or conditions of a particular phenomenon. This form of research is often used when the researcher aims to provide a comprehensive snapshot of a situation, without

manipulating variables or establishing causal relationships. Descriptive research is common in fields such as sociology, psychology, education, and marketing.

### **\*\*Five Characteristics of Descriptive Research:\*\***

#### **1. \*\*Objective Description:\*\***

- The primary goal of descriptive research is to objectively describe the characteristics or behaviors of the subject under study. It aims to provide a detailed account without manipulating variables.

#### **2. \*\*Cross-Sectional Nature:\*\***

- Descriptive research is typically cross-sectional, meaning data is collected at a single point in time. This snapshot approach is useful for capturing a momentary picture of the subject of interest.

#### **3. \*\*Naturalistic Observation:\*\***

- Researchers often use naturalistic observation or surveys to collect data in real-world settings. This allows for the study of phenomena in their natural context, enhancing the external validity of the findings.

#### **4. \*\*Quantitative or Qualitative Data:\*\***

- Descriptive research can involve the collection of quantitative data (e.g., numerical counts, percentages) or qualitative data (e.g., descriptions, narratives) depending on the nature of the research question.

#### **5. \*\*No Manipulation of Variables:\*\***

- Unlike experimental research, descriptive research does not involve the manipulation of independent variables to establish cause-and-effect relationships. It focuses on observing and reporting existing conditions.

### **\*\*Steps Involved in Conducting Descriptive Research:\*\***

#### **1. \*\*Define the Research Problem:\*\***

- Clearly articulate the research question or problem that the study aims to address. Ensure that the objective is well-defined and focused on describing the characteristics of the phenomenon under investigation.
2. **\*\*Review Existing Literature:\*\***
    - Conduct a thorough review of relevant literature to understand what is already known about the subject. This helps in refining the research question and identifying gaps in existing knowledge.
  3. **\*\*Select the Research Design:\*\***
    - Choose an appropriate research design based on the nature of the research question. Common designs include surveys, observational studies, case studies, and content analyses.
  4. **\*\*Select the Sample:\*\***
    - Decide on the target population and select a representative sample. The sample should be chosen to ensure that the findings can be generalized to the broader population.
  5. **\*\*Develop Research Instruments:\*\***
    - Design the tools for data collection, which may include surveys, questionnaires, interviews, observation checklists, or content analysis protocols. Ensure that the instruments are valid and reliable.
  6. **\*\*Pilot Testing:\*\***
    - Conduct a pilot test to identify and address any issues with the research instruments. This helps refine the tools before full-scale data collection.
  7. **\*\*Data Collection:\*\***
    - Implement the data collection process according to the chosen design. This may involve administering surveys, conducting observations, or analyzing existing records and documents.
  8. **\*\*Data Analysis:\*\***
    - Analyze the collected data using appropriate statistical or qualitative methods, depending on the nature of the data. Descriptive statistics, content analysis, or thematic coding may be employed.



9. **\*\*Interpretation of Findings:\*\***

- Interpret the findings in the context of the research question. Discuss the implications of the results and their contribution to the existing body of knowledge.

10. **\*\*Report Writing:\*\***

- Present the research findings in a clear and organized manner through a research report or paper. Include details on the research design, sample, data collection methods, results, and conclusions.

By following these steps, researchers can conduct a systematic and rigorous descriptive study, providing valuable insights into the characteristics of the phenomenon under investigation.

**Q.4. What is Experimental research? Write the steps involved in conducting experimental research. How many kinds of variables are involved in this research?**

**(20)**

Experimental research is a scientific research method that involves the manipulation of one or more independent variables to observe their effect on a dependent variable, while controlling for other potential influencing factors. The goal is to establish cause-and-effect relationships between variables. Experimental research is often used in various scientific disciplines, including psychology, medicine, physics, and education.

Here are the steps typically involved in conducting experimental research:

1. **\*\*Define the Research Problem:\*\***

- Clearly define the research problem or question that the experiment aims to address. Formulate hypotheses that state the expected relationships between variables.

2. **\*\*Conduct a Literature Review:\*\***

- Review existing literature to gain an understanding of previous research related to the topic. This helps in identifying gaps in knowledge and refining the research questions.

3. **\*\*Develop a Research Design:\*\***

- Design the experiment, including the selection of participants, the manipulation of independent variables, and the measurement of dependent variables. Choose an appropriate experimental design, such as pre-test/post-test, between-subjects, or within-subjects design.

4. **\*\*Random Assignment:\*\***

- Randomly assign participants to different experimental conditions. This helps ensure that any individual differences are distributed evenly across the experimental and control groups, reducing the potential for bias.

5. **\*\*Manipulate Independent Variables:\*\***

- Introduce and manipulate the independent variable(s), which are the factors that researchers control or vary to observe their effects on the dependent variable. The manipulation should be carefully controlled and standardized.

6. **\*\*Control Extraneous Variables:\*\***

- Minimize the influence of extraneous variables, which are variables other than the independent variable that could affect the dependent variable. This is typically achieved through experimental controls, randomization, and standardization.

7. **\*\*Measure Dependent Variables:\*\***

- Determine how the effects of the independent variable(s) will be measured. Clearly define and operationalize the dependent variable(s) to ensure consistency and reliability in measurement.

8. **\*\*Implement the Experiment:\*\***

- Carry out the experiment according to the designed protocol. Collect data through observations, surveys, experiments, or other relevant methods.

9. **\*\*Data Analysis:\*\***

- Analyze the collected data using statistical methods to determine whether there are significant differences between groups or conditions. This analysis helps test the hypotheses and draw conclusions about the effects of the independent variable(s).

10. **\*\*Draw Conclusions:\*\***

- Based on the data analysis, draw conclusions regarding the research questions and hypotheses. Assess whether the results support or reject the hypotheses.

11. **\*\*Report Findings:\*\***

- Communicate the findings through a research report or paper. Include details about the methodology, results, and conclusions, and discuss the implications of the research.

In experimental research, there are typically three kinds of variables:

1. **\*\*Independent Variable (IV):\*\***

- The variable that is manipulated or controlled by the researcher. It is the presumed cause that is expected to have an effect on the dependent variable.

2. **\*\*Dependent Variable (DV):\*\***

- The variable that is observed or measured to assess the effects of the independent variable. It is the outcome variable that researchers are interested in understanding or predicting.

### 3. **\*\*Extraneous Variables:\*\***

- Other variables that may affect the dependent variable but are not the focus of the study. These variables are controlled or accounted for to isolate the effects of the independent variable.

The successful application of experimental research relies on careful planning, rigorous methodology, and the appropriate analysis of data to draw valid and reliable conclusions about cause-and-effect relationships.

## **Q.5 Why research is needed in education Discuss its scope?**

**(20)**

Research in education is crucial for several reasons, and its scope extends to various aspects of the educational system. Here are some key reasons why research is needed in education and the scope of educational research:

### **1. \*\*Improving Teaching and Learning Practices:\*\***

- **\*\*Scope:\*\*** Educational research helps identify effective teaching methods, instructional strategies, and learning resources. It explores how students best acquire and retain information, leading to improvements in classroom practices.

### **2. \*\*Curriculum Development and Evaluation:\*\***

- **\*\*Scope:\*\*** Research contributes to the design, development, and evaluation of curricula. It ensures that educational programs align with learning objectives, are relevant, and meet the evolving needs of students and society.

### **3. \*\*Student Assessment and Evaluation:\*\***

- **\*\*Scope:\*\*** Research is essential for developing valid and reliable assessment tools. It explores various methods of evaluating student performance, understanding their strengths and weaknesses, and informing strategies for personalized learning.

### **4. \*\*Identifying and Addressing Educational Inequities:\*\***

- **\*\*Scope:\*\*** Research helps identify disparities in educational outcomes, such as achievement gaps among different demographic groups. It provides insights into the factors contributing to these inequities and informs policies to address them.

### **5. \*\*Professional Development for Educators:\*\***

- **\*\*Scope:\*\*** Educational research supports the continuous professional development of teachers and administrators. It explores effective training programs, mentoring approaches, and strategies to enhance the skills and knowledge of educators.

### **6. \*\*Educational Technology Integration:\*\***

- **\*\*Scope:\*\*** Research investigates the impact of technology on education, including the effectiveness of digital tools and online learning platforms. It guides the integration of technology into classrooms and informs decisions about the use of educational resources.

#### 7. **\*\*Policy Development and Reform:\*\***

- **\*\*Scope:\*\*** Research informs the development, implementation, and evaluation of education policies. It provides evidence-based insights that policymakers can use to make informed decisions about educational reform, funding allocation, and resource distribution.

#### 8. **\*\*Understanding Educational Psychology:\*\***

- **\*\*Scope:\*\*** Research in educational psychology explores how students learn, develop, and interact in educational settings. It informs the design of learning environments that are conducive to cognitive, social, and emotional development.

#### 9. **\*\*Parent and Community Involvement:\*\***

- **\*\*Scope:\*\*** Research examines the role of parents and communities in education. It explores effective strategies for involving parents in their children's education and fostering community support for schools.

#### 10. **\*\*Global Perspectives on Education:\*\***

- **\*\*Scope:\*\*** Research helps educators and policymakers understand global trends in education. It provides insights into successful practices in different countries, allowing for the adaptation of effective strategies to local contexts.

#### 11. **\*\*Innovations in Education:\*\***

- **\*\*Scope:\*\*** Research drives innovation in education by exploring new pedagogical approaches, educational technologies, and models of schooling. It encourages experimentation and adaptation to meet the evolving needs of learners.

## 12. **\*\*Lifelong Learning and Adult Education:\*\***

- **\*\*Scope:\*\*** Educational research extends to lifelong learning and adult education. It explores effective methods for adult skill development, retraining, and continuing education to meet the demands of a changing workforce.

research in education is essential for continuous improvement, innovation, and informed decision-making within the educational system. Its scope is broad, covering various aspects that contribute to the overall enhancement of teaching and learning experiences. Educational research plays a pivotal role in shaping policies, practices, and outcomes in the dynamic field of education.