COMMENTARY

Using mixed methods in research studies: An opportunity with its challenges

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ABSTRACT

Changes in first and second movements in research methodology led to emergence and development of quantitative and qualitative research methods. Second movement in research methodology emerged with an objective of rectifying certain shortfalls in the first movement; however, the second movement, itself, was not exempt from some shortfalls. These have led to the emergence of the third methodological movement which resulted in the birth of mixed methods research. Researchers are finding this movement to be a new opportunity to study complex phenomenon. They are also finding that the new opportunity comes with its own challenges. Some of the currently discussed challenges among educational researchers are philosophical and epistemological aspects of mixed methods research.

Keywords: mixed method research, triangulation, qualitative, quantitative, methodology

INTRODUCTION

The first and second movements in research methodologies have led to the emergence of quantitative and qualitative research methods, respectively. Often quantitative research prepares necessary background for drawing a general conclusion or result such as humans’ social patterns (Denzin & Lincoln, 1994; Neuman, 2000; Rocco, Bliss, Gallagher, & Perez-Prado, 2003; Williams & May, 1996) while qualitative research is found to be beneficial for different exploration and interpretations of data such as individual’s personal experiences (Polit & Beck, 2006).

With the advent of the second movement in research methodology, some shortfalls of the first methodological movement were rectified. Despite the refinement of certain shortfalls in quantitative research, qualitative research was not exempt from shortfalls either (Cameron & Miller, 2007). Some prevalent weaknesses of the latter research method are: lack of attention to quantitative aspect of phenomenon (Bazargan, 2007), limited possibility to generalize some findings (Denzin & Lincoln,
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2004; Husen, 1997), and some limitations in performing qualitative research (Neuman, 1997, 2000; Williams, 1996). Each of these constraints can hinder a full comprehension of an interesting research study or an existing phenomenon.

Surely, both quantitative and qualitative methods hold some weak and strong components in research methodologies and Kelle (2006) suggests the integration of the two methods. Combining the two types of methods along with orchestrating necessary conditions to maximize the potency in one hand and minimize weaknesses in the other hand can contribute immensely in the analysis and comprehension of phenomenon. The choice of a research method is very influential in determining how a researcher conducts a research. It has an enormous impact on the data collections and analysis of the research study. Thus familiarity with a research method and, in particular, with the nature the mixed methods and its applied objectives are essential in conducting a strong research study. However, the absence of enough attention toward mixed methods research due to its perceived complexity is documented by some researchers (Creswell & Plano Clark, 2007) and this calls for more awareness of such method.

**OVERVIEW OF MIXED METHODS RESEARCH**

In today’s fast evolving social phenomenon, the scholars and educational researchers are addressing more complex research problems than before. They are looking into developing new methods, as tools, to conduct reliable and valid complex research and to lessen the effects of the shortfalls of the old research methods. Thus the emergence of the third methodological movement, mixed methods, was inevitable (Cameron, 2009; Cameron & Miller, 2007). Mixed methods research involves both quantitative and qualitative methodologies (Hanson et al. 2005; Tashakkori & Teddlie, 1998). Quantitative method includes numerical values and measurement which help researchers to describe and determine some patterns, such as human’s social patterns, using deductive logic. Qualitative method deals with interpretation and exploration which guide researchers to understand and explain events and occurrences, such as humans’ phenomenon from the social patterns. The combination of the last two methods is a foundation for developing mixed methods research which has been called as an ‘evolution of research methodology’ (Creswell & Garrett, 2008, p. 322). This combination allows for the integration of data collection and analysis techniques of both quantitative and qualitative methods in either parallel or sequential stages (Creswell, 2003; Tashakkori & Teddlie, 2003).

The philosophical foundation for mixed methods research is pragmatism (Andrew & Halcomb, 2007; Cameron, 2009; Morgan, 2007). Pragmatism accepts the use of multiple methods in one study and emphasizes the relevant research questions and reliable findings or correct answers to the questions (Tashakkori & Teddlie, 2003). In other words, it is the research questions that define a good research study rather than only its selected method or paradigm. Thus using both qualitative and quantitative methods on one study will serve these principles.

Andrew and Halcomb (2007) state that there are six documented purposes for using mixed methods design. The following summarizes the purposes and provides a brief definition for each purpose:

**Triangulation**

It is ‘a validity procedure where researchers search for convergence among multiple and different sources of information to form themes or categories in a study’ (Creswell & Miller, 2000, p. 126). In addition, triangulation is a partnership among different methods in collecting data and confirming results in one study.

**Complementarity**

The application of triangulation in research yields to complementarity of the mixed methods when quantitative methods can ‘further develop findings
Enhance significant findings
It is to signify the findings from one method of data collection by exploring them from another method of data collection (Onwuegbuzie & Leech, 2004). Although the last two purposes of mixed methods are very similar, there exists a delicate difference between them. In expansion, both quantitative and qualitative methods are used to collect more details and data in the different stages of studying a phenomenon (Creswell, Clark, Gutmann, & Hanson, 2003) but in the latter, researchers try to enhance significant findings of one method by another data collection method. In particular, findings from qualitative methods can be signified by findings from quantitative methods in the same study while the two methods independently give different perspectives to the phenomenon being studied.

It is noteworthy to state that the design of mixed methods plays an important role on how to implement the above purposes in the methodology of a research study, which depends on the objective and the questions of the research.

CHALLENGES IN USING MIXED METHODS RESEARCH
The development of mixed methods did not happen without some debate. Some researchers are debating on the issues of incompatibility and impossibility if both quantitative and qualitative research methods are to be applied in one study (Foss & Ellefsen, 2002). Another researcher argues that data gathered using mixed methods can be put together to form a better picture of the study (Begley, 1996). However, they all agree that using multiple methods will increase the accuracy of the results of a research study (Begley, 1996; Foss & Ellefsen, 2002; Risjord et al., 2002; Halcomb & Andrew, 2005) and the tendency to combine quantitative and qualitative methods is becoming more prevalent in research methodologies in the area of humanistic and social sciences (Andrew & Halcomb, 2007; Cameron, 2009; Cameron & Miller, 2007).

Development
It is that one method shapes subsequent methods or that the results through one method are used to inform the development of another method in the same study (Flemming, Adamson, & Atkin, 2008). It occurs when a researcher applies the results obtained from quantitative methods to develop qualitative methods or vice versa.

Initiation
It follows the complementarity purpose of mixed method that different methods are used to investigate the same phenomenon from different perspectives. The main purpose of initiation is to raise new research questions or challenge results obtained through one method. This may yield to an exploration of opposite results, contradictions and new hypotheses by applying the findings through different methods, namely, quantitative and qualitative. In initiation, a simultaneous application of quantitative and qualitative methods is for researchers to access fresh insights about the in hand phenomenon (Rocco et al., 2003).

Expansion
It is to use different methods to examine different phenomena to expand the study for other opportunities or possibilities. This will provide depth and detail to the study by exploring specific aspects of each method. In the case of simultaneous application of quantitative and qualitative methods in one study, collecting different and various elements is to ‘extend the breadth and range of the study’ (Cited in Rocco et al., 2003, p. 23) which is one of the main objectives of researchers.

derived from qualitative methods and vice versa’ (Risjord, Dunbar, & Moloney, 2002, p. 269). It is about how different methods can complement each other while they are used in one study. For example, if quantitative methods are used in a study to collect data then qualitative methods can be used in the same study to illustrate or explain the results of the study.
Although educational researchers consider mixed methods as an opportunity to address complex research problems, the debate continues and remains very much current (Creswell & Garrett, 2008) and opens a door for a discussion about the challenges of using mixed methods in a research study, which is the objective of this paper.

The debate starts at the root of mixed methods research that the quantitative-qualitative dichotomy should remain intact because each method has distinct assumptions about the phenomena being studied (Dootson, 1995; Risjord, Dunbar, Moloney, 2002) and thus different methods and their findings must remain independent.

Another challenge in the use of mixed methods facing some researchers is the change in their beliefs toward one method or about the dichotomy of the two methods, namely, qualitative and quantitative. According to Johnson and Onwuegbuzie (2004), qualitative advocates believe that constructivism, interpretation and the involvement of the interviewer with the interviewees in a study are the components which make qualitative method superior, while quantitative advocates believe that researchers should eliminate their biases by remaining emotionally detached and uninvolved with object of the study. Thus the advocates of both methods ‘view their paradigms as the ideal for research’ (Johnson & Onwuegbuzie, 2004, p. 14). They also believe that the methods are not compatible and the associated techniques should not be mixed. Historically, the disparity started in 1980s when qualitative methodologies gained increasing momentum (Foss & Ellefsen, 2002) that made the advocates of quantitative method concerned about the low frequency uses of quantifying techniques in research areas. This also affected the relationships between the two methods which have been referred to as ‘battlefields of wars’ (Tashakkori & Teddlie, 1998, p. 3) despite the fact that the key difference in the two methods lies in the ‘nature of data itself and researchers’ attitude and treatment of data’ (Foss & Ellefsen, 2002, p. 245).

In general, combining different methodologies in one study is not an easy task. In particular, mixing quantifying and qualifying methods is complex because each paradigm has different epistemological and philosophical frameworks. The concerns include whether the assumptions in each paradigm get the same value or attention in the study, and whether the data derived from the two methodologies are ‘viewed as incommensurable’ (Foss & Ellefsen, 2002, p. 242). Even if researchers give equal weight and value to both methods by looking at each method as ‘partial correctness’ to each other (Foss & Ellefsen, 2002, p. 243), a challenging issue may arise if the findings through one method contradict the findings through the other method, making the value or the validity of one method questionable.

Another challenge is the lack of commonality in researchers’ standpoints about mixed methods research. Educational researchers’ multiple perspectives of mixed methods mark some confusion about the nature of the new methodology. Some believe that mixed methods is to serve the quantitative paradigm while leaving qualitative methods to secondary or auxiliary status (Creswell et al., 2006; Denzin & Lincoln, 2005; Howe, 2004). Others view mixed methods from its technical stand point which includes collection, analysis and interpretation of both quantitative and qualitative data in a study ‘without being encumbered by philosophy or other aspects of the research process’, namely, research questions (Creswell & Garrett, 2008, p. 326).

If we acknowledge that most opportunities come with their related challenges, then mixed methods research, the recent trend in research methodology, is no exception. The above challenges in using mixed methods in research are the most heated discussions among researchers and are continually evolving to provide stronger and more complete research methods for studying complex phenomena.

**Concluding Remarks**

Although the benefits of mixed methods research design have been acknowledged when applied
in different areas and specifically in social sciences, there seems to still be reluctance among researchers (Mactavish & Schleie, 2000) in embracing such design. Such reluctance appears to be associated with the challenges related to the implementation of the mixed method to a research study. Even so, the mixed method approach ‘has emerged as a viable alternative to purely quantitative or qualitative methods and designs [and] researchers and educators may be on the verge of a new generation of thinking about method and methodology’ (Hanson et al. 2005, p. 233). The primary purpose of this article is to draw attention to those challenges while giving recognition to the benefits of the research method. On the basis of our comprehension of the definition and challenges of mixed method design, this paper offers the following recommendations before implementing a mixed method research design:

1. A researcher could ask (before choosing a research method) whether the use of combined methods can guarantee reliable results or if more reliable results can be produced by using each method by itself.

2. The knowledge of each method used in the mixed method is required for collecting data desired by and related to the study.

3. The design of the mixed method for a study should be clear and consistent, leading to important contributions of the design in generating new knowledge from the study (Mactavish & Schleie, 2000).

All the debates and discussions surrounding the use of mixed methods in research studies will lead to a better understanding of such methods. Despite the challenges, many researchers have begun to embrace the mixed method approach as a legitimate alternative to a one method research design. Thus, continuing the discussions about the challenges and benefits of mixed methods research will add to its viability and legitimacy to stand alone as a research methodology in a complex study.

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**References**


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