

Research Methods

The Principle Tenets and Applications of Quantitative, Qualitative, and Mixed

Method Approaches

(Student Name)

Course Name

Faculty Name

Date

Quantitative, Qualitative, and Mixed Method Research

The broad areas of research methods used by researchers are quantitative, qualitative, and mixed method. Other areas of research are embedded into these methods.

Cresswell (2003) explains quantitative research by saying “in quantitative studies, investigators use research questions and hypotheses to shape and specifically focus the purpose of the study. Research questions are interrogative statements or questions that the investigator seeks to answer. They are numeric estimates of population values based on data collected from samples” (p. 108). Cresswell also points out that “in a quantitative project, the problem is best addressed by understanding what factors or variables influence an outcome. For example, in response to worker cutting backs (a problem for all employees) an investigator may seek to discover what factors influence businesses to downsize” (p. 75). Cresswell went on to say “the research problem is one in which understanding the factors that explain or relate to an outcome helps the investigator best understand and explain the problem” (p. 76).

Researchers use different strategies to study different topics and groups of people. Gall put forward that “quantitative researchers attempt to discover something about a large group of individuals by studying a much smaller group. The larger group that they wish to learn about is called population and the smaller group they actually study is called a sample. The advantage of drawing a small sample from a large target population is that it saves the time and expense of studying the entire population” (p. 167).

Qualitative research is also referred to as positivist research. According to Gall “positivist (qualitative) research is grounded in the assumption that features of the social environment constitute an independent reality and are relative constant across time and

settings. Positivist researchers develop knowledge by collecting numerical data on observable behaviors of samples and then subjecting these data to numerical analysis” (p. 23). Other research methods that are synonymous with qualitative research methods are interpretive research and case studies. Gall (2003) “defines interpretive research as the study of immediate and local meanings of social actions for the actors involved in them.” Case studies are also referred to as qualitative research. “This term emphasizes the fact that qualitative research focuses on the study of case rather than of populations and samples” (p. 24).

Cresswell (2003) postulate “a qualitative approach is one in which the enquirer often makes knowledge claims based primarily on constructivist perspective (i.e., the multiple meanings of individual experiences, meanings socially and historically constructed, with an intent of developing a theory or pattern)” (p. 18). Gail adds that “qualitative research focuses on the study of cases rather than of population and samples” (p. 24).

Qualitative research is more flexible with respect to sampling techniques than quantitative research. This flexibility reflects the emergent nature of qualitative research design which allows researchers to modify methodologies as data are collected” (197).

Creswell (2003) posits that mix method research “focuses on analyzing both quantitative data in a single study”. Researchers perform this type of research “to expand an understanding from one method to another, to converge or conform findings from different sources” (p. 210). Creswell mentions various procedures that are employed in the mixed method. In the sequential transformative strategy “either method may be used first, and the priority can be given to either the quantitative or the qualitative phase, or

even to both if sufficient resources are available” (p. 216). A researcher will combine both phases in order to give an explanation. The concurrent triangulation strategy allows researchers to do “separate quantitative and qualitative methods as a means to offset the weaknesses inherent within one method with the strengths of the other method. In this case the quantitative and qualitative data collection is concurrent, happening in one phase of the research study” (p. 216). Cresswell went on to say a mixed method research problem may be one in which a need exists to both understand the relationship among variables in a situation and explore the topic in further depth” (p. 76).

Theories may also be used in mixed method approach. Cresswell posit “the use of theory may be directed by the emphasis on either quantitative or qualitative approaches in the mixed methods research. Cresswell recommends “in using theory in mixed methods proposal:

- Determine if theory is to be used.
- Identify its use in accord with quantitative or qualitative approaches.
- If theory is used as in a transformational strategy of inquiry, define this strategy and discuss the points in the proposed study in which the emancipatory ideas will be used” (p. 138).

Validity

The aim of research methods is to increase scientific knowledge. In order to assess the credibility of these researches there is a need to understand validity and reliability. Gall (2003) “defines validity as the degree to which evidence and theory support the interpretation of test scores entailed by propose uses of test.” (p. 191). Gall went on to say that “this definition highlights the fact that test scores are neither valid or invalid. It is our interpretation of the test score that are either valid or invalid.” For example a test that is given to students is valid if it measures the instructional objectives of the instruction that was delivered prior to the test may be a claim but does not demonstrate that the test is valid.

The researcher has to be cognizant of the different types of validity in order to make a good interpretation about a test that is administered. As Gall stipulate “interpretation of test scores often refer to the relationship between a test’s content and the construct it claims to measure.” To explain construct Gall went on to say “it is a concept that is inferred from commonalities among observed phenomena. For example if a teacher gives her students a Spanish test, she is likely to claim that the test items represent the content that students were exposed to in the assigned textbook, supplementary curriculum materials, and the teacher’s presentations in class” (p. 191).

Gall argues “content-related evidence of test validity should not be confused with face validity which involves only a casual, subjective inspection of the test items to judge whether they cover the content that the test purports to measure” (p. 191). Gall went on to explain that “content -related validity evidence is particularly important in selecting tests

to use in experiments involving the effect of instructional methods on achievement. For example suppose that you are conducting research to determine whether the constructivist method of teaching social studies is superior to a traditional teaching method. To enable a proper comparison the, achievement test administered at the end of instruction should be representative of the content covered during instruction” (p. 192).

Reliability

According to Gall (2003) “reliability is the extent to which other researchers would arrive at similar results if they studied the same case using exactly the same procedures as the first researcher” (p. 460). A test that is given to students twice and the scores remains the same may be reliable. Gall recommends that “reliability must be carefully considered in selecting tests for use in research. It always is desirable to have high test score reliability” (p. 196). The researcher has to ensure that there is no measurement of error when tests are evaluated for reliability.

Researchers use different types of reliability to determine the accuracy of their tests. Gall posit “alternate-form reliability is an approach to estimating test score reliability in which the particular form of the test that is administered is examined. Test-retest reliability is an approach to estimating test score reliability in which the occasion of test administration is examined. The most critical issue in calculating test-retest reliability is to determine an appropriate delay between the two administrations of the test” (p. 197).

Gall points out “although reliability is essential to validity, this does not mean that test scores with good reliability always yield valid score inferences. Reliability must be carefully considered in selecting tests for use in research. It always is desirable to have high test score reliability” (p. 196).

Describing and Differentiating the Three Methods

Cresswell (2003) posits all three methods “follow a similar pattern: the author announces a problem and justifies why it needs to be studied. (p. 74). There is a vast distinction between the three research methods. The mixed method approach is a combination of qualitative and quantitative. Researchers based their findings based on their understanding of the two methods. “In a quantitative project, the problem is best addressed by understanding what factors or variables influence an outcome” (Cresswell, 2003, p. 75). For example a researcher may want to discover why there is a decline in the attendance of students after they have taken the state test. Cresswell went on to say “the research problem is one in which understanding the factors that explain or relate to an outcome helps the investigator best understand and explain the problem” (p. 76).

Qualitative research is given other names such as case study. “Qualitative research focuses on case study of case rather than on populations and samples” (Gall, 2000, p. 24). On the other hand quantitative focuses on the analysis and interpretation of numeric data. According to Gall “some researchers believe that quantitative research is best used to discover themes and relationships at the case level while qualitative research is best used to validate those themes and relationships and in samples and populations. In this view qualitative research plays a discovery role, while quantitative research plays a confirmatory role” (p. 24).

Gall (2003) provides some major differences between quantitative and qualitative research. Quantitative research “study populations or samples that represent population” while qualitative research “study cases.” Quantitative researchers “study human behavior in natural or contrived settings” and qualitative researchers “study human actions in natural settings.” In quantitative research the researcher “study behavior and other observable phenomena” and the qualitative researcher “study the meanings that individuals create and other internal phenomena.” The former “use statistical methods to analyze data” and the latter “use analytic induction to analyze data.” In all of the given instances the mixed method researcher will merge all pairs of scenarios to arrive at a conclusion.

A qualitative approach is one in which the enquirer often makes knowledge claims based primarily on constructivist perspectives (Cresswell, 2003). The fact that when students drop out of high school it has various effects on their lives emotionally and socially, qualitative research is an ideal method for studying drop out rates among inner city high school students. The major problem in such a study is ‘the drop out rate in inner city high schools.’ The purpose of such a study would be to devise and implement retention model to encourage the persistence of students. According to Gordon (2000) “students succeed at setting goals and making and executing plans to achieve them depending on their knowledge and understanding of themselves.” These students dropping out of school will not only have an effect on them as individuals but on the economy of the country. They are seen as the people who will be a part of the work force in the near future.

Gall (2003) state this is “a type of quantitative investigation that seek to discover possible causes and effects of a personal characteristic (e.g., self-esteem or academic success) by comparing individuals in whom it is present with individuals with whom it is absent or present to a lesser degree” (p. 620). Some of the reasons students drop out of high school are low self-esteem, being unsuccessful in academics, peer pressure, and improper home supervision. Gall points out qualitative research is “inquiry that is grounded in the assumption that individuals construct social reality in the form of meanings and interpretations, and that these constructions tend to be transitory and situational. The dominant methodology is to discover these meanings and interpretations by studying cases intensively in natural settings and by subjecting the natural data to analytic induction” (p. 634). An example is to analyze the number of students who persist throughout a four-years period in a suburban school and the numbers that persist throughout a four-years period in an urban school.

In such a study the independent variable is a group of students who did not finish high school and the dependent variable, the effects this cause on these students. Gall recommends “to select participants who can be measured on the variables to be investigated. It is very important to select a group of participants who are reasonably homogeneous” (p. 326). The variables in this study could be a number of students who did not complete high school or a group of students from an inner city high school. This group would be homogeneous in the sense that the variables belong to the same category.

The qualitative technique is appropriate for studying this topic as in such a study questionnaires, interviews, and observations are helpful ways of collecting data to get the views of students on high school education. The tools mentioned are helpful in collecting

data in qualitative study. An example of a questionnaire that can be used in this study is provided. This is a Likert survey questionnaire ranging from strongly agree to strongly disagree.

Instruction: Put a check mark in the box you deem most appropriate for each statement.

1. The drop out rate among students in inner city high schools is due to low self-esteem.

Strongly Agree [] Agree [] Neutral [] Disagree [] Strongly Disagree []

2. Many students who attend inner city high schools hail from communities that lack academic motivation.

Strongly Agree [] Agree [] neutral [] Disagree [] Strongly Disagree []

3. Most students in inner city high schools do not value education.

Strongly Agree [] Agree [] Neutral [] Disagree [] Strongly Disagree []

4. Many of the parents of these students do not place a high worth on education.

Strongly Agree [] Agree [] Neutral [] Disagree [] Strongly Disagree []

5. Administrators in inner city high schools are not doing enough to combat the drop out problem among students.

Strongly agree [] Agree [] Neutral [] Disagree [] Strongly Disagree []

6. These schools should devise a plan that will get parents more involved in their children's education.

Strongly Agree [] Agree [] Neutral [] Disagree [] Strongly Disagree []

7. More educational researchers need to gear their research towards the drop out problem.

Strongly Agree [] Agree [] Neutral [] Disagree [] Strongly Disagree []

8. The education department needs to place an advising and retention committee in these schools.

Strongly Agree [] Agree [] Neutral [] Disagree [] Strongly Disagree []

9. Academic advisors will have a positive impact on the education of these students.

Strongly Agree [] Agree [] Neutral [] Disagree [] Strongly Disagree []

10. Students who drop out of high schools are more prone to get involved in negative activities.

Strongly Agree [] Agree [] Neutral [] Disagree [] Strongly Disagree []

The researcher can also conduct a disguised observation of different groups of eleventh grade students to get a precise description of their attitudes towards school. A series of observations can be carried out over a six month period. Some of the things that the researcher could observe are:

- Teachers knowledge of the subject being taught
- Interesting and motivating activities
- How teacher capture students attention at the start and throughout the lesson
- Students attitude and response
- Students' behavior during instructions.

In using the qualitative method to study this topic the researcher can identify two groups of students high performing and low performing students and record how instructions are provided to students such as frequently ask students if they understand,

and go over what students do not understand. The measuring instrument could be the “naturalistic observation.”

“The naturalistic observation is a type of study classified under the broader category of field studies; non-experimental approaches used in the field or in real-life settings. In the naturalistic observation method the researcher very carefully observes and records some behavior or phenomenon, sometimes over a prolonged period, in its natural setting” (Naturalistic Observation Description). The researcher can record the nature of instruction to both groups’ responses by students, teachers’ attitude towards response and students questions.

In doing such a research it is imperative for the researcher to know who will be interested in the project. The stake holders for this research are parents, students, the city and the federal government. This will help parents of inner city students perceive the benefits of education, and how getting an education can help their children to be successful in life. The city will benefit in the sense that the department of education will provide more programs to encourage the persistence of students when the problem is brought to the forefront. When these students get an education they will become a part of the job market and will contribute to taxation which will benefit other siblings and the nation on a whole.

This project will also assist knowledge base. According to EPE research center (2006) “over a lifetime an 18 year old who does not complete high school earns about \$260,000 less than an individual with a high school diploma, and contributes about \$60,000 less in federal and state income taxes. The combine tax losses aggregated over one

cohort of 18 year old who does not complete high school is about 192 billion dollars, or 1.6 of the Gross Domestic Product” (Elena Rouse. Economist, Princeton University).

The paper went on to say:

- “individuals with high school diploma live longer
- have better indicator of general health
- less likely to use publicly financial health insurance than high school drop outs
- Adults who lack a high school diploma are at greater risk of being on public assistance.

- three times as likely to vote as Americans without a high school diploma
- High school dropouts are far more likely to commit crimes and be incarcerated than those with more education.

Researchers are like cartographers as research is like a map or guide used to get the answer to or solve a problem. It is a bit difficult to identify a best method of the trio as each is used based on the nature of the problem or topic to be studied. The different types of research can substantiate or complement each other and they help researchers to better understand the world.

Reference

Creswell, J.W. (2002). Research Design: Qualitative, Quantitative and Mixed Methods Approaches. Thousand Oaks, CA: Sage Publications.