

INTRODUCTION TO

EDUCATIONAL

RESEARCH

C. M. CHARLES

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by

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Introduction to Educational Research

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1

Educational Research: Process and Promise

This book is about educational research, and it has three main purposes:

1. To orient you to the nature of educational research, why it is done, and the forms it takes
2. To provide information that will help you become an intelligent consumer of research, which requires that you be able to locate research and read it with understanding
3. To teach you the fundamentals of doing educational research—the steps that get you started toward producing research of your own

CONSUMER AND PRODUCER

It is believed in some circles that graduate students should learn to locate, interpret, and use research before they begin learning how research is actually done. A different view is taken in this book. Published research is best understood when one also knows something about how research is done, how it is produced. By the same token, one learns more easily how to do research when one knows how it is expressed and where it is available.

That is why both the consumption and production of research receive attention in the chapters that follow. That is not to say that no differentiation is made between the two processes. Chapters 1 through 4 have to do with the nature of educational research, the sources of research topics and how they are put into researchable form, how to locate published research, and how to interpret what you find. Chapter 5

describes in general terms how research projects are organized, information that helps both with the interpretation and the production of research.

Beginning with Chapter 6, the six main types of educational research are explored; each chapter focuses first on the interpretation of the type of research under discussion and second on how to produce it.

The final chapters in the book have to do with understanding and applying statistics in various types of research and, finally, with formats and procedures for writing research reports.

WHAT IS RESEARCH?

According to the dictionary, the word research comes from the French *recherche*, which means to “travel through” or “survey.” It gives the English meaning as “careful, systematic, patient study and investigation in some field of knowledge, undertaken to discover or establish facts or principles.”

The words “careful, systematic, patient investigation” give you a good idea of what research entails. There is more to research than just looking up facts in an encyclopedia. Research is called for when one has a substantial question in mind that has no readily available answer. A researcher seeks out information related to that question and tries to make sense of it so that the question can be answered. The research process is done systematically and follows general rules. When you learn about those rules, you will find that research, both the understanding and the doing of it, is neither obscure nor mysterious.

One other idea should be associated with the meaning of research: It is an undertaking that people initiate and follow through on in a more or less self-directed way. It is a process of inquiry, of finding answers to important questions. Just looking up answers to fill in blanks on a prepared worksheet is not doing research, because someone else has organized the inquiry.

In light of these meanings, which of the following activities do you think would most likely involve research?

1. Finding the year in which Halley first sighted the comet that bears his name
2. Preparing a class report on the ten best-known comets of the twentieth century
3. Labeling all the bones on a drawing of the human skeleton
4. Learning about various skeletal deformities caused by arthritis

You can see that numbers 2 and 4 require something of a careful, systematic study, whereas you could quickly locate (look up) the information needed for numbers 1 and 3.

**Research is careful,
systematic
investigation.**

WHAT IS EDUCATIONAL RESEARCH?

Educational research is simply research into matters related to education. It is a broad field of inquiry, for the number of important questions in education never seems to decline. Consider the following questions:

- What is the best method for teaching reading to first-grade students of Indochinese descent?
- What combination of factors best ensures that ninth-grade students will pay attention while being taught English grammar?
- What are the projected costs of Elmwood School District's total program for each of the next five years?
- What are the key elements of the various programs of bilingual education now used in U.S. schools?
- What are the chief causes and signs of burnout in U.S. teachers, at different grade levels, in various cultural settings, in different parts of the country?

Research is required to answer each of these questions; the answers cannot be found readily in dictionaries, encyclopedias, textbooks, almanacs, or other references.

Educational research, then, is careful, systematic investigation into any aspect of education. It is done to find reliable answers to questions, to discover the best ways of doing things, to establish principles that can be followed with confidence. Ultimately, the answers to these questions lead to the development of reliable guidelines for accomplishing such things as:

- Ensuring adequate school finance
- Organizing and administering schools
- Providing quality instruction in all its numerous facets
- Obtaining, and making the best use of, quality materials of instruction
- Finding the most effective ways of interacting with students, parents, and community
- Providing quality psychological and other support services for students and teachers

WHY THE INTEREST IN EDUCATIONAL RESEARCH?

Prior to 1970, educational research yielded relatively little information that teachers could put to immediate use. Studies that compared different teaching methods, for example, usually found "no significant difference" between the methods, — meaning that you really couldn't

conclude that one approach was better than the other. The same was true for studies of factors that affected student learning. Except for psychologist B. F. Skinner's findings that reinforcement could guide, speed, and strengthen learning, teaching practice was based far more on intuition and "seeing what worked" than on information obtained through research.

That picture began to change in the 1970s, and by the mid-1980s a dramatically different situation prevailed. Jacob Kounin's (1970) research showed how astute teachers managed lessons to keep students effectively engaged. Frederic Jones (1979) identified the major misbehavior problems that disrupt teaching and learning, and developed and taught effective ways to deal with them. The Beginning Teacher Evaluation Study (Fisher et al., 1978) revealed how student learning was affected by academic *engaged time* (time students are actually working on a task) and the amount of content they covered. Other research showed that learning was affected by how teachers structured lessons, gave instructions, asked questions, monitored student work, provided corrective feedback, set high but reasonable expectations, and maintained calm, orderly, cooperative classroom environments (Berliner, 1984a). Benjamin Bloom (1984) began to find combinations of teaching behaviors that produced group learning almost as high as that previously reached only through individual tutoring.

Pre-service and in-service teacher-training programs have scrambled to keep abreast of these new findings. This ferment has fueled itself, increasing still further the interest in educational research.

Educational research is also beginning to change the way teaching is viewed. Formerly, most teachers saw the instructional task as consisting of three phases: planning, delivery, and evaluation. But more recently, studies of teacher behavior have shown that teachers in actual practice perform an amazing variety of tasks that affect student behavior and learning. From the basis of such studies, David Berliner (1984b) concluded that teachers make, on the average, at least ten nontrivial decisions per hour of teaching — real decisions of importance — in the midst of some 1,500 interactions per day with the students under their direction. The following are just a few of the many areas through which those decisions are scattered:

- Instructional planning
- Motivating students
- Giving cues and directions
- Delivering instruction
- Giving feedback, testing, and grading
- Maintaining a good classroom climate for learning

In all these areas, research has provided information that teachers can follow with confidence, and much more information will be forth-

**Educational
research can
provide practical
information.**

coming in the years ahead. As teaching comes to be considered a process of informed decision making, the need increases for reliable information upon which to base those decisions; hence the certainty of continued and growing interest in educational research.

Although major research efforts have gone into investigations of teaching effectiveness, other forces are also involved in the push for increased educational research.

Schools and teachers routinely face many important problems for which solutions are not readily available. The most common problems are (1) strengthening support for schools in apathetic communities; (2) providing effective instruction for groups of non-English-speaking students from various countries; (3) increasing achievement scores significantly on standardized tests; and (4) maximizing, for various ethnic and racial groups, access to quality education.

Finally, we should not overlook a factor that has always motivated research: the simple desire to know. We want to know about the solar system, about automobile engines, about migrating waterfowl, about what excites students, about what students like best (and least) in their teachers. We often set out on our own to explore what interests us. Frequently, the information we gain and the conclusions to which we come have little or no value to others. But sometimes they turn out to have unexpected extensions and applications.

HOW IS EDUCATIONAL RESEARCH DONE?

All research, in education and elsewhere, occurs according to the following sequence:

1. There is something we want to know, explore, or develop. As researchers, we call this the *problem*. It may be a question, a concern, a need, an interest. It may come from any source, often unexpectedly.
2. Once we have clarified the problem, we begin to seek information about it from various sources. Chief among these sources are people, places, physical objects, and printed materials. The steps we go through in obtaining and organizing information are called the *procedures* of our investigation.
3. Having obtained information, we organize it logically or sensibly. Sometimes we organize the information into tables or figures. Sometimes we present it statistically, a procedure that involves mathematical treatment and special terminology. That organized information comprises the *findings* of our investigation.
4. Once we have stated our findings, we try to explain what they mean. In other words, we interpret the information we have come up with, a phase appropriately referred to as *conclusions*.

**Educational
research occurs
through four
specific phases.**

In addition to knowledge of these four phases, there are two additional facts about research that you should recognize:

1. In reality, the four phases in the process seldom occur in such pure form. Researchers often have conclusions in mind before beginning their research, and they then seek information to support those conclusions. They are usually organizing and interpreting information *and* drawing conclusions about it, even as they are acquiring it. (Technically, they are not supposed to do that: They are supposed to be completely open-minded and systematic. They rarely are, however.)
2. You have often encountered terms such as “scientific problem-solving method,” “hypotheses,” “statistics,” and “experimental method.” All of them *can* be involved in research—and often are. They, along with a great many other things you will learn about, can provide guidance, lend precision, reduce errors, and assist in the interpretation of research. They are not, however, absolute requirements of research.

Exercise 1.1

1. José Gomes decided to investigate the reading achievement of Vietnamese, Cambodian, Laotian, and Filipino students who had been in the United States for two years or less. Identify each of the following, from his research, as (P) problem, (PR) procedure, (F) finding, (C) conclusion. Write the symbols in the blanks.

- _____ Average achievement for Cambodians was one year below grade level.
- _____ One hundred students were included from each of five schools.
- _____ We need to find out how well they are doing in reading.
- _____ There was a ten-point difference between the highest and lowest groups.
- _____ The seventh-grade scores were: Vietnamese, 37; Cambodians, 35; Laotians, 34; Filipinos, 38.
- _____ Their progress in reading was better than anticipated.

2. Suppose you wanted to investigate how math teachers in the eighteen schools of Persimmon Unified District introduce their daily math lessons. Indicate what the *problem* would be if your main purpose for doing the research was to:

- a. Describe the procedures that teachers use

- b. Identify the most and least effective ways of introducing the lessons
- c. Differentiate between introductions made by secondary and elementary teachers

WHAT ARE THE MAIN TYPES OF EDUCATIONAL RESEARCH?

We saw earlier that sometimes people simply want to explore interests, find information, or answer questions without any intention of putting their findings to any practical use. Research done for such purposes is called *basic research*. We also saw that research is sometimes done out of a desire to solve specific problems. This is called *applied research*.

Basic research and applied research are often referred to as *types* of research, but in reality they are not; they are, instead, categories into which all types of research can be placed, depending on whether the research is undertaken to solve a specific problem (applied research) or simply to satisfy the investigator's desire to know (basic research).

It is better to define the various types of research in terms of the kinds of information they are able to deliver. Given that definition, we can identify six types of educational research:

- Historical
- Descriptive
- Correlational
- Causal-comparative
- Experimental
- Research and Development

As we proceed to examine each of these types, we will consider not only the kinds of information they provide, but the methods they employ in producing new information. With that in mind, let us preview the six types of educational research.

Historical Research

Historical research describes, and often attempts to explain, conditions, situations, and events in the past. The main sources of data (information) are people and documents for fairly recent events, and documents, locales, objects, and their traces for events that either happened very long ago or for which there are no people or documents available.

A 1986 television documentary entitled "The Lemon Grove Incident" reenacted a series of events in the 1930s in which a school board attempted to place children of Mexican descent in a separate school for

“Americanization.” The Hispanic parents filed suit, and the resulting court case helped set a precedent for integrated schools. The research that was done to produce the documentary was “historical,” and the researchers obtained information from a few adults who, as children, were involved in the incident, plus court documents and written accounts that appeared in newspapers of the day.

Even if you don’t have people or written accounts to use as sources of information, you can often piece together very accurate historical pictures. For example, in the Western ghost town of Bodie, there remains a schoolhouse, complete with desks, instructional materials, chalkboards, student notebooks, school registers, and so forth, left in place when the mining company that owned the town decided abruptly to close and abandon the mines. Because the area is quite isolated, well off the beaten path, the school sat undisturbed for many years.

If you went there today, you would be able to construct a rather accurate picture of the student body, curriculum, classroom organization, activities, books and materials, and other objects used for educating youngsters of the community. You could do that by examining the objects that were left behind, organizing what you discovered, and interpreting the evidence in ways that make sense in terms of your experience. Knowing what typical American schools were like a few decades ago would also help.

Historical research describes the past.

Descriptive Research

While historical research describes conditions, situations, and events of the past, descriptive research describes conditions, situations, and events of the present. The methods used in the two types of research are quite similar, and it could be argued that they are actually the same type. Since they are generally referred to as different types, however, we will consider them as such here.

Descriptive research, like historical research, uses people, documents, locales, objects, and other written accounts as sources of information. Its purpose is to describe, clarify, and interpret aspects of education as they presently exist. Frederic Jones’s (1979) research on discipline is a good example of descriptive research. He described events in numbers of different classrooms, focusing in particular on how teachers prevented discipline problems in their classrooms.

Jones studied videotapes he made in many classrooms to describe the nature and frequency of student misbehavior. He found that 80 percent of all misbehavior was talking without permission, while 19+ percent was goofing off or walking about the room without permission. Jones also described what teachers did in response to the misbehaviors. He found that some teacher responses were effective in preventing or