

Critical Review of Quantitative and Qualitative Research

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ABSTRACT

There are both advantages and disadvantages involved in quantitative and qualitative research which are underpinned by divergent theories and assumptions. It is usually dependent on the nature of research to choose the appropriate research paradigm. In China's current educational studies, researchers have the tendency to use mixed method design strategy to address research questions more holistically by combining two different data sources in a single study. So critical assessment of quantitative and qualitative research can help researchers better choose the appropriate research method in their studies.

Keywords: *critical review, quantitative research, qualitative research.*

1. INTRODUCTION

It is generally believed that qualitative and quantitative research methods are two frequently-used approaches utilised by researchers to collect effective data for their studies in a variety of disciplines, particularly in the field of social science, such as linguistics, psychology, history. The two sharply-polarised paradigms generated from qualitative and quantitative research are interconnected with positivism and interpretivism respectively. The positivistic researchers claim that the reality involved in the social world is unchangeable which should be quantified in an objective manner[1], whilst the interpretive researchers hold the firm belief that the reality is socially constructed and can be altered and understood subjectively. With the rapid development of multidisciplinary research, mixed method research has become increasingly prevalent to meet the demand of the continuous renewal of educational science research ideas in recent years. In China's current educational studies, researchers have the tendency to use mixed method design strategy to address research questions more holistically by combining two different data sources in a single study. Admittedly, both of those two research methods have their own strengths and weaknesses and it is exceedingly difficult to identify which research method is superior to the other. Therefore, this article makes an attempt to critically discuss the advantages and disadvantages of using quantitative and qualitative research methods.

2. QUANTITATIVE RESEARCH METHODS

The definition of quantitative research varies from one researcher to another but with similar essential element involved. Creswell (1994) asserts that quantitative research is a type of study explaining phenomena by collecting numerical data which are analysed through mathematically based methods where statistics are particularly integrated[2], whereas Bryman(2012) claims that it is a research strategy which highlights quantification in collecting and analysing data[3]. In other words, such research places emphasis on measurement or variables incorporated in the social world and is correlated with positivism which presents objective accounts of the world and develops descriptions and explanations in the form of universal laws termed as nomothetic knowledge[4]. Deductive logic is frequently used in quantitative research methods to seek regularities in human lives by focusing on aforementioned variables which belong to empirical components. Those variables can be numerically demonstrated as frequencies or rate whose associations with each other can be examined by computational tools and accessed through researcher-introduced stimuli and systematic measurement. It can be indicated from those definitions that numerical data or quantification plays an indispensable role in quantitative research. Admittedly, there are both strengths and weaknesses identified in quantitative research, which will be elaborated in the following part.

2.1 Advantages

It can be summarised from a considerable number of quantitative studies that objectivity, generalisability and effectiveness are three remarkable characteristics of quantitative research methods.

Firstly, quantitative studies lay heavy stress on facts that researchers tend to study in the general public, which are assumed to be more objective. The issue of researcher being biased with either his data collection or data analysis will be highly eliminated when the researcher is not in direct contact with the participants[5]. Under such circumstance, researchers are more inclined to collect data through experiments and online or even pencil-paper questionnaires, which can then be interpreted via computational tools.

Secondly, findings yielded from quantitative studies can be generalised to a larger population in different settings. This is attributable to the fact that a larger sample size is integrated in quantitative research and an accurate and standardised conclusion can be drawn more easily from taking advantage of scientific methods for data collection and analysis.

Thirdly, data collection and analysis are effective and less time consuming when utilising quantitative research. Bryman(2012) argues that numbers and figures play irreplaceable roles in the process of collecting and analysing data in quantitative research methods[3]. Surveys and experiments are the major approaches to collect data which can then be analysed through statistical and computational tools with high efficiency and effectiveness. For instance, Connolly (2007) demonstrates that data can be calculated and conducted by computers via using the statistical software SPSS (Statistical Package for Social Science) in educational research[7]. Undeniably, such tools could provide researchers with technical assistance so that their efforts and time can be reduced to a substantial extent.

2.2 Disadvantages

In spite of the merits illustrated above, the demerits of quantitative research are evident too.

On the one hand, quantitative researchers fail to develop more profound understanding of underlying meanings and explanations involved in participants' viewpoints. Since quantitative researchers serve as detached observers and they are unlikely to establish intimate relationship with participants engaged in the research, it would be of tremendous difficulties to probe into the phenomena within its natural settings merely through using scientific methods. As is argued by Denzin and Lincoln (2005), such positivism research paradigm underpinning quantitative studies is inappropriate for researchers to critically examine the dynamic and complex contexts of public education concerning its

forms, sites and variations[8].

On the other hand, predetermined paradigms are incorporated in quantitative research approach. Although such positivism research paradigm may be more transparent and findings yielded through such study can perhaps be clearer for readers and subsequent researchers to understand by using hypotheses, theories and variables, innovative and critical thinking are not required or encouraged in this research approach[9].

3. QUALITATIVE RESEARCH METHODS

With regard to the definition of qualitative research, Saldaña(2011) illustrates in a straightforward and comprehensive fashion, claiming that the study of human experiences about others and/or one's self in social action and reflexive states is the core of qualitative research which encompasses a wide range of approaches and methods, such as interview, observation, field notes as well as both written and visual materials[10]. In addition, Coe (2012) further asserts that qualitative research centers on exploring meanings people used to make sense of their world which are also crucial in understanding their behaviours[4]. Such research approaches have been utilised to help researchers gain deeper insights into linguistic and educational issues such as designing, administering and interpreting language assessment since the late 1990. This reflects the general methodological development in language education, which can be regarded as a philosophical position shift from a postpositivist worldview toward interpretivist approaches. Sociocultural Theory advanced by Vygotsky is an essential conceptual framework incorporated in qualitative research which is indicative of the epistemic orientation in interpretivism which lays emphasis on meanings and interpretations. Underpinned by such research paradigm, an analysis of meaning construction in their social world has been brought into prominence as opposed to the objective reflections of an external world[4]. In this regard, authenticity plays a central role in the quality of qualitative research. Both participants' perspectives and interpretations elicited from data gathered should be authentically represented during the process of conducting qualitative research. It is undeniable that both positive and negative aspects can be found in qualitative research which will be elaborated as follows.

3.1 Advantages

Obviously, researchers can reap tremendous benefits from making use of qualitative research in terms of its correlation with social and cultural exploration, multiple data collection methods and flexible research design.

First and foremost, participants' feelings, opinions, and experiences can be described in detail and the meaning of their actions can be interpreted. In this way of

thinking about truth and reality, meaning is usually constructed on the basis of people's perception of their worlds, experiences, interaction with events and circumstances in their lives. Moreover, deeper insights can be gained from the human experience more holistically in particular circumstances. For instance, Denzin and Lincoln (2005) asserts that qualitative research can be applied into interdisciplinary fields with a wide range of epistemological viewpoints, research methods and interpretive techniques of understanding human experiences encompassed[9].

Secondly, not only can qualitative research provide researchers with specific data collection methods to discover the participants' inner experience but also indicate how meanings are shaped throughout the culture, which cannot be accomplished merely by numbers which are usually pertinent to quantitative research. Qualitative research is originally incorporated into studies associated with anthropology and sociology. Researchers from western countries would prefer to be immersed in exotic cultures and study local people and their customs as well as rituals by taking advantage of the data collection methods, including interviews, observations, and archived materials. Thereafter, an in-depth cultural description could be presented by researchers who analyzed data in their own ways. This is usually referred to as ethnography which lays great emphasis on common patterns elicited from data sources. Thus, people who could not have access to that specific part of the world would develop an understanding of a different culture through the research of anthropologists and sociologists[11].

Thirdly, data collection methods concerned with qualitative research tend to be multifaceted, which can elicit rich information about personal perspectives. There is a general perception that observation, interviews and field notes are frequently used in qualitative studies for collecting data. This can be termed as method triangulation, which involves integrating a diversity of data collection methods into exploring the same phenomenon [12].

Finally, in terms of research design for qualitative studies, it cannot be developed through an unchanged sequence of steps, but be proceeded with a variety of design components interconnected and interacted [13]. This means that researchers can analyse a particular issue appropriately and thoroughly with considerable flexibility. As a result, the complex issues can be understood easily.

3.2 Disadvantages

Despite the aforementioned strengths, weaknesses of qualitative research methods can also be identified obviously.

First, there are limitations regarding researchers'

interpretations which can be affected by their own personal experience and knowledge. In order to resolve this issue to the largest extent, contextual influence should be taken into consideration as well. However, as is claimed by Silverman (2010), contextual sensitivities are sometimes excluded from qualitative research approaches which focus more on meanings and experiences[14].

Second, a large number of quantitative researchers are critical about the issue of generalisability which is consistently regarded as one of weaknesses in qualitative research. Furthermore, the similarities between the bodies of knowledge or contexts are of paramount importance in determining whether the findings from one setting can be applied into another one, which are judged by those willing to apply the findings. Therefore, qualitative researchers should be aware that their responsibilities lie in presenting an adequate and detailed description of data collected from their studies whilst readers are held accountable for evaluating applicability of those findings in another context.

Third, it is more complex and time-consuming to interpret and analyse data in qualitative research to some extent. As is claimed by Berg and Lune (2012), it takes a long hard time in conducting qualitative research, with both elusive data stringent requirements for analysis involved[15]. Sometimes the pressure from limited time is so overwhelming that researchers may become both physically and mentally exhausted and collect poorer data. Worse still, the findings yielded under such circumstance are usually not so rich and compelling for further research, practice and policy.

4.CONCLUSION

In conclusion, it can be evidently identified that the strengths and weaknesses of two essential research paradigms, namely, quantitative and qualitative research are critically demonstrated. Moreover, mixed-method research is also brought into prominence in terms of illustrating my future research design in the field where I take intense interest.

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