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STRENGTHS AND WEAKNESSES OF RESEARCH DESIGNS

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Each of the aforementioned research designs has both strengths and weaknesses. Some of these differences are obvious but others are not. Table 1 presents some examples of the key strengths and weaknesses of the various research methodologies discussed in this entry. This is not an exhaustive list; rather, it is provided to demonstrate that each methodology is complex and has both pros and cons.

When researchers and consumers of research evaluate the strengths and weaknesses of various designs, there are many issues to consider. Specifically, there are several key questions that can serve as a framework for evaluating research designs. The main questions are discussed below.

The Research Question. The research question is by far the most important question to consider when selecting and evaluating a research design. In all educational studies, the major research question should be articulated before the methodology is selected; the appropriate methodology should then be chosen based on that question. Most social scientists agree that a preferred methodology should not be used as a framework to guide research.

For example, a large school district might want to know if high school students' foreign language pronunciation is better after two years of studying Spanish or two years of studying French. The research question might be: What is the relation between studying French versus study in g Spanish, and foreign language pronunciation after two years of study?

The researcher then must decide which research design is the most appropriate to answer the specific research question. In this example, the researcher can easily eliminate several options. For example, an experiment would be impossible, since students cannot be randomly assigned to Spanish or French classes. In addition, the researcher might decide that qualitative and micro genetic studies are inappropriate, since the researcher is not interested in the processes or developmental trends that occur over time. There are several other questions that the researcher must also address that will help to finalize the decision.

The Sample Being Studied. Researchers must consider the nature of their samples when selecting a methodology. This is an important question because some methodologies are challenging to implement with certain populations.

For example, most studies that use survey-based methodologies require the participants to be able to read the survey items. If the sample included young children, or individuals with impaired visual abilities, then this might preclude the use of a self-administered survey. In addition, if the researcher is studying a large sample, with more than 1000 participants, in many cases this would prohibit the investigator from implementing single-subject designs, since the sample is so large.

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Resources Available to Do the Research. Many resources are needed to complete research studies. Novice researchers often do not realize the cost involved with educational studies. A college student doing a small study for a research methods course will certainly not have the same resources available as an experienced investigator with a multimillion dollar grant.

Resources involve more than money. Another important consideration is personnel. Some research methodologies require more personnel than others. For example, a micro genetic study might be carried out by one investigator who can focus on the progress of a few subjects. In contrast, a large experimental study that requires collection of large amounts of data from many participants will require many more personnel. Thus if fewer resources are available, a researcher might not be able to use the ideal methodology to conduct a study.

Time is another important resource that often affects the type of methodology that is chosen for a particular study. A design experiment that involves continuous evaluation of progress and setting of goals might be ideal if a researcher has enough time to devote to a long-term study. Some studies (e.g., longitudinal studies) take a long time to complete. Thus a researcher who is interested in examining developmental issues, but who does not have a lot of time and funding, might select a cross-sectional methodology instead.

The Intended Audience for the Research. Different audiences will benefit from different kinds of research studies. If the audience is practitioners, then action research might be highly appropriate. First, teachers can be directly involved in action research studies; second, other educators might be more willing to accept the results obtained from one of their peers via action research than from unknown researchers.

Certain funding agencies might be interested in only funding some types of studies. For example, there is much debate among educational researchers about the advantages and disadvantages of using experimental designs in educational research; whereas many funding agencies encourage experimental studies, many educational researchers argue that sometimes, true experiments are difficult to implement in actual classroom settings.

Using Mixed Methods. Many educational issues are multifaceted and complex; consequently, often one single methodology will not yield all of the essential information that researchers desire. Given the strengths and weaknesses of the various designs, and the many decisions that researchers must make before choosing a methodology, a number of scholars in recent years have begun to use mixed methods in educational research. When researcher use mixed methods, they use a variety of different methodologies within the same study.

A mixed methods study is usually challenging; the researchers must be able to utilize multiple designs appropriately. Some mixed methods studies involve two or more methodologies being carried out simultaneously, whereas others involve a succession of different studies, all designed to answer one general research question.

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