

COMBINING QUALITATIVE AND QUANTITATIVE METHODS IN DATA ANALYSIS

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Abstract: In past days, the educational researchers often dichotomize qualitative and quantitative methods since the characteristics of both methods are different. Nowadays, there is awareness among the researchers to combine these methods due to providing more valid and accurate data for their research. This essay briefly discusses the objectives of combining qualitative and quantitative methods in data analysis, hence proposes triangulation as the appropriate model of mixed methods to be applied in the research process.

Keywords: *mixed methods, qualitative, quantitative, triangulation*

In past years, most educational researchers and practitioners differentiated their methods of data analysis in either qualitative or quantitative. Educational researchers often tended to use quantitative method in analyzing the data, since this method was considered to provide deeper analysis and interpretation of data for educational research, instead of using quantitative method which was considered as shallower and difficult to interpret. Nowadays, considering the importance of providing more valid and accurate data and its interpretation, the researchers choose to combine both methods in their research. This paper briefly discusses the continuum of qualitative and quantitative methods in data analysis.

Paradigm of Qualitative and Quantitative Research Methods

The difference of qualitative and quantitative research methods lie on the paradigm of both methods. Paradigm is a set of accepted rules to solve one or more scientific questions. Quantitative paradigm is based on positivism. There is only one truth, an objective reality. Since science is characterized by empirical research, all phenomena in science can be reduced to empirical indicators which represent the truth and therefore can be studied. The investigator and investigation in quantitative research method are independent entities, thus the investigator is capable of studying a phenomenon exists without influencing it or being influenced by it. Since the goal of quantitative is to measure and analyze causal relationships between variables within a value-free framework, an investigator can find the answer by randomly choosing samples from the population as subjects of the study.

On the contrary, qualitative paradigm is based on interpretivism and constructivism. In other words, qualitative emphasizes on process and meaning, interpreted by the researcher as its main instrument. Reality in qualitative is socially constructed by the researcher and therefore the research result cannot be applied to

other research, since the results can constantly change based on the interpretation of other researchers. In qualitative, the researcher and subjects of the study are interactively lined to each other thus the findings are mutually created within the context of the situation being studied and interpreted by the researcher. Since in qualitative a researcher wants to find out important information, the subject of the study is rather small and does not represent a large group of population hence cannot be generalized (Vanderstoep & Johnson, 2009: 187).

Characteristics of Qualitative and Quantitative Research Methods

Before discussing the combination of these methods, see Table 1 for the characteristics of both methods.

Table 1. Characteristics of Qualitative and Quantitative

Characteristics	Qualitative	Quantitative
Type of data	Phenomena are described in a narrative fashion	Phenomena are described numerically
Analysis	Identification of major themes	Descriptive and inferential statistics
Scope of inquiry	Broad, thematic concerns	Specific questions or hypotheses
Primary advantage	Rich, in-depth, narrative description of samples	Large sample, statistical validity, accurately reflects the population
Primary disadvantage	Small sample, not generalizable to the population at large	Superficial understandings of participants' thoughts and feelings

(source: Vanderstoep & Johnson, 2009: 7).

Table 1 shows the differences of qualitative and quantitative methods in terms of type of data, analysis, and scope of inquiry. Furthermore, each method has its own advantages and disadvantages. Quantitative method covers large samples and can reflect the characteristics of overall population represented by the samples more accurately. However, since

this method covers so many participants, the answers being studied by the researcher from the participants may be superficial and not too deep. Take it for example that if we want to predict the numbers of students who fail the test then quantitative method is best used for this, yet we cannot use this method to investigate more on the reasons of students' possible failure in taking the test and hence to anticipate the failure to happen. This is where we need qualitative method to dig deeper about the students' background that can lead them to the possibility of failure in taking the test, since qualitative method is able to lead the researcher in looking for rich and in-depth data by focusing on subjects' narrative description that are gathered through focus group discussion, observation, and documentation. Yet, the results cannot be generalized and applicable to the population.

Reasons of Combining Qualitative and Quantitative Methods

Combined method or mixed research methods means adopting a research strategy by employing more than one type of research methods (Brannen, 2005). Why do we need to combine qualitative and quantitative methods in our research? This is to make sure that our findings, in order to give contribution to human life and knowledge, must provide accurate and valid data and to reach this, our research must be based on the paradigms of qualitative and quantitative. By combining these methods, we can maximize the advantages of each and minimize its advantages that possibly happen if we only use one method.

To provide more complete reasons, I refer to Brannen's explanation by choosing four out of six reasons of combining these methods (Brannen, 2005). Firstly, it allows researchers to enhance their skills in doing research. Secondly, it presents an opportunity for lifelong learning. Thirdly, it is an opportunity that deflects attention away from theoretical work that is often specific to particular disciplines. And fourth, it is because researchers nowadays should speak at least two 'languages' – the technical language of research and the practical language of research – to make research results simple to communicate and easy to understand.

Figure 1 presents the philosophy of qualitative and quantitative methods.

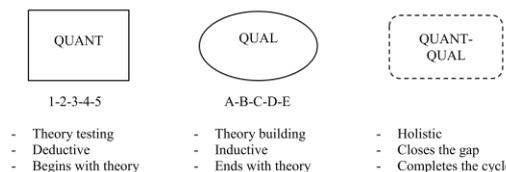


Figure 1. The Conceptualized Philosophy of Qualitative and Quantitative Methods

(Source: Newman & Benz, 1998: 21)

Philosophically speaking, in quantitative, a theory is placed at the first, and it is tested deductively (attempts to show that a conclusion necessarily follows from a set of premises or hypotheses). While in qualitative, through inductive reasoning (constructs or evaluates propositions that are abstractions of observations based on individual instances), it is possible to build a theory and therefore the research will end in a new theory. The gap between these two methods is the theory itself. In quantitative, a theory is tested, while in qualitative, a theory is built. Combining these methods will bridge the gap between these two, and thus will complete the cycle of building and testing new theory as the result of our research findings.

Triangulation: Combining Qualitative and Quantitative

Bryman (1988:130) argues that the researchers will exhibit greater confidence in their research findings if they use more than one method of investigation and data analysis. Triangulation then can be considered as best method in combined research, since triangulation is a method in which multiple observers, theoretical perspectives, sources of data and methodologies are combined (Bryman, 1988:130). Four types are commonly known as triangulation: (1) data triangulation, when a researcher uses various sources of to collect data, (2) investigator triangulation, when a researcher involves multiple researchers in an investigation, (3) theory triangulation, when a researcher uses more than one theoretical scheme in the interpretation of phenomenon, and (4) methodological triangulation, when a researcher uses more than one methods to gather data, such as interviews, observations, questionnaires and documents (Switzer, 2006:3).

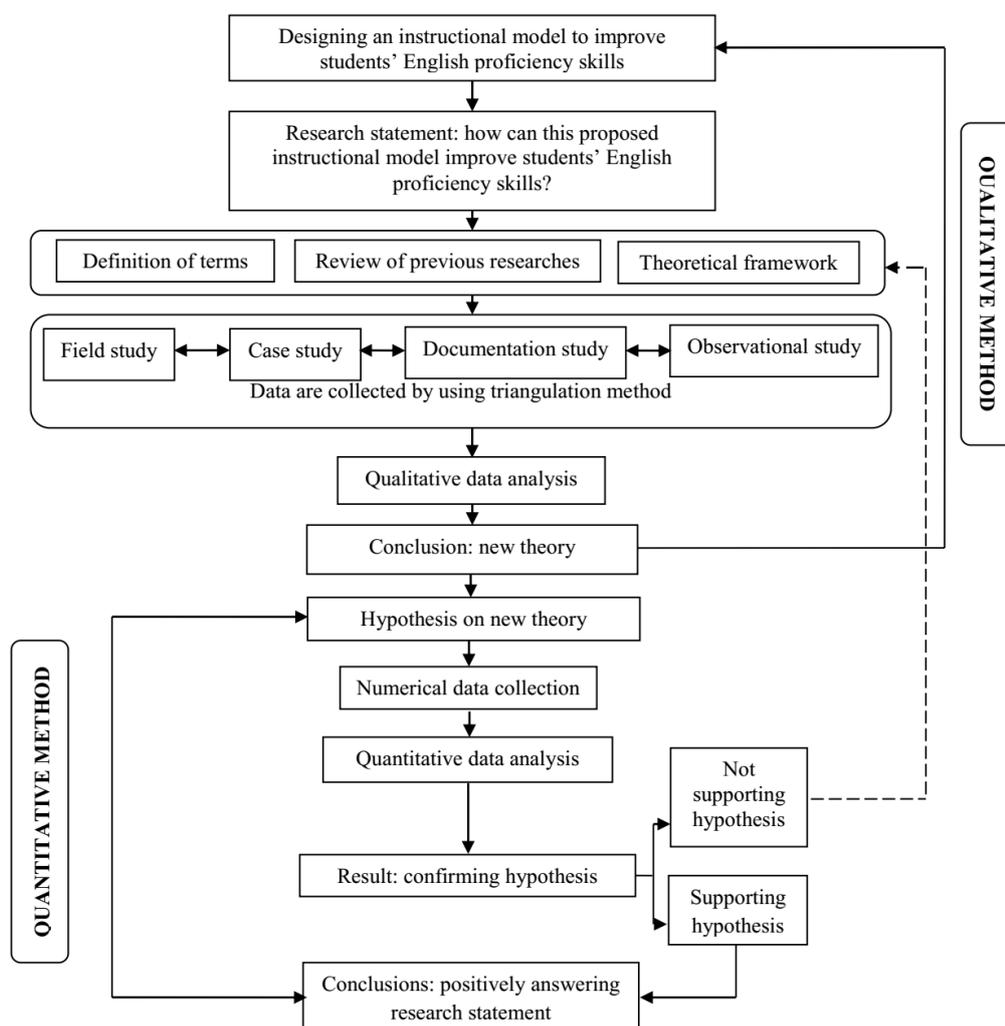


Figure 2. Combining Qualitative and Quantitative Methods in Data Analysis

(Source: Adapted from Newman & Benz, 1998:23)

Figure 2 shows how the combined qualitative and quantitative methods are used as a confirmatory study as a part of a larger study that intends to develop some educational products, for example, in designing an instructional model to improve students' English proficiency skills. Suppose that we want to design an appropriate instructional model to improve our students' English proficiency skills. We build a theory based on literary reviews and references, define the operational terms for our study, and then choose appropriate method and research design. We teach students by using our proposed instructional model, and then test students' English proficiency level before and after the instructional model. By implementing qualitative method in data collection and data analysis, such as combining questionnaire,

observation, and in-depth interviews, we can find out rich information about the process of learning and teaching, how the instruction model works and how students learn in this instruction model. Regarding that this information is more objective and cannot be generalized, we can apply quantitative method to find out more about what really works in the relation of instructional model and students' English proficiency skills, in order to provide more accurate and valid data and to minimize the subjectivity of our research.

Furthermore, Bryman strengthens that there are several benefits of using triangulation as a combined method of qualitative and quantitative. Firstly, it can enhance the credibility and persuasiveness of a research account. Secondly, it assumes that sets of data

derived from different research methods can be unambiguously compared and regarded as equivalent in terms of their capacity to address a research question. Considering this, as a researcher, we should consider the risk of taking on too many questions that are out of focus in our research, and to avoid that, we have to sequence all the questions in our research and have a sense of which method is primary for our research.

Conclusion

A researcher's study must give contribution and innovation for life and knowledge. To achieve that, combining qualitative and quantitative methods can be used to provide more valid and accurate research findings. By combining these methods, we can maximize their advantages as well as minimize the disadvantages that may be faced if we only use one method in our data analysis.

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