

## Qualitative and Quantitative Research

Up to this point, the terms *qualitative* and *quantitative research* have been used on occasion, without definition. Although the terms *qualitative* and *quantitative* are generally well known in our society, these types of research, especially qualitative, are somewhat difficult to define, as specific practice that covers a variety of studies. We can take a definite approach as provided by Krathwohl (1993):

Qualitative research: research that describes phenomena in words instead of numbers or measures.... Quantitative research: research that describes phenomena in numbers and measures instead of words (p. 740).

Essentially, Krathwohl's description shows the distinction in the way data are presented, and this may be the most apparent distinction to anyone reading the research literature. However, identification of additional differences between these two approaches to research aids in understanding them.

Qualitative and quantitative research represent two distinctly different approaches to understanding the world, that is, the phenomena being researched. Qualitative research has its origins in descriptive analysis, and is essentially an inductive process, reasoning from the specific situation to a general conclusion. Quantitative research, on the other hand, is more closely associated with deduction, reasoning from general principles to specific situations.

As Lancy (1993) points out, qualitative research is typically thought of as a method with a set of procedures for conducting research. From a practical standpoint of doing research this may be a useful approach, but there are underlying differences in the epistemologies of qualitative and quantitative research. They are based on different paradigms, a paradigm being a model consisting of assumptions, concepts, and propositions. Qualitative research in its purest sense follows the naturalist paradigm, that research should be conducted in the natural setting and that the meanings derived from research are specific to that setting and its conditions. The approach is that of a holistic interpretation of the natural setting.

Quantitative research has its roots in positivism and is more closely associated with the scientific method than is qualitative research. Reese (1980) defines positivism as:

a family of philosophies characterized by an extremely positive evaluation of science and scientific method (p. 450).



The emphasis is on facts, relationships, and causes. Quantitative researchers place great value on outcomes and products; qualitative researchers have great concern for the impact of the process as well, typically more so than quantitative researchers.

It is not desirable to get sidetracked on a discussion of the role of theory in educational research at this point. That issue, along with a formal definition of theory, merits more elaboration as is done later in the chapter, but a few comments are in order here. Qualitative research does not emphasize a theoretical base for whatever is being studied at the beginning of the research. A theory may develop as the research is conducted, if it does it may be changed, dropped, or refined as the research progresses. If a theory develops based on the data, we have a “grounded theory,” that is, a theory grounded in the data rather than based on some a priori constructed ideas, notions, or system. If no theory emerges, the research will be atheoretical, but will retain its descriptive value.

Quantitative research on the other hand, because of its deductive nature, tends to be more theory-based from the onset. In fact, when theory-testing research is being done it is likely to be quantitative research. Certainly, theories are not always identified explicitly in quantitative research but the theoretical underpinnings exist in one form or another.

Qualitative research is context-specific with the researcher’s role being one of inclusion in the situation. As Smith (1987) indicates, qualitative research is based on the notion of context sensitivity, the belief that the particular physical and social environment has a great bearing on human behavior. Qualitative researchers emphasize a holistic interpretation. They perceive facts and values as inextricably mixed. On the other hand, quantitative researchers look for more context-free generalizations. They are much more willing to focus on individual variables and factors, rather than to concentrate on a holistic interpretation. Typically, quantitative researchers separate facts and values.

Overall, quantitative researchers are more attuned to standardized research procedures and predetermined designs than qualitative researchers. The latter are more flexible once they are into the research, and qualitative research involves multiple methods more frequently than quantitative research. Quantitative research has more of a catalog of designs than qualitative research. The distinction in the way data are presented, mentioned earlier, means that qualitative research relies heavily on narrative description; quantitative research on statistical results.

The distinctions described above between qualitative and quantitative research are due to the different epistemologies underlying the two types of research. There is a difference in purpose between qualitative and quantitative research. Qualitative research is done for the purpose of understanding social phenomena, *social* being used in a broad sense. Quantitative research is done to determine relationships, effects, and causes. The distinguishing characteristics of qualitative and quantitative research are summarized in Table 1.1. This is not necessarily an exhaustive set of distinctions, and additional terms may appear in the literature. But this discussion should provide the reader with a basic conceptualization of the differences. Both approaches are valuable and have relevance for the improvement of education.

Qualitative and quantitative research have their own characteristics based on different purposes and paradigms underlying the research.

**TABLE 1.1** Contrasting Characteristics of Qualitative and Quantitative Research

QUALITATIVE	QUANTITATIVE
Inductive Inquiry	Deductive Inquiry
Understanding Social Phenomena	Relationships, Effects, Causes
Atheoretical or Grounded Theory	Theory-Based
Holistic Inquiry	Focused on Individual Variables
Context-Specific	Context-Free (Generalizations)
Observer-Participant	Detached Role of Researcher
Narrative Description	Statistical Analysis