Lecture Notes

# Chapter 1: Introduction to Educational Research

## Learning Objectives

* 1. Explain the importance of educational research.
  2. List at least five areas of educational research.
  3. Explain the difference between basic and applied research.
  4. Describe evaluation research, action research, and orientational research.
  5. Discuss the different sources of knowledge.
  6. Explain the scientific approach to knowledge generation.
  7. Explain how to determine the quality of a theory or explanation.
  8. List the six objectives of educational research and provide an example of each.

## Chapter Summary

This chapter serves as an introduction to educational research. It explains the purposes and objectives of educational research and provides examples of five areas (basic research, applied research, evaluation research, action research, and orientational research) of educational research.

## Annotated Chapter Outline

1. Introduction
   1. This chapter serves as an introduction to educational research. It explains the purposes and objectives of educational research and provides examples of five areas (basic research, applied research, evaluation research, action research, and orientational research) of educational research. The differences between applied and basic research are explored. Evaluation research, action research, and orientational or critical theory research are described. Different sources of knowledge are discussed. The chapter also explains the scientific approach and how it is used to increase our knowledge. How researchers evaluate the quality of a theory or scientific explanation is also discussed. The objectives of educational research are also described.
2. Why Should We Study Educational Research?
   1. Research can be interesting.
      1. It may also be beneficial.
   2. Develop students’ critical thinking skills
      1. Evaluate arguments of others
      2. Do not prove anything but instead “provide evidence” which must then be evaluated.
   3. Better understand discussion of research in the media and other sources
      1. Identify attempts at persuasion from multiple sources
   4. Evaluate the quality of research from many sources
      1. Design of the study impacts its quality
      2. Poor-quality studies present information that we should not have confidence in.
   5. Use of research on a specific topic to make informed choices or recommendations
      1. Terminology, characteristics of different types
      2. **Research literature**: set of published research studies on a particular topic
   6. Practical reason
      1. Improve your work as a teacher, counselor, coach, leader by learning from others’ or your own research
      2. Write a proposal grant to obtain funding for an innovation
      3. Notes
3. Areas of Educational Research
   1. Many areas covered by educational research
      1. AERA: American Educational Research Association
      2. Twelve major divisions and many special interest groups
      3. Table 1.1 has a listing
      4. To learn more about the areas of educational research and current issues, explore the AERA website at [http://aera.net](http://aera.net/)
      5. Great student membership rates
4. Examples of Educational Research
5. Examine journal articles to get a feel for research
6. **Abstract**: Brief summary of what is in an article
7. Look at abstract to decide whether the entire article should be read.
8. General Kinds of Research
9. Basic and Applied Research
10. **Basic Research**: Research aimed at generating fundamental knowledge and theoretical understanding about basic human and other natural processes.
11. Applied Research: Research focused on answering practical questions to provide relatively immediate solutions.
12. Evaluation Research
13. Focus on how well programs or interventions worked in the real world. **Evaluation**: Determining the worth, merit, or quality of an evaluation object
14. **Formative Evaluation**: Evaluation focused on improving the evaluation object
15. **Summative Evaluation:** Evaluation focused on determining the overall effectiveness and usefulness of the evaluation object
16. **Theory Failure**: A program performs poorly because it is based on a weak or faulty program theory.
17. **Implementation Failure**: A program performs poorly because it is based on a weak or faulty program theory.
18. Action Research
    * 1. **Action Research**: Applied research focused on solving practitioners’ local problems
      2. May be very useful to teachers, counselors, administrators, and others involved in education
19. Orientational Research
    * 1. **Orientational Research**: Research explicitly done for the purpose of advancing an ideological position or orientation
      2. Also known as *Critical Theory Research*
20. Sources of Knowledge
21. Experience
22. **Epistemology**: the theory of knowledge and its justification
23. **Empiricism**: the idea that knowledge comes from experience
24. **Empirical statement**: a statement based on observation, experiment, or experience
25. Reasoning
26. The process that we use to come to conclusions is important to understanding and conducting research.
27. **Rationalism**: The philosophical idea that reason is the primary source of knowledge.
28. **Deductive reasoning**: The process of drawing a conclusion that is necessarily true if the premises are true.
29. **Inductive reasoning**: The process of drawing a conclusion that is “probably” true.
30. **Probabilistic**: Stating what is likely to occur, not what will necessarily occur
31. **Problem of induction**: The future might not resemble the past.
32. The Scientific Approach to Knowledge Generation
    1. Dynamics of Science
       1. Science is dynamic, always new ideas and theories
       2. **Science**: An approach for the generation of knowledge
    2. Basic Assumptions of Science
       1. There is a world that can be studied. This can include studying the inner worlds of individuals.
       2. Some of the world is unique, some of it is regular or patterned or predictable, and much of it is dynamic and complex.
       3. The unique, the regular, and the complex in the world all can be examined and studied by researchers.
       4. Researchers should try to follow certain agreed-on norms and practices.
       5. It is possible to distinguish between more and less plausible claims and between good and poor research.
       6. Science cannot provide answers to all questions.
       7. **Psychological factors**: individual-level factors
       8. **Social psychological factors**: factors relating individuals to other individuals and to social groups
       9. **Sociological factors**: group- and society-level factors
    3. Scientific Method
       1. Process is making empirical observations, generating and testing hypotheses, generating or constructing and testing or justifying theories, and attempting to predict and influence the world to make it a better place to live.
       2. Exploratory method and confirmatory method have different purposes but both are used.
       3. Quantitative researchers and qualitative researchers differ in the type of data they collect.
       4. **Hypothesis**: a prediction or educated guess
       5. **Theory**: An explanation or explanatory system that discusses how a phenomenon operates and why it operates as it does.
       6. **Exploratory method**: a bottom-up or theory-generation approach to research
       7. **Confirmatory method**: a top-down or theory-testing approach to research
       8. **Quantitative researcher**: A researcher who focuses on testing theories and hypotheses using quantitative data to see whether they are confirmed or not.
       9. **Qualitative researcher**: A researcher who focuses on the exploration, description, and sometimes generation and construction of theories using qualitative data.
    4. Theory
       1. Involved in exploratory and confirmatory methods
       2. Quality is judged along many dimensions.
       3. **Theory**: An explanation or an explanatory system that discusses *how* a phenomenon operates and *why* it operates as it does.
       4. **Criterion of falsifiability**: the property that statements and theories should be testable and refutable
       5. **Rule of parsimony**: preferring the most simple theory that works
33. The Principle of Evidence
    * 1. Research does not prove but provides evidence.
      2. Replications of a study are crucial components of science.
      3. Replication: research examining the same variables with different people
      4. Principle of evidence: the philosophical idea that empirical research provides evidence, not proof
34. Critical/Scientific Reasoning and Pseudoscience
    * 1. Within research there has to be sufficient justification for each claim and the claims must be delimited.
      2. Universality is rare.
      3. **Pseudoscience**: Any set of beliefs or practices that purports to be scientific but are not.
      4. **Anonymous peer review**: Anonymous review of book and article manuscripts by experts for scientific accuracy and merit
35. Objectives of Educational Research
    1. There are six objectives of educational research
       1. **Exploration**: attempting to generate ideas about phenomena
       2. **Description**: attempting to describe the characteristics of a phenomenon
       3. **Understanding**: attempting to understand the subjective viewpoints of particular people and particular groups
       4. **Explanation**: attempting to show how and why a phenomenon operates as it does
       5. **Prediction**: attempting to predict or forecast a phenomenon
       6. **Influence**: attempting to apply research to make certain outcomes occur
36. Dispositions of a Good Researcher
    1. There are characteristics and attitudes that predispose one to be a good researcher.