Paradigmatic Choices for Educational Research

Hamid Ali Khan Eusafzai

English Language Center, Colleges & Institutes Division, Royal Commission Yanbu, SAUDI ARABIA.

haky2008@gmail.com

ABSTRACT

This paper offers an overview of three major educational research paradigms: positivist interpretivist and critical paradigms. These paradigms in turn shape the choice of methodology and methods. The paper explains the ontological and epistemological foundations of each paradigm. The paper can help those embarking on research journey to gather an insight into the three major research paradigms and choose a paradigm according to their personal propensity, aim of their research, or contextual limitations.

Keywords: research, paradigm, positivist, interpretivist, critical

INTRODUCTION

Research is a systematic contribution to knowledge (Basey, 1990; Ernest, 1994) and any research endeavor embodies and is influenced by a world view (Creswell, 2009). The world view has been termed as paradigm. A paradigm has been defined as a system of thought (O'Leary 2004), a theoretical perspective (Crotty, 1998) and a perceptual orientation (Given, 2008). The definition offered by Bogdan and Biklen (1998:22) presents a comprehensive view of the term and includes all aspects described above. They define a paradigm as "a loose collection of logically related assumptions, concepts, or propositions that orient thinking and research". The definition covers both practical and abstract or philosophical aspects. The philosophical aspects, which are 'assumptions, concepts and propositions', provide a framework and direction and even lay a foundation for techniques of conducting research. Guba (1990:17) aptly sums the philosophical and practical aspects in defining paradigm as being a "basic set of beliefs that guide action", the action being the research activity. The philosophical dimensions of the paradigm are ontology and epistemology which in turn influence the practical dimension of methodology. Ontology has been defined as the study of what exists or what is real (Crotty 1998). Epistemology is concerned with the 'nature and form' of knowledge (Cohen et al. 2007:17). Methodology is concerned with the choice of various ways of acquiring knowledge (Crotty 1998). Guba and Lincoln (1994:108) term methodology as "how can the inquirer go about finding out whatever he or she believes can be known?"

Paradigm is at the basis of all research approaches. It forms a foundation for differentiating one type of approach from another and may also provide a reason for choosing different methodology. Scientific research approach, interpretive research approach and critical research approach all have their own distinct paradigms. The following section of the paper intends to explore these approaches using different dimensions or aspects of paradigm as a framework.

SCIENTIFIC RESEARCH APPROACH

Scientific research approach or positivism emerged in the 19the century. Positivism owes its emergence as a prominent social sciences research paradigm to August Comte (Cohen et al., 2007). Comte believed that the principles of studying natural sciences can also be applied to social sciences.

Ontological and Epistemological Foundations

The ontological foundation of positivism is that of realism. Realism looks at reality as independent, external and objective (Cohen et al., 2007), and the application of the principles of natural sciences to the study of social reality, by implication, means that reality is also measureable. The implication of this view of reality for the role of a researcher is that of an observer. The researcher and the reality which s/he is trying to study are independent of each other. Reality is something 'out there' (Cohen et al., 2007:7) and a researcher can know it by applying the scientific method without associating his/her being to it. Crotty (1998:8) aptly captures this relation of the researcher and the reality in the following words:

> *"A tree in the forest is a tree, regardless of whether anyone is aware of its existence or not. As an object of that kind, it carries the intrinsic meaning of treeness. When human beings recognize it as a tree, they are simply discovering a meaning that has been lying in wait for them all along."*

Thus, reality or truth already exists there, and researchers need to discover this reality or truth as it exists, and also that researchers are not meaning builders but just discoverers of an already existing meaning. The term objectivism (Guba & Lincoln, 1994) has been used to describe such an impartial and dissociated relationship, and the independent and external nature of reality or truth. Objectivism also forms the epistemological foundation of positivism.

Positivist Methodology and Methods

The predominant focus of positivist approach is to discover the cause-effect relationship (Creswell, 2009) and "scientific generalizations or laws" (Ernest, 1994:22) existing in the world. To achieve this end, positivists rely on quantitative methodology of research. Quantitative methodology includes both experimental and non-experimental forms of research. Experimental research is used to discover and study the cause and effect relationships. The discovery is then interpreted and applied in the form of generalized laws. The experimental research is often conducted in controlled environment where the researcher controls and manipulates variables or conditions (Cohen et al., 2007). Non-experimental research is quite opposite of the experimental research. Controlling and manipulating variables or conditions do not exist, and the discoveries resulting are not interpreted and applied as generalized laws. The main focus of such a study is to find a link between various variables. Thus positivist research is nomothetic and deductive (ibid).

The main data collection methods, associated with positivist research, are: tests, structured interviews and surveys. The choice of the methods is associated with the aim of the research and the objective of the research study. The data collection is followed by data analysis and often data analysis softwares are used to acquire accurate statistics and analysis.

Reliability and Validity Criteria

As mentioned earlier, one aim of positivist research is to discover generalizable laws which are applicable to wider contexts and situations. Thus, any research in quantitative tradition needs to be dependable and sound. The quality of dependability of a positivist research is

ISSN: 2186-8492, ISSN: 2186-8484 Print
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evaluated in terms of reliability and validity. Reliability is related to consistency and repeatability, whereas validity is related to accuracy in measurement (Creswell, 2009). For Girden (2001:2) reliability means the quality of "repeatability or consistency. Under the same experimental conditions, anyone else should be able to obtain the same results". Thus any research study should be replicable and should produce the same results given that the conditions in which the study is carried out remain unaltered. Bryman (2008) identifies three levels of reliability: stability, internal reliability and inter-observer consistency. Stability refers to consistency in results. Consistency in results also implies consistency in measurement. Thus any study when replicated or repeated with the same conditions and within the same parameters should produce the same results. Inconsistency of results may dent the dependability and believability quality of a study. The second level is internal reliability. Internal reliability refers to interrelationship of measurement indicators and the respondents' score on them. The third level of inter-observer consistency is consistency in observation across and among different observers. Thus, generally speaking, reliability and its different levels are related to the accuracy of inquiry or research.

The second quality which contributes to the dependability and soundness of research is validity. Validity has been defined as "the correctness and appropriateness of the interpretation that a researcher makes of his/her study" (Gass, 2010:12). Validity makes generalizability of the findings possible (Cohen et al., 2007) as a valid study means an accurate reflection of the issues the study aimed to address.

An additional aspect which contributes to the soundness of a quantitative study is the strategies of sampling (Creswell, 2009). Sampling is related to choosing participants for the research study. Sampling should be random and representative. Random sampling means that each individual in the target population should have an equal opportunity of participation, and representativeness is related to the size of the sample. The size of the sample should be big enough to proportionately represent the target population.

Pros and Cons of Adopting Positivist Approach

Positivism, probably due to its qualities of objectivity, reliability and generalizability, has remained the most dominant approach until recent times (Lazaraton 2000). Positivist studies or quantitative studies have certain advantages. They may be time saving as larger sample of population can participate in a shorter time and within limited resources. Further, positivist methods of data collection are helpful in contexts where the researcher and the participants do not share the same language, thus, making it difficult to carry the meanings across. Questionnaires can really be helpful in such situations. Then, in the context of the writer of this paper, which is Saudi Arabia, access to certain portions of population is not possible. For example, the possibility of male researcher accessing a female group of participants can only be possible through questionnaires which make data collection possible without any need for personal contact of the researcher with the participants.

However, positivism also received its due share of criticism. Some of the flaws identified by the critics of positivism are its dehumanized objectivity and also it's being pseudo-scientific. Positivism, when applied to the field of social sciences (sciences mainly dealing with human beings and society) treats human beings as any other object of nature (Bryman, 2008). Then, positivism expects generalized laws for human beings in the same ways as natural sciences expect them for other natural objects. Treating human beings as other objects of nature is not possible and appropriate. Human being is a sum total of his/her environment, culture and context. The expectation of his/her being value-free, aloof and detached is ungrounded. Thus, any meanings or reality, which they discover in the world out there, will be colored by his/her judgment and values which evolved as a result of the interplay among him/her, the

environment, the culture and the context human beings grow. All these aspects add an attribute of complexity to human beings, meaning thereby that, owing to this complexity, they cannot be reduced to simple controllable variables. Many researchers reacted to these flaws, and the reaction took the shape of finding an alternative to scientific or positivist research approach. The alternative approach is known as interpretive approach and the next section of this paper aims to discuss ontological, epistemological and methodological aspects of the approach.

INTERPRETIVE RESEARCH APPROACH

Various terms exist to identify interpretive research approach. The approach has been termed as constructivism, anti-positivism, naturalism and qualitative research. The approach evolved as a reaction to positivist or scientific approach to research. The approach is linked to Max Weber who advocated an approach of 'understanding' rather than 'explaining' in social sciences (Crotty, 1998:67). The underlying idea is that social world and natural world are fundamentally different from each other. Social world deals with human beings, and as mentioned earlier in this paper, human beings cannot be studied and dealt in terms of simple cause and effect relations. Further, perception of reality by human beings is always influenced by their values and conscience. Thus, we "need to consider human beings' subjective interpretations, their perceptions of the world (their life-worlds) as our starting point in understanding social phenomena" (Ernest, 1994:25. The implication of this perspective for researchers is that the purpose of any research endeavor should be to study individual understandings, the meanings that individuals develop, form and attach to the world around them, and thus look deep inside these understandings and meanings. Richards (2003:8) elaborates the point in the following way:

> "…..reality is socially constructed, so the focus of research should be on an understanding of this construction and multiple perspectives."

Ontological and Epistemological Foundations

The perspective built above can be summed in one term: relativism. Relativism is also the ontological foundations of interpretive research approach (Guba & Lincoln, 1994). Relativism means that reality varies from individual to individual; meaning thereby that reality is subjective. Additionally, individual's perception of reality is influenced by individual's conscience and conscience is a sum total of social, cultural, ideological and environmental influences. Thus, we have an approach to reality which is complex (as it varies from individual to individual) and rooted in local context rather than universal or general.

The epistemological foundation of interpretive approach has been termed as subjectivism (Guba & Lincoln, 1994). Subjectivism "subscribe[s] to the view that the world does not exist independently of our knowledge of it" (Grix, 2004:83). Thus if we go back to Crotty' s (1998) analogy of a tree in the earlier section of this paper, we can take the position that a tree's being a tree is dependent on an individual's or human being's association of the name 'tree' or the attribution of associated meanings to it. Thus, reality is personal and individually varied. The researcher can understand reality only if s/he becomes a part of this reality or the process of how it evolved through interaction between an individual and his/her world (Cohen et al., 2007). The role of the researcher in interpretive paradigm is subjective and participatory as opposed to objective and detached.

ISSN: 2186-8492, ISSN: 2186-8484 Print
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Interpretivist Methodology and Methods

The role of the researcher in interpretive approach is to "understand, explain and demystify social reality through the eyes of different participants" (Cohen et al., 2007:19), which implies a need for a methodology which may allow the researcher's involvement with the participants, in their natural environment, to study reality from the perspective of the participants.   The methodology appropriate for interpretive research is qualitative methodology. The methodology is "flexible and sensitive to social context in which data are produced" (Grix, 2010:121), and also allows the participants to share their "mind" (Dornyei, 2007:147). The methodology, thus, allows for greater interaction between the researcher and the participants, and facilitates the researcher in understanding the participants' perspective. Qualitative methodology includes phenomenology, grounded theory, case study, historical research, and ethnography.

Phenomenology is adopted to study the participants' experiences of a phenomenon. Grounded theory allows for collecting data and developing a theory based on the interpretation of the data. Ethnography is related to observing participants in their natural setting through a relatively longer period of time, and then analyzing the influences of the context, setting, environment or culture on the individual. Case study aims at studying a case over a period of time. Historical research is studying historical material and searching in them for symbolism which may help understand past societies.

Interpretive researchers use various qualitative methods to collect data. Observation, open-ended interviews or questionnaires, focus group discussions, and perusing historical records are examples of qualitative data collection methods. The data collected is mostly verbal, and is interpreted subjectively (Cohen et al., 2007) through identifying different themes and categories within the data. To ensure the dependability of the data, and to eradicate any possibility of misinterpretation, data can be collected through multiple methods. The technique is known as triangulation. To ensure that data is information rich, purposive sampling technique is used. Purposive sampling technique means choosing and approaching those participants who hold a promise for relevant and sufficient data.

Trustworthiness Criteria

Quality in interpretive research can be achieved through the elements of credibility, confirmability, dependability, and transferability (Lincoln & Guba, 1985). Credibility makes a research "worth paying attention to" (Lincoln & Guba, 1985:290). Seeking informants' or participants' feedback on researcher's understanding of their perceptions, interview corroboration to see if the findings reflect the perceptions of the participants, spending sufficient time with the participants to develop a sound understanding of them, deviant case analysis and triangulation are some of the strategies employed to achieve credibility in interpretive research (Lincoln & Guba, 1985). Confirmability implies the ability of the researcher to hinder his/her biases from impinging on his/her interpretation of the participants perceptions (Dieble, 2008). The techniques used for achieving confirmability attribute of the research are: confirmability audit, audit trail, triangulation and reflexivity.

Confirmability audit is to audit the research process and interpretations by an auditor other than the researcher, for example by another expert researcher (Patton, 1990). For confirmability audit, it is necessary that the researcher record the process of data collection, interpretation and the data itself, and make these available to the auditor. The process and steps of data collection leading to data interpretation is audit trail. Triangulation means using multiple sources of data to establish reliable understanding of participants perceptions (Creswell, 1998). Triangulation adds validity to a study and is a way of corroborating

findings. Reflexivity is being aware that "a researcher's background and position will affect what they choose to investigate, the angle of investigation, the methods judged most adequate for this purpose, the findings considered most appropriate, and the framing and communication of conclusions" (Malterud, 2001:483). A reflexive researcher maintains a journal with entries related to methodological choices and reasons responsible for these choices, logistical issues involved in the inquiry, and issues related to the effect of the researcher's interests and values on the investigation (Lincoln & Guba, 1985).

Pros and Cons of Adopting Interpretive Approach

Interpretive research approach has certain advantages. It allows for deeper understanding of the individual perspectives. Further, interpretive research approach allows for studying smaller number of participants as compared to positivist approach which necessitates approaching larger number of participants which may not be logistically possible in certain situations.

However, personally I feel it difficult to study and interpret participants' perspectives where I do not share the same language with them. Shared language means shared conscience, and shared conscience means deeper and reliable understanding of perspectives leading to reliable interpretations. Then, as stated earlier that in the social segregation contexts like Saudi Arabia, it may not be possible to approach certain groups (like female by male or male by female) personally, thus, precluding a study based on interpretive approach.

Apart from these advantages and disadvantages, the classic criticism against interpretive approach has been mainly for its being subjective and unscientific. These attributes limit the ability of the approach to lead to the creation of generalizable laws and applicability of the findings to wider contexts and situations. However, these problems can be overcome by observing the practices of rigour to bring the quality of trustworthiness to interpretive research. Further, and probably the most important criticism of the approach, has been that the approach is predominantly focused on the study of individual perceptions and meaning building, and does not account for historical, social, institutional and environmental influences on individual experiences. Interpretive approach, as well as positivist approach, probably seeks to investigate and understand the existing realities, and both do not target transformation or challenging the status quo existing in the society.

The interpretive approach failed to account for historical, societal, political structures existing in the society and the controlling power of these structures over individuals. The flaw necessitated a new research paradigm. The paradigm is known as critical approach. The next section of this paper examines the ontological, epistemological and methodological aspects of the approach.

CRITICAL RESEARCH APPROACH

As stated earlier that neither positivism nor interpretive approach attempt to understand and explore the relations between societal structures and their constraints on human beings. Critical approach takes the stance that meanings pre-exist and are enforced on human beings. It means that, "we come to inhabit a pre-existing system and to be inhabited by it" (Crotty, 1998:53). Critical research paradigm aims at emancipating people from these constraints resulting from pre-existing social, political, cultural structures. The aim is not to understand and interpret, but to liberate and transform the social structures (Pring, 2003). The role of the researcher is to generate knowledge which may serve as a stepping stone to this liberation (Guba & Lincoln, 1994).

Ontological and Epistemological Foundations

The ontological foundation of the approach is that of realism (ibid). The reality is concrete and is historically informed by social, political, cultural and economic structures. These structures crystalized over a period of time and now people take them as real. The role of the critical researcher is to challenge this reality and emancipate individual from the influence and power of these societal structures. Thus the role of the research and researcher in critical paradigm is transformative and emancipatory (Cohen et al., 2007).

Though the ontological position of the critical approach is similar to positivism as both subscribe to the philosophy of realism, the approach takes an epistemological position similar to that of interpretive paradigm. The epistemological foundation of the critical paradigm is subjectivism (Denzin and Lincoln, 1994). The paradigm views knowledge as socially constructed. The stance of the approach is: "what counts as worthwhile knowledge is determined by social and positional power of the advocates of that knowledge" (Cohen et al., 2007:27).   Thus, knowledge is not only socially constructed but is also shaped by power relations and interests existing in the society.

Critical Approach Methodology and Methods

The main aim of critical approach is emancipation, and initial step to emancipation is awareness and conscious-raising, thus the research methodology of the paradigm is based on collaboration between the researcher and the participants. The two main ways in which this collaboration translates into methodology are action research, ideology critique and critical discourse analysis. Action research is used at micro or local level. The aim is to collect information to affect change and improvement. In educational contexts, action research has been used to study the practices prevailing in the educational institutions, for developing reflective practices among students, and to improve the environment in the schools (Mill 2003). Ideology critique is comparing commonsensical knowledge to the actual social and cultural conditions. The research tries to expose the disparity existing between claimed and actually prevailing historical and social realities. Critical discourse analysis analyses the use of written and verbal texts for power, inequality and dominance.

Critical research paradigm may use quantitative, qualitative and mixed methods. However, as the epistemological bent of the approach is towards subjectivism, the researcher may use data collection techniques like open-ended interviews, focus groups, open-ended questionnaires, observations, diary and journal keeping. The data collected may then be interpreted to discover themes and lead to ascribing values to these interpretations. It does not mean that the choice is limited to qualitative methods. Quantitative and mixed methods may also be used. Mixed method is choosing a combination from both quantitative and qualitative methods.

Pros and Cons of Adopting Critical Approach

Critical research has many benefits in the form of action research. Teachers and educators can use action research to improve their practices, and to be the initiators of change not only at micro level but also at the macro level. At micro level the change can be in the teaching methods, raising awareness among students and at macro level the approach can help solve some of the controversial issues. For example in the field of TESOL the approach can challenge the native speaker myth. Many qualified and skilled non-native teachers remain barred from good opportunities because of their being non-native speakers. For example, some universities in Middle East use phrases like "ONLY native teachers" and "non-natives need NOT apply" in their job advertisements to bar non-native teachers from applying for ESL jobs. Critical approach can challenge this native and non-native structure which has crystalized into a reality because of historical and social developments.

However, critical research approach can be problematic in societies which are conservative and do not allow any challenge to the prevailing status quo. Researcher may face resistance or may not be allowed to take such research initiatives. For example, I wanted to conduct some small scale research and was not allowed to proceed with it as my questionnaire contained certain questions which challenged the male-female role relation in that conservative society, and the stake holder was not personally convinced of a need for change to the existing structure of male-female role.

Validity Criteria

The quality of any critical research endeavor can be judged by the degree to which it is successful in achieving and its aim of affecting or initiating emancipation, transformation, or empowerment of the marginalized and oppressed. The term catalyst validity has been used to refer to this kind of validity or criteria (Cohen et al., 2007).

CONCLUSION

The paper examined positivist, interpretive and critical research paradigms. Each paradigm has its unique approach and purpose. Each paradigm has its own validity. Adoption of a certain paradigm depends on the aims and objectives of the research activity. In some situations, we may need to predict and use the positivist paradigm, in other situations we may need to understand and thus may adopt the interpretive paradigm, and there might be situations where the aim might be emancipation, and thus we may resort to critical paradigm (Lather, 2006). Thus the choice of a paradigm should be based on pragmatism. Our choices should be guided by the consideration that what can work best for us in a given context or situation.

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