Key Differences Between Quantitative Research And Qualitative Research

by Mike Worthington

One of my observations working with doctoral learners for the past 14 years is that they tend to understand when and why we conduct quantitative research much better than they tend to understand when and why we conduct qualitative research. Some doctoral learners decide to conduct qualitative research either out of a fear of statistics or dislike of numbers or out of the belief that qualitative research is easier to conduct and those reasons are never valid reasons to conduct a qualitative study. The type of methodology should be determined by the research problem, the purpose of the study, and how the research questions are framed. Doctoral learners often do not understand that typically a qualitative study requires far more time and effort than a quantitative study. Good qualitative research is hard work. Although challenging, qualitative research can be quite rewarding for those learners who want to explore some phenomenon at a deep and detailed level that quantitative research cannot achieve. I will highlight some significant differences and characteristics of each methodology.

In helping learners see the big picture I really like Sharan Merriam’s broad definition of qualitative research. *Qualitative research* is an umbrella concept covering several forms of inquiry that help us understand and explain the meaning of social phenomena with as little disruption of the natural setting as possible” (1998, p. 5). The centrality of meaning appears again and again in defining qualitative research within the qualitative methodological literature. Consider also Michael Patton’s (1985) definition:

> [Qualitative research] is an effort to understand situations in their uniqueness as part of a particular context and the interactions there. This understanding is an end in itself, so that it is not attempting to predict what might happen in the future necessarily, but to understand the nature of that setting – what it means for participants to be in that setting, what their lives are like, what’s going on for them, what their meanings are, what the world looks like in that particular setting – and in the analysis to be able to communicate that faithfully to others who are interested in that setting . . . The analysis strives for depth of understanding. (p. 1)

Here again meaning of lived experience in context is central to qualitative research. Therefore an inquiry about how your participants perceive some issue or process does not fit with the methodological definitions of qualitative research. Perceptions can be collected via quantitative survey research, although the need to obtain and measure those perceptions should driven by a practitioner’s practice problem or the literature.

Here is another broad means to distinguish the key differences between quantitative and qualitative research and deciding which methodology fits best. The aim of qualitative research is discovery, while the aim of quantitative research is verification. The goal of qualitative research is to gain an in depth understanding and explanation of some particular social phenomenon typically done by attempting to understand the lived experiences of the participants and how they construct meaning and make sense of their experiences. Frequently the data collection is done
by interviewing; however, an understanding of the *social phenomenon* and personal *lived experiences* of individuals might be gained via non-intrusive qualitative approaches in which the researcher might use texts, journals, written narratives, observations, or other unobtrusive measures to examine the traces of humans and how they were affected by some ideological, social, psychological, legal, political, and/or technological factors. Qualitative research seeks to answer questions that focus on the *meaning, essence, and interpretation of social phenomena* with as little disruption to the natural setting as possible. Frequently central qualitative research questions begin with "How?" and/or "Why?" questions, but can begin with a "What?" question as well.

Quantitative research, on the other hand, explores descriptive analysis of characteristics through variables or answers questions about the relationships among variables (values assigned to characteristics or factors) with the purpose of measuring, explaining, predicting, confirming, validating, testing, or controlling phenomena. Quantitative research studies generally end with a summation of the verification process, which is a confirmation or disconfirmation of the hypotheses tested via deductive reasoning. Qualitative research typically does not begin with hypotheses although it is not unusual for qualitative studies to conclude with tentative working hypotheses drawn from the themes and their properties via inductive reasoning.

There is no measurement in qualitative research. Variables, used for measuring, are used only in quantitative research; variables are NOT used in qualitative research. However, two exceptions might include (a) action research, which might include a quantitative component; and (b) a qualitative program evaluation or evaluative case study that collects and measures quantitative data in addition to collecting qualitative data.

A variable is quantitative expression of a construct that can vary quantity or quality in observed phenomenon (Gall, Borg, & Gall, 2006). Thus a variable is a characteristic or finding that can vary and thus can be expressed in values that can vary. The opposite of a variable is a constant. A condition that does not change is a constant and not a variable. A human being is never a variable.

The aim of qualitative research is NOT measurement but discovery; thus we do not use variables in qualitative research. We do not use qualitative research to verify or confirm our hypotheses. The focus of qualitative research is the discovery of *meaning in context.* Remember the aim of qualitative research is the discovery and understanding of our participants’ *experiences* and the meaning our participants ascribe to their *experiences* and related social phenomena and we conduct such an inquiry without disrupting the natural setting. Attempting to understand *meaning* is central to qualitative research.

Often learners will state that they want to conduct a qualitative study to understand the perceptions of their participants. The problem with that approach is that perceptions are easily quantifiable and perception research is typically done via surveys that are quantitative data collection tools. Although understanding perceptions can be a secondary or tertiary goal of qualitative research, the primary goal should always be focused on lived experiences and meaning or understanding a process from the experiences of those individuals who participate in that process.
If you want to understand your participants' perceptions, opinions, and views without primarily understanding their own *lived experiences* and the *meaning* they ascribe to their *lived experiences*, propose quantitative survey research. We construct and use surveys to obtain, understand, and measure opinions, perceptions, and views. We conduct qualitative research to go beyond perceptions in order understand *personal experiences* and the corresponding *meaning making* related to those experiences.

**I recommend avoiding qualitative research that examines opinions.** For such studies you can anticipate committee members asking (a) why can’t the opinions be collected via quantitative survey research? (b) what value is there in knowing the opinions of a small group of individuals? and (c) how will knowing the opinions of small group of individuals advance theory? Consider this quote from the *Capella Dissertation Manual* (2010):

> The dissertation is not just descriptive; it has a sound extant basis or a well-developed conceptual basis that leads to the question(s) under investigation. This basis serves as the origin for conclusions and inferences that lead to further research, to enhanced theoretical understanding, and to recommendations for organizational improvement (in cases of action science). (p. 8)

I think it would be quite unusual or unlikely that the sound extant or conceptual basis would lead to an examination of opinions or that an examination of opinions will advance theoretical understanding. I suppose an exception might be a Delphi Technique study using nationally renowned experts whose valuable opinions might be used to lead to organizational improvement or the best strategic planning. Please also note that the Delphi Technique is an acceptable School of Education research design yet it remains highly controversial to many of our faculty members.

Please note that qualitative research can also be used to understand a process – how a process works from the understanding and perceptions of those individuals who participated in the process. Again the focus is on experiences. For example, one of my former mentees wanted to know how school leaders, primarily principals, were able to move their schools to such high levels of culturally responsive education [those rated high by a state evaluation agency]. Thus she conducted extensive in depth interviews with about a dozen successful principals regarding their strategies and practices that seemed to be most effective. In addition to uncovering the intricacies of the successful process and strategies, she also uncovered the obstacles to planning and implementation.

Qualitative research in the form of action research can also be used to solve school problems, to improve our students’ learning or improve our teaching and administrating practices. Action research can appear much like an experiment because we begin with reflection and measurement, make a change, and measure the results. Qualitative research can also be used to make a social change as in participatory action research; however, this kind of research is tricky in that one of our IRB requirements is that we not contact our participants until the study is approved and true participatory action research is planned with the participants. You see the dilemma? The key feature of action research that makes it qualitative is its emergent nature. Note also that action
research is controversial and not supported by all of our specializations or faculty. Attached is a list of School of Education acceptable research designs.

Mixed methods research is a form of research in which a design had both a quantitative and qualitative component. Although pragmatism can support a mixed methods study, having a pragmatic philosophical framework does not obligate a researcher to conduct a mixed methods study. Mixed methods research is really like carrying out two research studies and will require more time and effort than a single method study. The School of Education (SOE) allows but does not encourage mixed methods studies as (a) our learners struggle enough with a single method, (b) our research curricula do not teach mixed methods, (c) prior SOE dissertations attempting mixed methods were quite poor and most were not truly mixed methods studies, and (d) only a small number of mentors are skilled in supervising mixed methods studies.

Learners often believe that a mixed methods study can include a survey that contains a few open ended questions. This approach is not mixed methods; it is a quantitative descriptive research using a survey to obtain data. The open-ended items typically receive tersely written answers that are easily quantified. A true mixed methods study includes both quantitative and qualitative methodological components [e.g., survey followed by lengthy in depth interviewing several participants] and philosophical components; that is, the traditions and philosophies underlying each methodological component clearly identified [e.g., post-positivism for the survey and social constructivism for the interviews]. I particular support a mixed methods approach to experiments such as in a concurrent triangulation strategy or concurrent embedded strategy [see your Creswell text, Chapter 10]. Please note though that many mentors do not promote mixed methods research because (a) our research curricula does not adequately prepare our learners for conducting mixed methods research, and (b) conducting mixed methods research has the equivalent work load of conducting two studies. However, when a learner in this class presents a research problem that is best approached with mixed methods research, I will help guide that learner to planning a solid study.

Regarding mixed methods research, unless you are proposing a pragmatic parallel or pragmatic sequential mixed method model, mixed methods studies will have a primary quantitative research question [for the quantitative component] and a central qualitative research question [for the qualitative component]. You can have as many additional quantitative and qualitative questions as you want but it is these two primary and central questions that will align with your problem and purpose statements and that drive the investigation in a mixed methods study. The two questions need to complement each other in terms of the problem and purpose of the proposed research. Each question will drive separate data collection procedures and separate data analysis processes. For pragmatic parallel or pragmatic sequential mixed method model studies, the researcher develops one research question, independent quantitative and qualitative data collection processes, and infers a response to the single question from both sets [strands] of data.