



## Mixed Methods Research: Ontological, Epistemological and Methodological underpinnings

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**Abstract:** *This paper endeavours to offer a detailed understanding regarding three main philosophical positions including Ontology, Epistemology and Methodology and how various assumptions behind each of them can be addressed in a mixed methods study. First, it elaborates on the questions such as, what is meant by ontology? What ontological positions have usually been adopted by the researchers? How can an ontological position be taken in a mixed methods study? Later, the study discusses how the questions regarding epistemology, the choice regarding epistemological positions and the questions regarding epistemology may be addressed in a mixed methods study. Finally, this paper offers a comprehensive explanation of methodology, the qualitative and quantitative approaches and the benefits of mixing both the methods in a single study. It is hoped that this paper will help researchers to enrich their understanding regarding philosophical underpinnings that will help them to carry out their own research.*

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**Keywords:** *Ontology, epistemology, quantitative approach, qualitative approach, mixed methodology*

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## **Introduction**

A Mixed methods research is comparatively a recent form of inquiry in social sciences and in education (Tashakkori, & Teddlie, 2010). This approach adopts Ontological, Epistemological and Methodological positions in a different way as compared to either qualitative or quantitative approach. A researcher, while adopting a mixed methods approach, needs to have an understanding not only of the philosophical positions such as ontology, epistemology and methodology (Seliger, 1989), but also how they may be addressed in a mixed methods study (Collis & Hussey, 2003). If the researcher fails to do so, the entire research process may be flawed and the outcome of that study may not be accepted by other researchers in the field (Dörnyei, 2007). Thus, this paper discusses each of these philosophical positions respectively followed by a detailed elaboration on how they can be applied in a mixed methods research.

## **Ontology**

Ontology, according to Gray (2013), may be defined as the perception or view point regarding existence of man, society and the world in general on the one hand, and relationship among them on the other hand. In other words, ontology deals with the nature of the entities of the world and the assumptions of reality about them (Bryman & Bell, 2011). Two major ontological perceptions regarding social world reality are: a) reality is one (Bryman, 2004) and b) multiple realities co-exist in a social world (Bryman, 2007). Following the first view, the researcher investigates a social phenomenon objectively, whereas following the other view; the researcher explores nature of social world reality with the help of human experiences (Bryman & Bell, 2011).

The ontological position may be understood and explained by answering the question: 'what is the nature of reality' (Creswell, 2003)? If the researcher is not part of the study and believes in objective reality then the position may be termed as Objectivist. However, if the researcher sees the reality from the participants' point of view and considers his/her role to explore reality, then this position is termed as 'Subjectivist'. These both schools of thought are opposite to one another. The Objectivists are of the view that social world reality may be determined 'independent of social actors' (Bryman & Bell, 2011:21). Hence, they investigate it in a way similar to that of physical or natural scientists who analyse physical

phenomena and the subjects behave only as responding mechanisms. The Subjectivists, on the contrary, argue that social world is different from that of natural or physical objects. Humans, unlike objects and animals, assign meaning to the phenomenon around them. Thus, in order to explore the nature of social reality, human involvement, within the scope research study, is useful to find out the truth.

In general, researchers' ontological perspectives can be positioned in the middle of two extremes: fully objective to fully subjective. In a mixed methods study, however, a researcher may obtain an intermediate ontological position acknowledging the fact that both objective and subjective views of the reality are useful in a social science study.

One of the examples of this (intermediate) position may be observed in the study of Ansari (2015) on reading habits and reading performance of university students whose mother tongue is Sindhi and Urdu. The researchers, in their study, acknowledge the importance of both objectivist and subjectivist views on ontology, and measures the relationship between reading habits and English reading performance of Sindhi and Urdu groups as they, believe in the single reality. They also, seek the participation of Sindhi and Urdu respondents believing in the existence of multiple realities in a social world (Bryman & Bell, 2011). Using semi-structured interviews, the researchers explore participants' home background and educational background and their influence on reading habits. Thus, the study as a whole, offers a full understanding of the participants' reading habits and English reading performance. Therefore, it may be suggested that the intermediate position on ontology underlying a mixed methods study may offer a more complete picture of the social phenomenon.

### **Epistemology**

Epistemology is related to the process through which a researcher may establish or determine reality. Creswell (2003) states that the epistemological position may be identified by putting the question: what is the relationship between the researcher and that researched? If a researcher seeks knowledge and argues for it keeping his or her own perspectives aside, then the epistemological path of the study, in broad terms, may be termed as 'positivism'. Positivism assumes that there is only one objective reality; independent of human perception on it. On the epistemological assumption reality is determined through the systematic scientific methods of inquiry.

Conversely, if the interaction occurs between the researcher and the subjects, in that case the study would follow the 'phenomenological' epistemology. According to Maykut & Morehouse (2002:15):

The differences between the two paradigms are basic and affect both the general approach to research and particular practices within each research tradition.

Positivists take a relatively objective stance and analyse measurable variables (Collis & Hussey, 2003) and their emphasis is mainly on proof and explanation (Maykut & Morehouse, 2002). Their main consideration is that the world is "simple or at least potentially simple if it can be examined properly and broken apart correctly" (Maykut & Morehouse, 2002:14). Also, they argue that the causal relationships cannot be investigated by qualitative research methods alone (Maxwell, 2004) and they usually believe in the context free generalizations of the results from a research study (Onwuegbuzie & Leech, 2005).

Phenomenologists or interpretivists, unlike positivists, consider the world as a complex entity, which may be understood through the subjective meaning people assign to the social actions in a specific social setting (Bryman, 2004). They interact with what is being researched in order to decrease the gap between the researcher and what is being researched (Collis & Hussey, 2003).

Similar to the ontological position taken for the research study (Ansari, 2015); an intermediate view point on epistemology was adopted acknowledging both positivists and phenomenological approaches. This position helped the researcher examine, empirically, what the students read in their daily life, both in English and in L1 and how proficient they were in English reading. It also offered a free room to the researcher to interact with the participant believing that the participants are part of the social world. Hence, their respective perspectives were useful to gain a complete understanding of the phenomenon being studied. The interaction between the researcher and the students not only explored students' reading practices and English reading proficiency but it also offered an understanding of the factors that may have influenced their reading habits and reading proficiency in English.

## **Methodology**

Methodology is one of the most important elements of a research study. Silverman (2016) defines it as the generic approach used by the researchers, which includes the methods of data collection to data analysis to conduct their research. In other words, research methodology is concerned with the use of either the qualitative or quantitative methods or mixed methods (both qualitative and quantitative methods together) in order to carry out research. Hughes & Sharrock (1997) state that researchers need to choose their methods of inquiry keeping in view the research problem(s). In order to gain a better understanding of the qualitative and quantitative approaches, the following section provides a brief explanation of both approaches, informing about the strength and weakness of each method followed by a more detailed discussion on the historical background and suitability of the mixed methods research.

## **Qualitative and Quantitative Approaches**

Qualitative and quantitative approaches are the two well-known approaches used in social sciences and educational research. Both these approaches are in complete contrast to one another. The qualitative approach, for example, usually follows inductive methods of inquiry to understand and explore a social phenomenon and generates theories. It seeks human participation as the main source for data collection.

This approach, in the words of Dörnyei (2007), uses verbal data rather than numeric data and creates more open-ended categories than predefined categories. It generates rich data hence, it uses human interpretations as the main source of data collection (Collis & Hussey, 2003). It uses small sample size and involves the researcher and the participants to investigate the social phenomena. This raises the question if the quantitative methods of inquiry are useful to explore the complexity of human life (Bryman & Bell, 2011). Nevertheless, the qualitative approach, if it is used alone, may create an issue regarding the generalisation of the research findings to larger population (Argnode, 2012) owing to its small sample size (Dörnyei, 2007).

In contrast, the quantitative method uses '*observations that are converted into discrete units that can be compared to other units by using statistical analysis*' (Maykut & Morehouse, 2002:3). This approach predefines categories (variables) and assigns them a logical scale of values which may

be defined in numbers (Dörnyei, 2007). Creswell (2003:18) argues that following the quantitative methods of inquiry, a researcher:

‘primarily uses post-positivist claims for developing knowledge (i.e., cause and effect thinking, reduction to specific variables and hypotheses and questions, use of measurement and observation, and the test of theories), employs strategies of inquiry such as experiments and surveys, and collects data on predetermined instruments that yield statistical data’.

Thus, the quantitative study analyses the data in numbers adopting deductive methods of inquiry to examine the relationship among the predetermined variables. It includes simple data sets and the large representative sample of participants in order to generalize the findings to the entire population. One weakness of the quantitative approach is that it does not offer an in-depth understanding of the social phenomenon due to the use of simple data sets.

Overall, both the qualitative and quantitative approaches have certain weaknesses when they are used in isolation. The qualitative approach, if it is used alone, may not apply the findings to the larger population due to its small sample size. Conversely, the use of quantitative approach alone may not provide a clear picture of the complex social world. The underlying weaknesses behind qualitative and quantitative clearly support the need of a new approach that may combine both the qualitative and quantitative approaches and offer ‘the best of both worlds’ (Dörnyie, 2007:20). The researcher further states that: *particular research topics or questions can more naturally be studied using either QUAL or a QUAN methods, in most cases one can also look at same question from another angle, using the other approach, thus uncovering the new aspects of the issue* (p.30).

Dörnyie (2007), in the above statement, clearly advocates the use of qualitative and quantitative methods of inquiry in the same study. However, it is important at this stage to determine whether or not qualitative and quantitative methods of inquiry may be mixed in one study, owing to their apparent differences in respect of ontology and epistemology as mentioned earlier.

According to Dörnyei (2007), there were various conflicts regarding the use of mixed methods during the 1970s and 1980s between positivists and interpretivists. They were of the view that it was impossible to make quantitative and qualitative methodologies compatible in a single study due

to their underlying differences regarding paradigm (Smith & Heshusius, 1986). Resultantly, they completely discouraged mixing of both in the same study.

Nowadays, however, these conflicts seem to have died down and there is an increasing interest regarding the integration of qualitative and quantitative methods of inquiry in a single study (Creswell & Plano Clark, 2011). Many researchers in education (Dörnyei, 2007; Creswell, 2009) and in social sciences (Bryman, 2004, Onwuegbuzie & Leech, 2005) consider mixed methods approach as a natural complement to traditional qualitative and quantitative approaches.

Bergman (2008:1) states that in a mixed methods study, '*at least one qualitative and at least one quantitative component*' is combined. In support of a mixed methods research, Morse (2004) argues that the combination of qualitative and quantitative methods enables the researcher to design confirmatory and exploratory questions and simultaneously, and verify and generate theory in a single study (Teddlie & Tashakkori, 2012).

Creswell (2009) states that research methods must be selected in line with research aim of the study. The quantitative part of the study examined the causal association between the predetermined variables e.g. reading habits and English reading performance. The study also compared Sindhi and Urdu learners in terms of their English reading performance through the quantitative inquiry. Simultaneously, in order to understand and explore the complexity of social phenomena; and evade the inappropriateness of quantitative inquiry, the factors e.g. home and educational background, were also explored through qualitative method of inquiry because they may have an influence on learners' reading habits and reading performance. The study also identified that the qualitative approach, or the quantitative approach, by itself, was not appropriate to meet the various objectives of the study.

## **Conclusion**

This paper clarifies that an understanding of ontological and epistemological assumptions is useful for a research study in general and the mixed methods research in particular. It also suggests that despite the variations between qualitative and quantitative approaches have in terms of ontological and epistemological assumptions, the combination of both in one study is not only possible, but it also provides a proper understanding

of the phenomena (Creswell & Plano Clark, 2007). Accordingly, this paper clearly demonstrates that contextual nature of qualitative findings complement the representativeness and generalizability of quantitative findings (Greene & Caracelli, 2003). However, a mixed methods research may be designed only if there is a need to understand and confirm the social phenomenon at the same time. It is hoped that this paper will help novice researchers to carry out a mixed methods study with accuracy.

## References

- Ansari, S. (2015). Researching Sindhi and Urdu students' reading habits and reading performance in a Pakistani university context. *Ph.D. Thesis*, University of Bedfordshire, UK.
- Arghode, V. (2012). Qualitative and quantitative research: Paradigmatic differences. *Global Education Journal*, 2012(4), pp.155-163.
- Bergman, M. M. (2008). 'Introduction: Whither mixed methods?', In: M.M. Bergman, (Ed) *Advances in mixed methods research: Theories and applications*. (pp.1-7). London: Sage Publications.
- Bryman, A. (2004). *Social research methods*, 2<sup>nd</sup> edn. Oxford: Oxford University Press.
- Bryman, A. (2007). Barriers to integrating quantitative and qualitative research. *Journal of Mixed Methods Research*, 1(1), pp.8-22.
- Bryman, A. and Bell, E. (2011). *Business research methods* 3<sup>rd</sup> edn. Oxford: Oxford University Press.
- Collis, J. and Hussey, R. (2003). *Business research: A practical guide for undergraduate and postgraduate students*, 2<sup>nd</sup> edn. New York: Palgrave Macmillan
- Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches*, 2<sup>nd</sup> edn. Thousand Oaks, California: Sage Publications.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*, 3<sup>rd</sup> edn. Thousand Oaks, California: Sage Publications.
- Creswell, J. W. and Plano Clark, V. L. (2007). *Designing and conducting mixed methods research*; Thousand Oaks, California: Sage Publications.
- Creswell, J. W. and Plano Clark, V. L. P. (2011). *Designing and conducting mixed methods research*, 2<sup>nd</sup> edn. Thousand Oaks, California: Sage Publications.
- Dörnyei, Z. (2007). *Research methods in applied linguistics: Quantitative, qualitative, and mixed methodologies*, Oxford: Oxford University Press.
- Gray, D. E. (2013). *Doing research in the real world*, 3<sup>rd</sup> edn. London: Sage Publications
- Greene, J. C. and Caracelli, V. J. (2003). Making paradigmatic sense of mixed methods practice, In: A. Tashakkori, & C. Teddlie (Eds). *Handbook of mixed methods in social and behavioral research* (pp.91-110). California: Sage Publications.
- Hughes, J. and Sharrock, W. (1997). *The philosophy of social research*, 3<sup>rd</sup> edn. Essex: Pearson.
- Maxwell, J. A. (1996). *Qualitative research design*. Newbury Park, California: Sage Publications.
- Maykut, P. and Morehouse, R. (2002). *Beginning qualitative research: A philosophical and practical guide*. Routledge.
- Onwuegbuzie, A. and Leech, N. (2005). Taking the "q" out of research: Teaching research methodology courses without the divide between quantitative and qualitative paradigms. *Quality & Quantity*, 39(3), pp.267-296.
- Seliger, H. W. (1989). *Second language research methods*; Oxford: Oxford University Press.
- Silverman, D. ed., 2016. *Qualitative research*. Thousand Oaks, California: Sage Publications
- Teddlie, C. and Tashakkori, A. (2012). Common "core" characteristics of mixed methods research a review of critical issues and call for greater convergence. *American Behavioral Scientist*, 56(6), pp.774-788.