Abstract

Conducting educational research studies is a daunting and challenging experience for novice researchers. The novice researcher is not only haunted by the ambiguity of the new research experience but also challenged by the difficult choice of research paradigms and compatible research methodologies and methods that are often presented as competing paradigms and therefore as against each other. This paper is a humble attempt to discuss and clarify research terminologies and help novice researchers choose appropriate research methodologies and methods as seen compatible with the positivist, interpretive, and critical paradigms.

Keywords: Paradigm, Ontology, Epistemology, Methodology, Methods, Positivist, Interpretive, Critical, Quality, Criteria

1. Introduction

Stenhouse (1984) in Welligton (2000: 11) defines educational research as a “systematic activity that is directed towards providing knowledge, or adding to the understanding of existing knowledge which is of relevance for improving the effectiveness of education.” As a graduate student new to the complexities of research methods, words such as systematic, knowledge, understanding, existing, and improving sounded normal as my understanding of them did not go beyond their surface meaning. However, these words bear a lot of significance with deeper interpretation than my presumed understanding. In essence, “existing” and “existence” refer me to ontology; “knowledge” to epistemology; and “understanding and improving” to different research paradigms. To reflect on these words is, therefore, to understand the difference between the research paradigms.
But what constitutes a paradigm, in this context? A paradigm consists of four parts: ontology, epistemology, methodology, and methods. Ontology is “concerned with … the nature of existence” (Crotty, 1998: 3) which Grix (2004) considers as the departure point of all research. Epistemology, on the other hand, “deals with the nature of knowledge” (Crotty, 1998: 8). It deals with the nature of the relationship between the knower and the known. The relationship between ontology and epistemology is fundamental. Grix (2004: 58) states that “ontology and epistemology can be considered as the foundations upon which research is built.” It is the researcher’s ontological and epistemological assumptions that inform the choice of methodology and methods of research.

Methods are the “range of approaches used in educational research to gather data which are to be used as a basis for inference and interpretation” (Cohen et.al2003: 44). Methodology is the strategy, or action plan that justifies the use and choice of certain techniques (Crotty, 1998). Therefore, methods of enquiry are reflections of the researchers’ assumptions about the nature of reality and the nature of knowledge. Most of the time, these assumptions are not explicit; a fact which makes it the role of novice doctoral students, like myself, to unveil them in critiquing the functions of studies. This is what I will try to do in Part B. In part A, however, I will discuss three research paradigms: Positivist, Interpretive, and Critical.

2. Positivist Approach

Positivism is closely associated with the French philosopher Auguste Comte (Pring, 2000). Crotty (1998) holds that though Comte, who popularized the word positivism, is considered as the founder of positivism, what he said about experiment, observation, and cause-effect relationship can be echoed in what was earlier preached on by Francis Bacon. Positivists think that they can apply methods of the natural sciences on the practices of social sciences. Positivist social scientists try to replicate procedures followed by natural scientists to control and understand the natural world. They are committed to value neutrality, statistical measurement, quantifiable elements, and observable events to establish causal laws (Seale, 2000). Grix (2004) presents the most significant premises of the positivist approach (what does Girx say?). Positivists believe in the possibility of establishing cause-effect relationship. They are after regularities to make predictions and establish scientific laws and that, based on this factor; it is possible to use scientific methods to analyze the social world. Positivists believe that the role of the neutral researcher is to present an objective explanation of matters of concern and predict
laws (such as what?). From the previous principles, we can understand the ontological and epistemological assumptions of the positivists.

2.1. Ontology and Epistemology

Positivists hold a realist, foundationalist ontology. Guba and Lincoln (1994: 109) state that “an apprehendable reality is assumed to exist, driven by immutable natural laws and mechanisms”. For them, social reality is external to individuals. Objects exist independently and have no dependence to the knower (Cohen et al, 2003: 6). Pring (2008: 58) gives a similar definition by stating that realism is “the view that there is reality, a world, which exists independently of the researcher and which is to be discovered.” According to this definition, Pring draws a clear separation between the knower and the subject known to the knower.

Epistemologically, positivists hold a dualist and objectivist view. Being objectivist is a fundamental aspect of any competent inquiry (Creswell, 2009). The knower and the object to be known are different entities. Neither of them exerts influence on the other. Positivists are interested in facts and hold that research should be value free. Threats to validity are controlled by preventive procedures. Causal relationships can be established and therefore generalization and replicability become possible.

2.2. Methodology

Positivist methodology aims at explaining relationships (of what?). Cause and effect relationship is one of the tenets of the positivist paradigm (Creswell, 2009; Grix, 2004; McDonough and McDounough, 1997). Experimental designs seem to provide an umbrella to explain this causal relationship (Creswell, 2009). Questions and hypotheses are tested and verified by experiments. The researcher should seek a cause-effect relationship between the independent variable, which is the intervention and cause of any improvement, and the dependent variable, the outcome of the intervention. The attribution of the effect to the independent variable can be warranted by the manipulation of other variables that may threaten research validity.

True experimental and quasi-experimental designs are both experimental; with the main difference that the sample in the quasi-experimental is not assigned randomly (Best and Khan, 1993). In this case, the belief is that true experimental designs use empirical testing and random sampling by which researchers control and manipulate variables and use experimental and
control groups (Best and Khan, 1993). True experiments attempt to explain relationships and therefore make predictions and generalizations. Moreover, a deductive approach is followed. Accordingly, terms such as intervention and treatment become key words in the scientific paradigm. Based on this reality, the independent variable, or intervention and treatment, is the cause of any change in the performance or behavior of subjects. This change in the performance can then be attributed to the independent variable if necessary precautions are taken to remove any creeping threats to validity. The notion here is that the researcher in the scientific paradigm should control the different threats to validity such as mortality, history, and maturation.

2.3. Methods

Positivist researchers use data collection methods to gather quantitative, numerical data that can be tabulated and analyzed statistically. According to Creswell (2008), four major types of data are gathered in quantitative research. Individual performance is the first type. It includes norm-referenced tests, criterion-referenced tests, intelligence and aptitude tests. The second type of data measures individual attitude and uses an affective scale. Observation of individual behavior is the third type of gathered data. Researchers can use behavioral checklist to record observation about individual behavior. The last type of data is factual. Researchers may rely on public documents or school records to gather data about a sample. Creswell (2008) agrees with Dornyei (2007) on the great importance of choosing the sample in quantitative studies. Both of them started their chapters about collecting quantitative data by addressing the issue of random sampling. According to Creswell (ibid: 153), simple random sampling is “the most popular and rigorous form of probability sampling from a population.” Dornyei (2007) contends likewise that sampling is important as it can guarantee generalizable findings.

2.4. Quality Criteria

Validity and reliability are the criteria to evaluate the quality of a positivist research. Kumar (1999: 138) defines validity as the “ability of an instrument to measure what it is designed to measure.” This definition with a focus on a measurement perspective seems not to satisfy Lynch (2003) (as cited in Dornyei 2007: 51) who summarizes the new concept of validity by stating that when “examining the validity of assessment, it is important to remember that validity is the property of conclusions, interpretations or inferences that we draw from the assessment instruments and procedures, not the instruments and procedures themselves.” Positivists try to
meet internal and external validity when they conduct research. For positivists, the findings of a study are not internally valid if factors other than the independent variable affect the outcome. External validity is the extent to which the findings can be generalized to larger groups. The main task of a researcher is to manipulate variables and control other variables that may be a threat to the validity of the research. Mortality, history, Hawthorne effect, and practice effect are mentioned to be among the potential threats to validity. Seale (2002: 103) realizes the challenge of predicting threats in that the “use of threats requires an imaginative effort by the researcher to enter the minds of potential critics.” Reliability, on the other hand, is “a synonym for consistency and replicability over time, over instruments and over groups of respondents” (Cohen et al 2003: 117). Perry (2005) shares the same position and defines reliability as consistency of data results. According to Kumar (1999), a research instrument is said to be reliable if it is consistent, stable, predictable, and accurate.

3. **Interpretive Approach**

Interpretivism is mainly associated with Max Weber (Crotty, 1998) and Alfred Schutz (Pring, 2000). Cohen et al (2003: 21-22) present the distinguishing features of the interpretive paradigm. Interpretivists state that reality is multi-layered and complex. They believe that people are creative and actively construct their social reality. They further note that the social world should be studied in the natural world, through the eyes of the participants, without the intervention of the researcher.

3.1. **Ontology and epistemology**

Interpretivists hold a realist, anti foundationalist ontology. Relativism is the view that reality differs from person to another (Guba and Lincoln, 1994). Interpretive researchers believe in multiple realities (Crotty,1998; Pring, 2000) and that reality is socially constructed. Epistemologically, interpretivists adhere to a subjectivist view in that subjective meanings and subjective interpretations have great importance (Pring, 2000). Crotty(1998: 79) states that the object “ cannot be adequately described apart from the subject, nor can the subject be adequately described apart from the object.” Therefore, the relationship between the knower and the subject to be known is not of detachment, but rather of involvement, interaction.

In presenting the tenets of the interpretive paradigm, Grix (2004) writes that according to interpretivism, the world is constructed through interaction of individuals. The natural and social
worlds are not distinct and researchers are part of that social reality and are not detached from the subjects they are studying.

3.2. **Methodology**

Interpretive researchers use different methodologies such as case studies, phenomenology, and ethnography. Denzin and Lincoln (2008: 29) state that “qualitative researchers deploy a wide range of interconnected interpretive methods, always seeking better ways to make more understandable the worlds of experiences they have studied.” Interpretivist methodology aims at exploring and understanding phenomenon inductively. Interpretivists believe that the “social world can only be understood from the standpoint of the individuals who are part of the ongoing action being investigated” (Cohen et al, 2003: 19). For this reason, interpretive researchers start with individuals and try to understand their interpretations of the world surrounding them. Denzin and Lincoln (2008: 9) compare the researcher to a bricoleur and state that the “interpretive bricoleur understands that research is an interactive process shaped by his own personal history, biography, gender, social class, race, and ethnicity, and by those of the people in the setting”. Contrary to the positivist paradigm, theory should generate from the data (Cresswel, 2003); it should follow data and not precede it (Cohen, 2003). Moreover, researchers are not detached from the situation under study. They “see themselves as participants in the situation they investigate” (Edge and Richards, 1998: 336). According to interpretivism, it is the involvement that enables researchers to have a thick description of the situation (Holliday, 2007: 74-5) under study.

3.3. **Methods**

Contrary to positivists who rely on randomization, interpretivists use purposeful sampling and select individuals and sites that are information rich (Cresswell 2008: 214). Interpretive researchers rely on various methods to collect qualitative data. Creswell (2008) categorized qualitative data into four categories: observations (participant and non-participant), interviews and questionnaires (one to one interviews, focus group, telephone, and electronic mail interviews), documents (public and private records, newspapers, letters and personal journals), and audiovisual materials (photographs, videotapes, digital images, paintings and pictures). In terms of preference and usefulness, Punch (2009:144) states that “interview is the most prominent data collection tool in qualitative research.” One of the reasons for this merit is
underpinned to the flexibility of the interview as a tool since researchers may choose on whether to design structured, semi-structured, unstructured interviews; or whether to triangulate and use any two or all of them in one study. This means that researchers choose the type of interview that is aligned with the purpose of the study and the research questions. The methods of data collection that interpretive researchers employ enable them to build a relationship of trust with the subjects; for example, participant observers who opt for prolonged engagement in natural settings build close relationships with their subjects. They may use introspective methods (Dornyei2007) which may enable them to achieve deeper understanding of the phenomenon under their interrogation; their emotions, experiences as well as perceptions of the subject matter under investigation.

Because of the immense information they can collect, qualitative researchers use different techniques to organize data. Miles and Huberman (1994: 10-11) present their view of qualitative analysis by stating that it consists of data reduction, data display, and conclusion drawing and verification. Data reduction is the process of selecting, focusing, and transforming the data. Data display includes charts, graphs, and networks and helps to organize information. Conclusion drawing and verification refers to the analyst’s effort to give meaning to data. Miles and Huberman contend that the competent researchers should hold early conclusions lightly and maintain “Openness and Skepticism, but the conclusions are still there, inchoate and vague at first, then increasingly explicit and grounded” (1994: 11).

3.4. Quality criteria

Establishing explicit quality criteria for qualitative data is problematic (Dornyei, 2007). Dornyei presents three basic quality concerns in qualitative data: insipid data focusing on individual meaning, quality of the researcher which determines the quality of the study, and anecdotalism and the lack of quality safeguards which deals with selecting specific examples to present their findings.

Lincoln and Guba (1985) in Seale (2000) present their criteria to establish the trustworthiness of a research. First, they suggest credibility to replace internal validity. Credibility can be built by persistent observation, criticism by a peer reviewer, and member checks. Second, transferability should replace external validity. It can be achieved by providing thick description of the situation studied. Third, dependability, which can be achieved by auditing, should replace reliability.
Finally, confirmability should replace objectivity. It can also be achieved by auditing. Seale (2000, 2002) argues that Lincoln and Guba added a fifth criterion, authenticity, which can be demonstrated by showing that researchers have represented different realities.” Seale (2000: 43) shares Lincoln and Guba’s point of view that establishing “trustworthiness of a research report lies at the heart of issues conventionally discussed as validity and reliability.” Teddie and Tashakkori (1998: 90-93) summarize the different ways to establish credibility as prolonged engagement, persistent observation, use of triangulation techniques, peer debriefing, negative case analysis, referential adequacy, and member checks. Transferability, dependability, and confirmability can be established by thick description, dependability audit, confirmability audit and reflexive journal (ibid).

4. Critical Approach

Critical theory is associated with the Institute for Social Research founded by Adorno, Marcuse, and Horkheimer. It is especially influenced by the work of Habermas (1972) and Freire who claims that “liberation is thus a childbirth, and a painful one.” (1996: 31)

4.1. Ontology and Epistemology

Ontologically, reality in the critical research paradigm is described within a political, cultural, historical, and economic context. Mertens (2008: 74-75) states that the “transformative-emancipatory ontology assumption holds that there are diversities of viewpoints with regard to many social realities but that these viewpoints need to be placed within political, cultural, historical, and economic value system to understand the basis for the differences.” Epistemologically, the critical theory researchers emphasize the importance of the interactive relation between the researcher and the participants and the impact of social and historical factors that influence them. Mertens (Ibid; 99) holds that the “interaction between the researchers and the participants is essential and requires a level of trust and understanding to accurately represent viewpoints of all groups fairly.”

4.2. Methodology

Critical methodology is directed to raise the awareness of participants and interrogate accepted injustice and discrimination. Critical theorists are “concerned with action rather than discovery” (Edge and Richards, 1998: 341). Critical researchers have an agenda of change to improve the
lives and situations of the oppressed. Creswell (2009: 9) states that “the advocacy/ participatory worldview holds that research inquiry needs to be intertwined with politics and a political agenda.” Researchers and participants are involved in the research process. Participants may help in designing question research, collecting and analyzing data, and “reap the results of the research” (Creswell, 2009: 9). Habermas in Carr and Kemmis(1986) contends that human knowledge is made up of the technical, practical and emancipatory interests and that critical science theory serves the emancipatory interest in freedom and emancipation.

Carr and Kemmis (ibid:149) define critical science theory as “a process of reflection which requires the participation of the researcher in the social action being studied, or rather, that participants become researchers.” Parallel to this definition, critical educational science must be participatory which implies the active roles of participants. Carr and Kemmis propose three different kinds of action research parallel to Habermas’ three types of knowledge interests: technical action research, practical action research, and emancipatory action research. The latter is the form of action research, which embodies the values of a critical educational science. Burns (2010) presents the tenets of action research as a process which generates theoretical and practical knowledge, aims at improving participants’ conditions, enhances collaboration and involvement of active participants, and founds a culture of self-development, continual change and growth.

Apart from action research, critical theorists use ideology critique, critical discourse analysis and critical ethnography as critical methodologies. Ideology critique aims to reveal to individuals how their attitudes are just illusions. It offers individuals opportunities to liberate themselves from these illusions through “a process of critical self-reflection” (Carr and Kemmis, 1986: 138). Critical discourse analysis does not focus on the language or the use of language but on the partially linguistic character of cultural and social structures and processes (Fairclough and Wodak, 2010). It aims at studying “the way social power abuse, dominance and inequality are enacted, reproduced and resisted by text and talk in the social and political context” (Van Dijk, 2008: 85). Critical discourse analysts try to understand, uncover and resist social inequality. Therefore, critical ethnography questions values, legitimacy, domination and oppression. Quantz(1992) in Cohen et al.(2003) argues that the role of researchers in critical ethnography is political and that they should be concerned with issues of power, domination, and empowerment.” Cohen et al (2003: 153) believe that the subjects in a critical ethnographic study
are located in contexts of power and interests and that these “contexts have to be exposed, their legitimacy interrogated, and the value base of the research itself exposed.”

4.3. Methods

Mertens (2008) argues that critical researchers may use qualitative, quantitative or mixed methods but should be aware of the underlying contextual, historical and political factors inherent to the subject under interrogation. She states that within the assumptions associated with the transformative paradigm, several of these approaches can be combined in the mixed methods design, which means the use of qualitative and quantitative methods. Critical researchers use the data collection methods that best work and serve their critical enquiry. They use methods that enable them to critically study situations from cultural, economic, political, and historical perspective. They may use focus group interviews, open ended interviews, participant observation, journals, surveys and questionnaires.

4.4. Quality Criteria

Lather (1986) contends that the qualities of rigor and care can be achieved by adopting measures of conventional ethnography. She advocates using triangulation, systematized reflexivity, member checks and catalytic validity which “refers to the degree to which the research process re-orienta, focuses, and energizes participants…[and] knowing reality in order to better transform it.”(ibid: 67). Cohen et al (2003) state that catalytic validity embraces the critical theory paradigm. It has to ensure that research will lead to action. It needs to reveal injustice, dominance and help participants to understand and change situations.

According to Dornyei (2007), researchers adopting mixed methods should be careful to defend the methods they employ. He presents three quality aspects of mixed methods research. First, researchers should justify the choice of mixing qualitative and quantitative approaches. Second, they should consider the design validity of the study by combining and integrating qualitative and quantitative components to give the study complementary strengths. Finally, researchers should consider the quality of the specific methods which implies that “most of evidence included in the validity argument will need to be in accordance with the quality standards of the particular paradigm.”(ibid: 63). Elsewhere, scholars give advice that researchers should understand the weaknesses and strengths of qualitative and quantitative research and use them
effectively as the outcome of mixed methods is superior to that of a monomethod approach (Johnson and Onwuegbuzie, 2004).

5. Reflections

As a teacher of English Language, my interest in research goes beyond paradigm wars (Gage, 1989). I am interested in the impact that different research paradigms have on teaching practices that can be implemented in classrooms and enhance learning. The emphasis of the Audio-lingual approach on establishing a cause effect relationship between stimulus and response has founded most mechanical drills of teaching practices. Learners must react in a predictable way to a given stimulus. Within this approach, inspired by positivist paradigm, the learning outcome is moulded as students are exposed to same stimulus to produce an identical outcome. It is moulded to be one, similar, identical without differences. It is one outcome that reflects the ontological assumptions of the positivist paradigm. As reality exists and is driven by natural laws and mechanisms, students’ outcome in the Audio-lingual approach is driven and moulded by the law of the stimulus. Within this approach inspired by behaviorism, learners’ emotional, cognitive, and developmental differences are not considered. Learners are conceived as objects that exist independently and have no dependence to the knower, in this case the teacher, and the outer world. Within the Audio-lingual approach, learning styles and different intelligences were neglected. The interpretive paradigm tried to address the shortcomings of the positivist paradigm and granted more importance to learners’ differences. The importance of differences stems from the ontological assumptions of the interpretive paradigm that have an impact on teaching practices and techniques implemented in classrooms. Interpretive researchers do believe in different realities and differences between learners who cannot be shaped by a similar stimulus and produce the identical product. The relationship between teachers and learners is subjective, as opposed to the relationship that prevailed in Audio-lingual classrooms. Influenced by constructivist assumptions, importance is granted to learners’ differences and interaction. For this reason, there emerged an interest in learners’ learning styles and excessive use of cooperative learning strategies. This interest is generated from the belief in the importance of differences between learners and ways to cater for these differences. It stems from the ontological assumption that reality differs from one person to another. Teachers should design activities that meet the needs of different learning styles and intelligences. The adoption of
cooperative learning strategies meets the needs of these learners as these strategies focus on social skills and positive interdependence.

Interaction, interdependence, and involvement seem not to satisfy critical theorists. Reality in the critical research paradigm is described within a political, cultural, historical, and economic context. Learners in a critical context need more than involvement and interaction. They need to be conscientised and see relationships in the classroom as problematic. To acquire this critical ability, learners should be exposed to activities that promote noticing. As learners should notice the gap between their production and an original passage for example, they should be conscious enough to notice the gap between their status quo and the equal world that they should strive for. Achieving conscientisation (Freire, 1996), in a classroom inspired by the critical paradigm, can be achieved by implementing activities that promote consciousness raising. Activities such as dictogloss, reformulation, and grammaticality judgment tasks aim at helping learners to notice the gap between their performance and the targeted output and become critical.

As an English language teacher, understanding research paradigms and their impact on educational research and teaching approaches helped me to adopt an eclectic approach. An intelligent teacher should not be a salve to one research paradigm or a teaching approach. As a teacher who has been teaching for more than twenty five years, I have always adopted the techniques that meet the needs of learners, the context of instruction, and the expected learning outcomes.

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*Abderrazak Dammak* is an “All But Dissertation” (ABD) Doctoral Candidate in TESOL at the University of Exeter’s Graduate School of Education. He is a multilingual scholar with a wide range of experience in the field of Applied Linguistics & TESOL and a Senior Lecturer and Researcher as well as program team leader in the English Dept. (Academic & ESP Sections) of ADNOC Technical Institute, Abu Dhabi, United Arab Emirates. In addition, Abderrazak has over 20 years of experience in teaching, ESL curriculum design, educational development, and academic leadership. He is a member of various academic and professional associations including TESOL Arabia and the International Editorial Board of the *Journal of Somali Studies* (JOSS). He has extensively presented in institutional, regional and international academic conferences. His current research projects are related to teacher empowerment & development, ESL/EFL teaching and learning in the Arabian context, design an application of remedial courses for slow learners, as well as research methods in TESOL.

He may be reached at damarazak@yahoo.com or ad413@exeter.ac.uk