

Chapter 2

Answers to Study Questions

2.1. Describe the key features of quantitative and qualitative research.

Just look at Table 2.1, which shows the key characteristics of these two approaches in their pure or extreme forms as well as the characteristics of mixed research. I will mention a few of these here. Quantitative research uses the deductive or “top down” scientific method; it is used for description, explanation, and prediction. It is based on quantitative data, in particular on the analysis of variables. The results are statistical and a goal is to generalize the results. In qualitative research, in contrast, the “bottom up” or inductive method is used; it is used primarily for the purposes of description and exploration. It is based on qualitative data which during analysis are examined for patterns, themes, and holistic features. A narrative report is presented and generalization is usually not a goal.

Here is Table 2.1 for your convenience:

■ **TABLE 2.1** Emphases of Quantitative, Mixed, and Qualitative Research

	Quantitative Research	Mixed Research	Qualitative Research
Scientific method	Deductive or “top-down” The researcher tests hypotheses and theory with data	Deductive and inductive	Inductive or “bottom-up” The researcher generates new hypotheses and grounded theory from data collected during fieldwork
View of human behavior	Behavior is regular and predictable	Behavior is somewhat predictable	Behavior is fluid, dynamic, situational, social, contextual, and personal
Most common research objectives	Description, explanation, and prediction	Multiple objectives	Description, exploration, and discovery
Focus	Narrow-angle lens, testing specific hypotheses	Multilens focus	Wide-angle and “deep-angle” lens, examining the breadth and depth of phenomena to learn more about them
Nature of observation	Attempt to study behavior under controlled conditions	Study behavior in more than one context or condition	Study behavior in natural environments Study the context in which behavior occurs
Nature of reality	Objective (different observers agree on what is observed)	Commonsense realism and pragmatic view of world (i.e., what works is what is “real” or true)	Subjective, personal, and socially constructed
Form of data collected	Collect quantitative data based on precise measurement using structured and validated data collection instruments (e.g., closed-ended items, rating scales, behavioral responses)	Multiple forms	Collect qualitative data (e.g., in-depth interviews, participant observation, field notes, and open-ended questions) The researcher is the primary data collection instrument
Nature of data	Variables	Mixture of variables, words, and images	Words, images, categories
Data analysis	Identify statistical relationships	Quantitative and qualitative	Search for patterns, themes, and holistic features
Results	Generalizable findings	Corroborated findings may generalize	Particularistic findings Representation of insider (i.e., “emic”) viewpoint Present multiple perspectives
Form of final report	Statistical report (e.g., with correlations, comparisons of means, and reporting of statistical significance of findings)	Eclectic and pragmatic	Narrative report with contextual description and direct quotations from research participants

2.2. Describe the key features of mixed research.

Mixed research is the third and newest research paradigm. As you can see in Table 2.1 it tries to mix the best of qualitative and quantitative research into research studies. Philosophically, mixed research takes an eclectic, pragmatic, and commonsense approach, suggesting that the researcher mix quantitative and qualitative in a way that works best for the given research question being studied in a particular context. Mixed research uses both deductive and inductive methods, obtains both quantitative and qualitative data, attempts to corroborate and complement findings, and takes a balanced approach to research. Later in the chapter you will learn about the *fundamental principle of mixed research* which states that when planning mixed research, the researcher should mix methods or procedures in a way that the resulting mixture or combination has complementary strengths and nonoverlapping weaknesses.

2.3. What is the difference between a categorical variable and a quantitative variable? Think of an example of each.

A categorical variable varies in type or kind and a quantitative variable varies in degree or amount. An example of the former is gender, and an example of the latter is class size.

2.4. Why is experimental research more effective than nonexperimental research when a researcher is interested in studying cause and effect?

Strong experimental research designs (i.e., the best experiments) include both manipulation and random assignment. “Manipulation” is an action taken by the researcher in the world (e.g., providing a treatment to one group and a control condition to another group); manipulation allows us to see a manipulation first, and then observe the outcome or result of the manipulation. “Random assignment” makes the groups similar on ALL extraneous variables at the beginning of the experiment; hence, the only difference between the groups will be the level of independent variable received, allowing the differences observed after the experiment is completed to be attributed to the manipulated independent variable.

2.5. What are the main problems with the simple cases of causal-comparative and correlational research?

The problem with BOTH of the simple cases is that the researcher has no manipulation, no random assignment, and is only able to determine whether a statistical relationship is present. Observing a relationship is NOT enough information to attribute causation. To make a causal attribution, one need to meet three conditions: 1) relationship, 2) correct time order, that is, if A causes B then A must precede B in time, and 3) alternative explanations must be ruled out. Again, all the simple cases give us is a relationship (i.e., condition 1). (On the other hand, a well conducted strong experiment satisfies all three conditions.)

2.6. What are two variables that you believe are positively correlated?

Study time the night before an exam and test grades (i.e., the greater the study time, the higher the grades).

2.7. What are two variables that you believe are negatively correlated?

Amount of time spent partying the night before a test and test grades (i.e., the greater the time spent partying, the lower the grades)..

2.8. What are the different types of qualitative research, and what is the defining feature of each of these?

The types are phenomenology, ethnography, case study research, grounded theory, and historical research. Here are the definitions, with the key ideas underlined:

- (a) Phenomenology: a form of qualitative research in which the researcher attempts to understand how one or more individuals experience a phenomenon.
- (b) Ethnography: a form of qualitative research focused on describing the culture of a group of people.
- (c) Case study research: a form of qualitative research that is focused on providing a detailed account of one or more cases.
- (d) Grounded theory research: a qualitative approach to generating a theory from the data that the researcher collects.
- (e) Historical research: research about events in the past.

2.9. What are the different types of mixed research, and what is the defining feature of each of these types of research?

There are two types of mixed research: mixed method and mixed model research. Here are the definitions of the two types:

- (a) **Mixed method research:** research in which the researcher uses qualitative research paradigm for one phase and the quantitative research paradigm for a different phase of the study.
- (b) **Mixed model research:** research in which the researcher uses both qualitative and quantitative research within a stage or across two or more of the stages in the research process.

2.10. What are the three research paradigms in education and what are the major types of research in each of these paradigms? (Hint: We show the answer in Figure 2.3.)

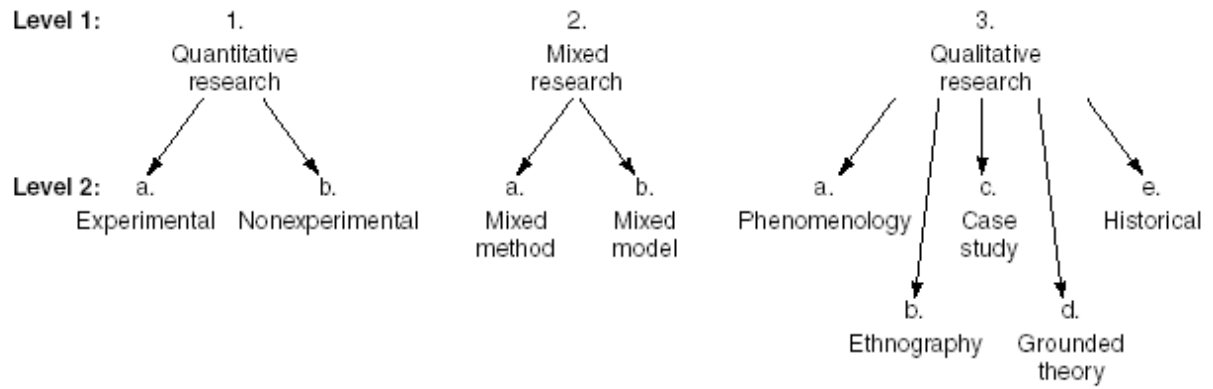
They are quantitative research, qualitative research, and mixed research.

Quantitative research has two major subtypes: experimental and nonexperimental research.

Mixed research also has two major subtypes: mixed method and mixed model research.

Qualitative research has five major subtypes: phenomenology, ethnography, case study, grounded theory, and historical research.

Here is Figure 2.3 for your convenience.



■ FIGURE 2.3 Research typology (Later chapters will add a third level to this typology).