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Demystifying Ontology and Epistemology in research methods

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Introduction

Most postgraduate research students find it difficult to get their heads around some of the theoretical concepts and issues which they come across as they begin their research journey. Amongst these concepts and issues are **ontology** and **epistemology**. These philosophical assumptions or positions are a basic component of any postgraduate research and, as such, need to be clearly set out at the beginning of the methodology chapter. This paper therefore aims to help novice research students understand, in easy terms, what ontology and epistemology mean, what their variants are and how they relate to research.

Ontology

Ontology is the study of 'being' and is concerned with 'what is', i.e., the nature of existence and structure of reality as such (Crotty, 1998) or what it is possible to know about the world (Snape & Spencer, 2003). The SAGE Online Dictionary of Social Research Methods (2006) defines ontology as "a concept concerned with the existence of, and relationship between, different aspects of society such as social actors, cultural norms and social structures… Ontological issues are concerned with questions pertaining to the kinds of things that exist within society" (no page). For Richards, (2003), ontology is the assumptions we make about the kind and nature of reality and what exists. Snape and Spencer (2003) also define ontology as the nature of the world and what we can know about it. Furthermore, Bryman (2008) introduces the concept of 'social ontology' which he defines as a philosophical consideration in research which concerns the nature of social entities, i.e., whether these social entities are or can be objective entities which exist independently from social actors or rather they are social constructions in themselves built up from the perceptions, actions and interpretations of the individuals in society. Similarly, Ormston et al (2014) assert that ontology concerns the question "whether or not there is a social reality that exists independently from human conceptions and interpretations and, closely related to this, whether there is a shared social reality or only multiple, context-specific ones" (p.4). In short, ontology concerns our beliefs about the kind and nature of reality and the social world (what exists).

Epistemology

Epistemology in general is the assumptions we make about the kind or the nature of knowledge (Richards, 2003) or how it is possible to find out about the world (Snape & Spencer, 200). For Crotty (1998), epistemology is a way of looking at the world and making sense of it. It involves knowledge and, necessarily, it embodies a certain understanding of what that knowledge entails. He further explains that epistemology deals with the 'nature' of knowledge, its possibility (what knowledge is possible and can be attempted and what is not), its scope and legitimacy. Similarly, but with a particular reference to the contrasting views about how natural and social worlds should be studied, Bryman (2008) defines epistemology as "an issue concerns the question of what is (or should be) regarded as acceptable knowledge in a discipline" (p.13). To further explain what epistemology is about, I cite Cohen, Manion and Morrison (2007) as saying that epistemology is about the assumptions which one makes about "the very bases of knowledge – its nature and form, how it can be acquired and how communicated to other human beings" (P.7). Furthermore, the authors stress how the kind of epistemological assumptions which we make or hold about knowledge profoundly affect *how* we go about uncovering knowledge of social behaviour. Here they refer to the decisions which the researcher will need to make about the kind of method(s) he or she will be using in their research as per their epistemological assumptions. That is, if knowledge, on one hand, is viewed as **hard, objective and tangible**, this demands of the researcher an observer role together with an allegiance to the methods of natural science such as testing, measuring, etc. If knowledge, on the other hand, is viewed as **personal, subjective and unique**, then this imposes on the researcher a rejection of the methods used by natural science and a greater involvement with their subjects.

Types of ontology and epistemology

There are quite a range of epistemological and ontological positions, i.e., views of the world and knowledge. You will need to discuss the main ones and say which views or traditions you adopt as a researcher.

Positivism and objectivism

Positivism, which is an epistemological position, focuses on the importance of objectivity and evidence in searching for truth and the world is unaffected by the researcher. Also, in positivism, facts and values are very distinct, thus making it possible to conduct objective and value-free inquiry (Snape & Spencer, 2003). What this means is that the researcher should distance him or herself from any impact on their research findings. In addition, positivism epistemology holds the position that meaning and meaningful realities already reside in objects awaiting discovery and they exist apart from any kind of people's

consciousness (Crotty, 1998). Therefore, according to this view, when we recognise objects around us, we simply discover meanings which have been lying in them all along. Furthermore, according to the positivism/objectivism paradigm, truth is static and is always objective. This truth is 'objectified' in the people being studied and this objective truth can be 'discovered' if we go about it in the right way. These 'right' ways of discovering knowledge about the world include, as proposed by positivist writers such as Isaac Newton and Francis Bacon, methods such as 'careful direct observation' and not deduction from abstract propositions (Ormston et al, 2014). In other words, the essence of objectivism derives from the acceptance of natural science as a paradigm to study human knowledge and, necessarily, employs means and methods for data collections and data interpretations similar to those used in natural science including hypothesis testing, causal explanations and modelling. Finally, in this tradition, all knowledge about the world originates in our experiences and is derived through our senses and, as such, only phenomena (and hence knowledge) which can be confirmed by the senses can genuinely be regarded as knowledge (Bryman, 2008; Ormston et al, 2014; Wellington, 2000). Positivist knowledge, according to Wellington (2000) deemed to be objective, value-free, generalizable and replicable. This is why positivism is often being perceived as a synonymous of 'scientific method'.

Critiques to positivist thinking

Nevertheless, the positivist and objectivist traditions and thinking have been subject to criticism since the early twentieth century. The rejection of the positivist thinking and tradition was based on the ground that if rules and laws are only derived from observation, then it is also quite possible that a future observation proves an exception to a current rule or law (Ormston et al, 2014). This view then gave rise to a second version of positivism known as **post-positivism.** The proponents of this view argue that knowledge of the world is produced through testing propositions rather than based on careful observation and hypotheses are to be derived first from theories and then tested empirically against observations (deductive reasoning). Finally, while positivism advocates that reality can be known accurately, the post-positivist approach maintains that reality can be known approximately.

Interpretivisim and constructionism

In a total rejection to the positivist and objectivist traditions, opposing views of the world and knowledge then appeared known as interpretivisim and constructionism (Bryman, 2008; Crotty, 1998). According to these views, there are ways of knowing about the world other than direct observation; namely, our perceptions and interpretations of the world around us. People use their perceptions to interpret what their senses tell them. As such, knowledge of the world is based on our 'understanding' which arises from our reflection on events rather than only on lived experiences (Ormston et al, 2014). In a clear opposition to

the positivist and objectivist tradition, interpretivism and constructionism approaches argue that knowledge is produced by exploring and understanding (not discovering) the social world of the people being studied, focusing on their meaning and interpretations, i.e., meanings are social constructed by the social actors in a particular context. (This very position will later establish the ground on which my research design and data collection methods rest). In the previous traditions we have seen that reality is unaffected by the reach process and that the researcher has to distance him or herself from the findings. In this opposing tradition, however, researchers also construct meanings and interpretations based on those of their participants. In addition, the research process is considered to be largely 'inductive' in the sense that the aim is to generate a theory from the data collected rather than use the data to test an already existing theory. Another important distinction between the former and latter approaches is that facts and values in interpretivism and constructionism approaches are not distinct and totally objective and value-free research is impossible. In other words, the researcher cannot detach him or herself from the research; they inevitably become personally engaged in the research and, as such, findings are influenced by their perspectives and values. Finally, in interpretivist and constructivist traditions, the methods used in studying the natural sciences are not suitable for the study of the social world and that social reality cannot be captured or portrayed accurately because there are different perceptions and understandings of reality (Bryman, 2008; Cohen et al, 2007; Crotty, 1998; Ormston et al, 2014; Snape & Spencer, 2003).

To help us get a better grasp of all the philosophical research traditions and views discussed above, I summarise the main assumptions of each position in the following diagrams and table. The tabulated data were derived from the related literature on qualitative research methods, which includes (Bryman, 2008), (Cohen, Manion, & Morrison, 2007), (Crotty, 1998), (Denzin & Lincoln, 2005), (Hennink, Hutter, & Bailey, 2011) , (Ormston et al 2014), (Snape & Spencer, 2003) and (Wellington, 2000).

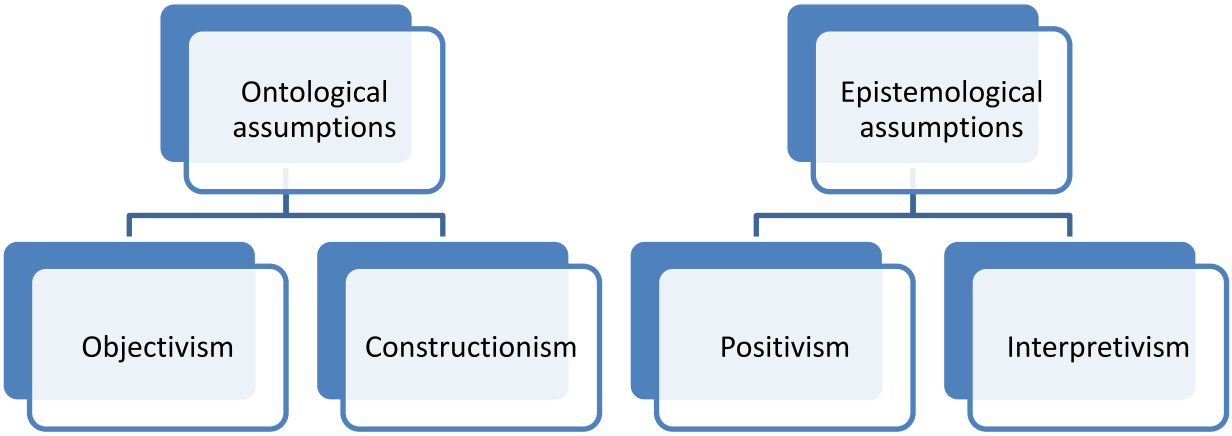

Figure 1: Key philosophical paradigms in research methods

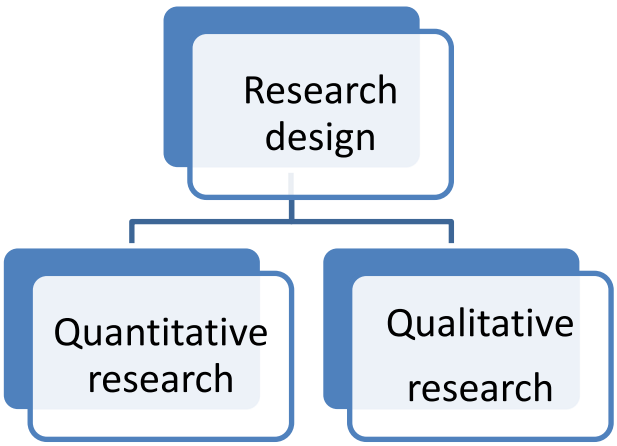

Figure 2: Two main types of research design

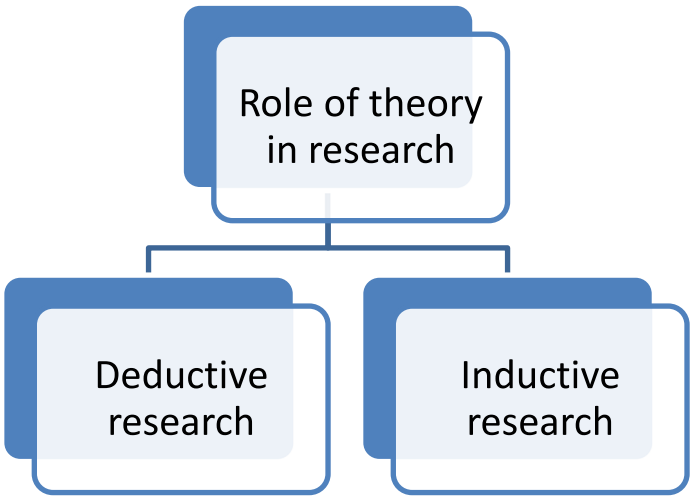

Figure 3: Role of theory in research

ONTOLOGICAL POSITIONS (nature of the world and existence)	
Position	Assumptions
Objectivism	• Reality exists *in*dependently of our beliefs or understanding • Reality can be observed directly and accurately • A clear distinction exists between our beliefs about the world and the way the world is • Only material or physical world is considered 'real' • Social phenomena and their meanings cannot change • Events have causes and determined by other circumstances • The casual links between events and their causes can eventually be uncovered by science • Life is defined in 'measurable' terms rather than inner experiences • Notions of choice, freedom, individuality and moral responsibility are excluded
Constructionism	• External reality exists but is only known through human mind and socially constructed meanings • There is no shared social reality, only a series of different individual constructions of it • Reality is subjective • There exist only estimate or approximate observations or views of reality • Social phenomena and their meanings are continually being accomplished by social actors • Social phenomena and their meanings are produced through social interaction and are in a constant state of revision • Life is defined in 'estimate' terms based on inner experiences of humans where choice, freedom and individual responsibility are appreciated

EPISTEMOLOGICAL POSITIONS (nature of knowledge and how it is acquired)	
Position	Assumptions
Positivism	• The world is independent of and unaffected by the researcher • Facts and values are distinct • Objective and value-free inquiry is possible • Disputes are resolved through observations • Methods of natural science are appropriate for the study of social phenomena • Knowledge is produced through the senses based on careful observation • Only phenomena (and hence knowledge) confirmed by the senses can be genuinely regarded as knowledge • Knowledge is seen as hard, tangible and objective • Knowledge is arrived at through gathering of facts • Social world is approached through the *explanation* of human behaviour
Interpretivism	• The researcher and the social world impact on each other • Facts and values are not distinct • Objective and value-free inquiry is not possible since findings are inevitably influenced by the researchers' perspectives and values • Methods of natural science are *not* appropriate for the study of social phenomena for the social world is not governed by law-like regularities but mediated through meaning and human agency • Knowledge is produced by exploring and understanding the social world of the people being studied • Knowledge is seen as personal, subjective and unique • The researcher understands the social world using both his/her as well as the participants' understanding • Social world is approached through the *understanding* of human behaviour

Table 1. Key philosophical research positions and their underlying assumptions.

Linking philosophy to research: my epistemological and ontological assumptions

My epistemological and ontological assumptions which I set out herein form the bases upon which my own thinking about and understanding of the world and its phenomena rest. These assumptions also inform my thinking about and understanding of social research in general and the development of my research methodology and methods which I have adopted in this research. As a matter of fact, and as a Muslim person, my ontological and epistemological positions have arisen mostly from my beliefs which I derive from the holy Qur'an and the sayings and traditions of the Prophet Mohammed (peace and prayers be upon him) as revealed to him by Allah the Almighty. My epistemological and ontological

assumptions about social research have arisen from, although I didn't have the exact terminology to describe them then, my early reflective thoughts on the language learning and teaching context which I belong to. However, my readings in the area of epistemology and ontology have largely contributed to the development of my understanding of such philosophical arguments and helped me to relate them to and critically think about the actual language learning and teaching situation in my context.

The ontological and epistemological positions which underpin my research are grounded on the belief that no ultimate or absolute reality or knowledge exists except that which has been revealed to us through the holy Qur'an. Other knowledge and realities do exist, but these cannot be claimed as purely true realities. The knowledge and reality which have been revealed to us through the holy Qur'an about existence, nations and events of the past, present and future is doubtless and considered as pure truth because of their divine origin. However, not all truth and knowledge have been revealed to mankind and, thus, it is upon us to explore them. Allah says: *"Of knowledge, it is only a little that is communicated to you (O men!)"* (Quran: chapter 17, verse 85). In fact, Allah the Almighty encourages us to think about the world around us and contemplate upon existence so that we have our own understanding of the universe and become knowledgeable. In this regard, Allah says in the Qur'an: *"Say: Behold all that is in the heavens and on earth"* (Qur'an: chapter 10, verse 101). So this means that other knowledge and realities do exist and we have to explore them but, as a constructionist thinker, I take the position that these can only be understood in the light of human beliefs and perceptions. This necessarily means that our knowledge and experiences remain limited, highly subjective and approximate in nature because they are a result of our endeavours to interpret and understand the world and its phenomena. According to Cohen, Manion and Morrison (2007), "the social world can be understood only from the standpoint of the individuals who are part of the ongoing action being investigated" (p.19). In a contrary view to objectivism, this means that there is no shared reality and meanings amongst people; what exists is only a series of different individual constructions of these reality and meanings for "all meanings are a product of time and place…the researcher cannot capture the social world of another, or give an authoritative account of their findings because here are no fixed meanings to be captured" (Ormston et al, 2014, pp.15-16). In addition, because reality is seen through people's beliefs and perceptions, there exist different ways of viewing and interpreting this reality. This, in turns, makes knowledge subjective for it is influenced by various personal and contextual factors. Such views about reality are socially 'constructed' and do not exist independently of human experiences and interaction. Therefore, I see social phenomena and their meanings as continually being accomplished by social actors through interaction. In addition, people may construct meanings in different ways, even in relation to the same phenomena for each one of them has his/her own personal perspective (Wellington, 2000). Finally, I view truth as in a constant state of revision rather than something fixed awaiting discovery.

Turning to the nature of knowledge and how it is acquired (which is what epistemology means), I take an interpretivist view which emphasises a close relationship between the researcher and the social world, i.e., the two are not totally independent but impact one another. In other words, in the research process, the researcher cannot distance him/herself from the research process. On the contrary, they continually construct meanings and interpretations based on their experiences and reflection as well as those of their participants. As such, knowledge of the world and social phenomena, such as learning in my case in this research, is based on our understanding which arises from our reflection on and interpretations of events rather than on our senses and careful observation as advocated by the positivist view. Necessarily, I think that objective and value-free inquiry is not possible since findings are inevitably influenced by researcher's perspectives and values. In addition, I believe that we can learn a great deal about the social world by trying to understand and make sense of people's behaviour, perceptions and interpretations of the world rather than just observing and explaining these perceptions and interpretations. Therefore, I think that the methods of natural science are inappropriate for the study of social phenomena such as learning– hence the research methods I used to explore my participants' perceptions and beliefs about language learning. Moreover, since the purpose of social research is to explore rather than discover reality, it embraces the qualities and essence of qualitative research. Hennink, Hutter and Bailey (2011) and Ormston et al, (2014) have complied a useful list of characteristics and qualities of qualitative research. One of the relevant characteristics of qualitative research to our discussion here is that it uses a process of 'induction' to develop theory and new knowledge from the data collected rather than using the data to prove or disprove an already established theory. Therefore, I don't see scientific method and deduction, which are common in natural science, as suitable methods in social research, and in my research in particular.

I have mentioned earlier that social science places a considerable emphasis on individuals' experiences and their perceptions of different phenomena around them. In this view, findings of social research are inevitably highly subjective. According to Cohen, Manion and Morrison (2007), "social science is seen as a subjective rather than objective undertaking, as a means of dealing with the direct experience of people in specific contexts, and when social scientists understand, explain and demystify social reality through the eyes of different participants" (p.19). I therefore do not see learning as a purely objective phenomenon which exists independently of the learner or his/her context but rather as a result of an active process of interaction and deliberate exchange of meanings between individuals. Such a process is informed by the context in which individuals live in and at the same time influences the way individuals construct their perceptions about learning and thus the way they learn. I also recognise the critical importance of my participant's own interpretations of the issues my research is set to explore while at the same time believe that their varied viewpoints will yield different types of understandings. These ontological and epistemological positions are of a particular relevance to my work as I commit myself here

to exploring language learning experiences of the students in my context through the eyes of the students themselves, as explained further below.

The above explained ontological and epistemological positions and views vividly manifest themselves in my research methodology and overall research design. Here, I commit myself to exploring (not discovering) 'part' of the reality about language learning through the experiences and perceptions of my participants themselves and in their particular context while at the same time acknowledging and privileging their varied 'subjective' views, perceptions and experiences.

Conclusion

In short, there exist various philosophical views and debates about the kind and nature of knowledge and truth (or epistemologies) and, as such, there exist various methodologies and frameworks employed in the study and understanding of this knowledge. Therefore, the ontological and epistemological assumptions which you make or hold as a researcher are important in the sense that they (should) justify you choice of methodology and methods of your research. In other words, your choice of data collection, data analysis and data interpretation should be informed by, and understood through, the ontological and assumptions and arguments you are making.

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