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# Research Paradigms: Researchers' Worldviews, Theoretical Frameworks and Study Designs

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**Abstract**
For novice researchers, in the fields of educational and social research, the choice of an appropriate research paradigm and relevant methodology is an uphill task. The vast amount of literature on this subject further exacerbates the confusion of early-career researchers. Hence, the current paper introduces them to the philosophical underpinnings of three major research paradigms in research. It delineates the positivistic, interpretive, and critical paradigms with an aim to seek a connexion among the ontology, epistemology, methodology and methods of each paradigm. In addition, it explores various underlying assumptions in educational research that have an impact on researchers' world views, theoretical frameworks and study designs.

***Keywords:*** methods; methodology; research paradigms; study designs; worldviews

## Introduction

To explore the nature of educational research and to understand its underlying philosophy, novice researchers must be fairly familiar with major research paradigms and their underlying ontological and epistemological assumptions. For new researchers, it is essential to recognize how these assumptions narrate the chosen methodology and methods in connection to the findings of a research study. Therefore, to raise research awareness, this paper briefly discusses the terms ***Research*** and ***Paradigm***; and reveals the philosophical underpinnings of three major research paradigms, known as ***Positivistic, Interpretive*** and ***Critical,*** which are mainly used in educational research**.** Their theoretical and philosophical issues are addressed in the light of ontological, epistemological and methodological positions.

## Nature of Research

One of human kind's most persistent endeavours has been the search for the truth and the exploration of nature. This immutable obsession has been accomplished primarily through experience, reasoning and research (Moley, 1978 cited in Cohen, Manion & Morrison, 2007). Research is considered a combination of both experience and reasoning, particularly in the natural sciences (Borg, 1963 cited in Cohen et al, 2007). If research is such a powerful tool for uncovering the ultimate truth, researchers must know more about its purpose and process.

Research is a systematic and methodical process that investigates a phenomenon, addresses an issue, answers a particular question and solves problems, all of which help increase existing knowledge (Sekaran, 1992: 4). Redman and Mory define research as a "systematized effort to gain new knowledge" (1993, p. 10). Similarly, Bassey (1990) considers research as "a systematic, critical and self-critical inquiry which aims to contribute to the advancement of knowledge" (p. 35). These two definitions emphasise the systematic production and expansion of knowledge through research.

In the investigative process, a researcher attempts to link and build on existing knowledge, uses an organized process of enquiry, and engages in theory development (Cohen et al., 2007; Ernest, 1994). We believe that these elements assist a researcher to scrutinise the research phases while assuming a self-critical and principled position. This systematic and critical approach helps explore and develop knowledge in various domains of the social and natural sciences.

## Paradigm

The term ***paradigm*** was first introduced by Kuhn in his seminal work *The Structure of Scientific Revolution*. Kuhn defines paradigm as "an integrated cluster of substantive concepts, variables and problems attached with corresponding methodological approaches and tools" (cited in Flick, 2009). Guba and Lincoln (1994) call paradigm "a basic system or worldview that guides the investigator" (p. 105). Likewise, for Chalmers (1982), paradigm is "made up of the general theoretical assumptions and laws, and techniques for their application that the members of a particular scientific community adopt" (p. 90). It is generally acknowledged that a paradigm has five components:

1. Explicitly stated laws and theoretical assumptions.
2. Standard ways of applying the fundamental laws to a variety of situations.
3. Instrumentation and instrumental techniques that bring the laws of the paradigm to bear on the real world.
4. General metaphysical principles that guide work within the paradigm.

5. General methodological prescriptions about how to conduct work within the paradigm. (Chalmers, 1982, p. 91)

Hussain, Elyas and Nasseef (2013) believe that the term ***paradigm*** can be utilised in three ways in human sciences: it can be used for the institutionalisation of intellectual activity, for the broad groupings of certain approaches and perspectives to the study of any subject, and for the description of broad approaches to research, e.g. the *positivist* or *interpretive* paradigms (Grix, 2010). It is generally believed that the paradigms we build in our minds have a powerful effect as they create the lens through which we see the world (Covey, 1989).

**Positivist Paradigm**

Positivism is regarded as "scientific method" or "science research" and is "based on the rationalistic, empiricist philosophy that originated with Aristotle, Francis Bacon, John Locke, Auguste Comte, and Emmanuel Kant" (Mertens, 2005, p. 8). Positivism is related to various schools of thought such as empiricism, naturalism, behaviourism, scientism and determinism, and reductionism. Furthermore, it "reflects a deterministic philosophy in which causes determine effects or outcomes" (Creswell, 2003, p. 7).

Positivism was propounded by the French philosopher Auguste Comte who interprets it as a doctrine that defines observation and reason as a means of understanding behaviour. He maintains that true knowledge is based on sensory experience and only observation or experiment can accomplish it (Crotty, 2003, Cohen et al., 2007). On the same grounds, positivists in social sciences apply scientific methods, used in natural sciences, to study a social phenomenon, considering it value free and subject to scientific explanation. Thus, researchers pursue the social world objectively (Mertens, 2005), and adopt all those approaches that synchronize scientific methods with human affairs (Grix, 2010).

The twentieth century saw the emergence of post-positivism which shares somewhat similar ontological and epistemological grounds with positivism. In a scientific paradigm, the generated truth simply signifies a shared belief in its current tested hypotheses (Popper, 1959, p. 415-9). With regards to the principle of falsification, scientific theories can never be proven true (Ernest, 1994, p. 22) and can only be accepted tentatively true when all attempts to refute them fail. Hence, "every scientific statement must remain tentative forever" (Popper, 1959, p. 280). In addition, for a better understanding of scientific theories researchers need not restrict themselves to empirical data but are required to go beyond that in order to minimise the element of uncertainty. For instance, in light of Heisenberg's uncertainty principle, it is highly unlikely to understand the precise position and velocity of a subatomic particle concurrently (Crotty, 1998, p. 29). Thus, Post-positivistic knowledge claimed to be more objective and certain in nature than knowledge originated from other paradigms.

***Ontology***

Positivist paradigm takes realism (naïve realism) as its ontological stance, assuming that reality exists and is driven by immutable natural laws and mechanism (Guba & Lincoln, 1994). For a positivist, reality is "out there" in the world independent of the researcher (Pring, 2000a, p. 59) and essentially discovered through scientific and conventional methodologies (Guba & Lincoln, 1994: Bassey, 1995). Positivist researchers perceive the world as an external and objective reality where the observers are independent and detached (Cohen et al., 2007, p. 176) and their philosophical treatise is that the world is knowable which could be explored through

quantitative methodologies. Further, positivists see the world as a meaningful object once the conscious beings engage with it and make sense of it. This is also evident from the researchers' claim that human beings could be studied as a scientific entity in a world that exists independent of human consciousness (Cohen et al., 2007, Grix, 2004 and Crotty, 2003).

***Epistemology***

Epistemology pertains to the nature of knowledge (Crotty, 2003). The epistemology of the positivist paradigm is dualist and objectivist, in which the investigator and the investigated exist as independent entities and the former is able to study the object or the investigated without influencing each other (Guba & Lincoln, 1994). Therefore, the role of a researcher is to maintain an aloof, distant and non-interactive position and not to impede the research procedure (Cohen et al., 2007) whereas, phenomena have an independent existence and can be discovered via research. Moreover, meaning exclusively rests in objects, not in the researcher's consciousness, of those objects and the researcher aims to obtain that meaning as Crotty (1998) elaborates:

> 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 (p. 8).

***Methodology & Methods***

Positivist methodology is concerned with explaining relationships among various phenomena. Positivists adhere to the principles of demonstration, verification and causal links between the bits of information used (Dash, 2005) and identify causes which influence outcomes (Creswell, 2009, p. 7). Their research is related to quantitative methods, i.e. experimental (cause and effect) and non-experimental wherein questions and hypotheses are posited in advance in a propositional way and are subjected to an empirical test (falsification) for verification under conditions that are carefully controlled (manipulated) so that the results are not influenced (Guba & Lincoln, 1994). This approach aims to study the fundamental relationship between variables that are consistent in time and context. An essential part of it is to deal with researchers' control and manipulation of conditions independently to determine the events according to their interests. In non-experimental approaches, especially, in correlational studies, the researcher would refrain from manipulating the independent variable. It is primarily concerned with researcher's links between the variables (Cohen et al., 2007). The limitations of this linkage are that the researcher cannot generalize the results due to the probability of other justifications that could be gathered as in cause and effect research.

The scientific paradigm seeks predictions and generalisations, so different methods often generate quantitative data. Examples are: experiments, quasi- experiments, standardised tests, scales, questionnaires, closed ended questionnaires, structured interviews and descriptions of phenomena employing standardised observation tools (Pring, 2000, p. 34). However, it is on the researchers' discretion to choose a method appropriate to their paradigmatic stance and design of the study to present and analyse the data statistically (Bryman, 2008; Creswell, 2009). Similarly, post-positivists seek to understand and establish causal relationships by designing experimentation and correlational studies. Post-positivists also aim to collect sense-data through seeking participants' perspectives. Consequently, as knowledge is considered tentative, hypotheses are neither simply proved nor rejected (Creswell, 2009, p. 7).

The quality of the quantitative research is dependent upon its validity and reliability, however, Wellington (2000) believes that researchers often find the terms difficult to understand. For Cohen et al. (2007) reliability is a pre-condition of validity in research, but not the opposite.

Creswell (2009) relates reliability to consistency in test administration and scoring whereas validity pertains to the possibility of drawing meaningful and useful inferences using a particular instrument.

To measure the reliability of a result, Bryman (2008) considers three vital factors: stability, internal reliability and inter-observer consistency. Stability denotes that the outcomes are related to a sample's measurement and are consistent. Internal reliability examines if the respondents' scores on different indicators are similar. Inter-observer consistency involves more than one observer in the process of categorization of the data or recording of the observation. There are various kinds of validity. Two of them are significant i.e., external and internal: the external provides the precise description of an issue or an investigated event through the obtained data; internal validity is concerned with the contingency of generalizing the results beyond a specific research context (Bryman, 2008; Cohen et al., 2007).

What is more, validity and reliability could be influenced by the participants' unknown interests. For example, if a questionnaire is given to students to evaluate the teacher's performance, they might not respond to the questions in an impartial way, bearing in mind the teacher's rapport with them and his authoritative position. Also, the questions that are beyond the participants' understanding may lead to unreliable results and interpretations.

***Sampling***

In a positivist study, sampling is of paramount importance. All quantitative sampling aims at approaches that draw a representative sample from the target population, hence, the results of studying the sample can then be generalized back to the population. The quality of quantitative research is not limited to the appropriate use of methodology and instruments, but hinges on the suitability of the sampling strategy adopted by the researchers (Creswell. 2009). Positivists commonly use random or probability samples. A random sample defines the nature of the population and offers all members an equal chance of selection. Area sampling and stratified random sampling are variants of random sampling and allow sub-groups to be studied in more detail.

***Critique of the Positivist Paradigm***

The positivist paradigm has been criticised from different perspectives. First, it fails to differentiate people and social sciences from natural sciences, and deals with human beings like any other natural objects (Bryman, 2008). Second, it seeks to dilute the complex to the simple by simplifying and controlling variables, which is why its application seems difficult in educational research. Third, it assumes that generalization is applicable in social sciences. However, it seems inapplicable based on differences in culture, belief and human experience. Last but not least, positivists shred contexts from the meanings while developing quantified measures of phenomena (Guba & Lincoln, 1994) and give no value to research. In fact, research is a value-laden activity with its meaning residing in the context. Accordingly, the context of the study gives value to the research by explaining and signifying the participants' roles, different variables and interpretation of findings.

**Interpretive Paradigm**

This paradigm is considered as constructivist, naturalist, humanistic and anti-positivist which emerged in contradistinction to positivism for the understanding and interpretation of human and social reality. According to Crotty (2003), this approach "looks for culturally derived and historically situated interpretations of the social life-world" (p. 67). Interpretive research is concerned with subjective meanings as it seeks to recognize the individuals' interpretation and

understanding of the social phenomena (Schwandt, 1994). Since social research is guided by the researcher's desire to understand social reality, all is interpretive. Hussain et al. (2013) argue that researchers cannot distance themselves from the object being observed, the subject matter and the methods of the study. In contrast to positivists, interpretivists assume that there is no objective knowledge which is independent of thinking and reasoning by humans, so knowledge and meaning are acts of interpretation (Schwandt, 1994). Moreover, interpretivists believe that adopting a cause-and-effect relationship in social sciences is not applicable. Thus interpretivist researchers aim to explore individuals' perceptions, share their meanings and develop insights about the observed case (Bryman, 2008, Grix, 2004). This type of research investigates and highlights how the subjective interpretations of individuals and groups shape the objective features of a society. In interpretivist research, terms such as *credibility, transferability, dependability*, and *confirmability* replace the usual positivist criteria of *internal* and *external validity, reliability*, and *objectivity* (Denzin & Lincoln, 1998).

***Ontology***

Ontology of interpretive paradigm is relativist. Realities exist in the form of multiple and intangible mental constructions that are based on experience, local and specific in nature and dependent for their form and content on the persons or groups holding the constructions (Guba & Lincoln, 1994). Interpretivists do not believe that reality is "out there", rather they view it as socially constructed. They maintain that people make their own sense of social realities that emerge when consciousness interacts with objects (Crotty, 1998). Interpretivists adopt the idea of multiple realities to conduct qualitative research on individuals. Intending to report these realities, language does not passively label objects, but actively shapes and moulds reality (Frowe, 2001, p. 185). Therefore, reality is constructed through interaction between language and various aspects of an independent world while actual words of individuals become the evidence of multiple realities (Creswell, 2007).

***Epistemology***

Interpretivism espouses subjective and transactional epistemology, therefore, the inquirer and the inquired are fused into a single (monistic) entity and their interaction leads to certain findings. Subjectivity serves as the only means of answering the constructions kept by the individuals which is thrust upon us by human conditions. Subjective interaction can access the realities that are in respondents' minds (Guba & Lincoln, 1994). Interpretivists believe that the world does not exist independently of our knowledge of it (Grix, 2004, p. 83) and the individuals' interpretation and participation can influence the observed phenomena (Glesne & Peshkin, 1992 cited in Alwan, 2007). They present how the individuals or groups construe the social phenomena and how the researchers' interpretation establishes different concepts, theories, strategies and procedures (Bryman 2008; Cohen et al., 2007; Ernest, 1994). Crotty (1998) elaborates the example of trees that "We need to remind ourselves here that it is human beings who have constructed it as a tree, given it the name, and attributed to it the associations we make with trees" (p.43).

The meaning of a tree is not discovered but, in fact, is constructed through interaction between consciousness and the world. To experience the world is to participate in it by encountering and shaping it simultaneously (Heron & Reason, 1997, p. 3).

***Methodology & Methods***

Interpretive methodology seeks an understanding of phenomena from individual's perspective, investigating interaction among individuals as well as the historical and cultural contexts which people inhabit (Creswell, 2009, p. 8).

Research methods used by interpretivists are hermeneutical and dialectical (Guba & Lincoln, 1994). The varying personal constructions are explained through hermeneutical techniques and equated through a dialectical interaction to reach a consensus construction that is more informed (Guba & Lincoln, 1994).

Interpretivists think that quantitative research methods are not adequate to comprehend social phenomena so they believe in qualitative techniques that are diverse. The qualitative aspect of these techniques presents human beings as the primary research instrument. These techniques include phenomenology, grounded theory, ethnography, case study, historical and documentary research and ethno-methodology. Following are brief definitions of these methods:

***Phenomenology*** considers the experiences of different individuals and focuses on what all participants have in common while they experience any social phenomenon. "Phenomenologists talk about the 'primordial phenomena', the 'immediate, original data of the consciousness" (Crotty, 2003: 79). Husserl and Schutz are the main advocates of this school of thought.

***Grounded Theory*** evolves from the research study and is developed from the data while the research is carried out.

***Ethnography*** is considered to be the essence of qualitative research. It intends to investigate the beliefs, ideas and practices of a particular cultural setting and its influence on people.

***Case study*** is an approach that employs in-depth investigation of any social phenomenon, using various sources of data. A "case" may refer to an individual, an event, a social activity, group, organisation or institution (Jupp, 2006). It could be a descriptive, explanatory or exploratory form of research inquiry.

***Historical and documentary research*** deals with qualitative historical studies as it depends on verbal and other symbolic materials largely derived from past cultures.

***Ethno-methodology*** is a research perspective that foregrounds the intentional activity of human beings and describes inter-subjective negotiations between individuals (Scott & Morrison, 2005, p. 93). It delineates everyday life and defines how common sense reality is constructed in everyday interaction. The ethno methodologists' core interest is to interpret how people perceive their social settings (Creswell, 2009; Creswell, 2007; Dornyei, 2007; Grix, 2004).

***Symbolic Interactionism*** explores the understandings prevalent in culture as the meaningful matrix that guides our lives (Crotty, 2003, p. 71). The hallmark of this approach is that it shows how human beings interpret and define each other's actions rather than reacting to them.

***Narrative research*** is a form of research in which the researcher analyzes the lives of individuals by asking one or more individuals to narrate their life stories (Creswell, 2003; Dornyei, 2007; Grix, 2010).

The data collection techniques include observation (participant / non participant), open-ended questionnaires, interviews (semi- structured / unstructured / interactive), focus-groups, think aloud protocol and role-playing, document reviews, and visual data analysis. Interpretivists do not rely on statistical analysis rather they employ an investigative, holistic and inductive approach for data analysis (Cohen et al., 2007; Creswell, 2003; Dornyei, 2007).

Klein & Myers (1999) contend that

> ...the word interpretive is not a synonym for qualitative – qualitative research may or may not be interpretive, depending upon the underlying philosophical assumptions of the researcher (Myers 1997). This implies that case study research can be positivist (Yin

1994), interpretive (Walsham 1993), or critical, just as action research can be positivist (Clark 1972), interpretive (Elden and Chisholm 1993) or critical (Carr and Kemmis 1986) (p. 69).

***Sampling***

The quality of a piece of research not only depends on suitable methodology and instrumentation but also on the suitability of the sample (Cohen et al., 2007). There are three extensive approaches to select a sample in interpretive research known as convenience, purposive or theoretical but the most important sampling technique is purposive sampling, which helps in obtaining thorough information (Cohen et al., 2007; Marshall, 1996).

***Critique of the Interpretive Paradigm***

Whilst Interpretivism is sensitive to individual meanings, it can be buried within broader generalizations (Samdahl, 1999). The subjective and contextual nature of interpretive research findings prevents researchers from generalizing the results to different organizational settings. Moreover, carrying out interpretative research could also become costly because of the prolonged research time that is needed to observe and describe idiosyncratic interactions. Replicating original research and reaching an inter-subjective agreement about the results is also problematic. Furthermore, as researchers' views are reflected in the interpretive research process, their personal subjectivity may influence the research outcomes and compromise the participants' privacy and autonomy due to the open-ended nature of the adopted methods; that may lead to the unintended discovery of secrets, lies and oppressive relationships (Howe & Moses, 1999, p. 40). Owing to the lack of participants' control over the subjective interpretations of the researcher, interpretivists often produce theorized accounts that represent participant's sociological understandings (Danby & Farrell, 2004, p. 41).

**Critical Paradigm**

Critical theory challenges both positivist and Interpretivist paradigms and attempts to uncloak beliefs and practices that shackle human freedom (Scott & Usher, 2011). The main proponent of this paradigm, Jurgen Hebermas worked at the Frankfort school in Germany to develop an approach of investigation and action in social sciences.

The critical paradigm research tries to emancipate people by changing their social, political, and cultural settings. It is concerned "with questions of power, control, and epistemology as social constructions with benefits to some and not to others" (Muffoletto, 1993, p. 4). Research in this paradigm advocates changes in societal and educational structures and aims at practicality (Alwan, 2007; Crotty, 2003; Pring, 2000). Moreover, it vouches for collective freedom and social transformation (Cohen et al., 2007). It considers the researcher to be a transformative intellectual who liberates people from their historical, mental, emotional and social conditions (Crotty, 2003; Guba & Lincoln, 1994).

Critical theory doubts all the culturally constructed meanings and emphasizes that meanings are created in peculiar social conditions which might attend to certain hegemonic concerns, "Each set of meaning supports particular power of structures, resists, moves towards greater equity, harbours oppression, manipulation and other modes of injustice and denial of freedom" (Crotty, 2003, p. 59-60). The issues encountered by the marginalised groups, such as oppression, domination, suppression, alienation, and hegemony are given paramount importance. The researchers study and expose these issues and give participants a voice, raise their consciousness and improve their lives (Creswell, 2003, p. 21). The goals that critical inquirers set may not obtain the absolute results, yet they regard their struggle for social justice, freedom

and equity to be worthwhile. They explore the relationship between power and culture through the lens of the marginalised and hope for "universality and universal validity of culture" (Crotty, 2003).

The critical paradigm is considered anti-foundational attacking the reality and asserting that people are not only *in* the world but also *with* it (Crotty, 1998, p. 149). It also considers reality a commutable human action. The emancipatory aim is achieved through addressing issues of social justice and marginalisation. Various theoretical perspectives of critical research embraces: Marxism, queer theory and feminism.

***Ontology***

*Historical realism* is the ontological stance of the critical theorists who view reality as tangible and historically placed in social and institutional structures (Guba & Lincoln, 1994). Reality is shaped by social, political, cultural, ethnic and gender values; that was deemed plastic once and has become crystallized over time (ibid). Interaction between language and aspects of the independent world helps shape the reality (Frowe, 2001, p.185).

***Epistemology***

The epistemology of the critical paradigm is transactional and subjectivist which is based on real world phenomena and associated with societal knowledge. It assumes the investigator and investigated objects are interactively linked and closely related to the practical conduct of the research that is likely to influence the enquiry (Crotty, 2003; Guba & Lincoln, 1994). The researchers characterize knowledge as socially constructed and human perception as value laden and prejudiced (Ernest, 1994: Creswell, 2003). They also believe that our actions depend on the meanings we comprehend (Ernest, 1994).

***Methodology & Methods***

Critical methodology aims to interrogate values and assumptions, to expose hegemony and injustice, to challenge conventional social structures and to engage in social action (Crotty, 1998, p. 157). Critical theorists adopt dialogic, dialectical and transformative methodologies. The transactional nature of the inquiry involves the researchers and the subjects in the dialectical nature of dialogues to transform ignorance and misapprehension (Guba & Lincoln, 1994). For researchers, a research methodology is not value-free and their utilised methods aspire to initiate dialogues with participants as sources of information (Pring, 2000b, p. 250).

Cohen et al. (2007) associate two research methodologies with critical paradigm, ideology critique and action research. Ideology critique aims to uncover the vested interests and illegitimate actions of those in authority, to raise the awareness of marginalised people about an unjust social system. Therefore, a crucial relationship exists between theory, data, research questions and interpretation (Talmy, 2010). Action research is mainly concerned with practice which gives researchers' a "voice" (Cohen et al., 2007). It is a strategy that sets out to change the situation being researched and improve the standard of practice in various contexts (Scott & Morrison, 2005). In educational practices, it is assured to have an in-depth view of the context to enhance learning outcomes through developing reflective practice and acquainting the school environment with effective changes (Mills, 2003). Dornyie (2007) considers it a vital tool for a research project that establishes a close link between research, teaching and teachers. However, novice researchers may find it challenging to establish these links, thus they collaborate with old hands to conduct sound research.

Critical researchers may adopt qualitative, quantitative or mixed methods to design their research studies in order to critically examine the realities from a cultural, historical and political stance. Triangulation can be used to obtain more valid and reliable results (Mertens, 2005).

Purposive sampling is a key to understand the target groups, their problems and expected changes to happen. Moreover, open-ended interviews, focus groups, open-ended observations, open-ended questionnaires, and journals are commonly used methods which usually generate qualitative data. Like interpretivsim, analysis often includes thematic interpretation of data placing explicit values on them.

***Critique of the Critical Paradigm***

Critical theory has been criticised on a number of grounds. It has a deliberate political agenda where researchers place themselves as ideologues when they should remain objective, dispassionate and disinterested (Morrison, 1995, cited in Cohen at el., 2007, p. 30). This may lead the researchers to introduce political changes with ulterior motives. As a result, that may encourage people to make radical changes irrespective of their desires and needs. On the other hand, the hidden institutional forces of resistance to change, like teachers, students and institutional structures, etc. may foreclose the attainment of desired results, thus rendering the whole process a futile exercise. Furthermore, to conduct critical inquiries in various marginalised contexts in order to liberate and empower people, critical theorists often lack clarity in terms of guidelines and roadmaps to achieve the desired outcomes. These shortcomings notwithstanding, the immense strength of critical paradigm cannot be denied due to its plainly stated goal of transforming the phenomena under study (Ernest, 1994).

**Mixed-Method Approach**

This discussion would not be complete without touching upon the acceptance and utility of the mixed-method approach in research. The use of mixed methods finds its roots in ***triangulation*** which aims to enhance and strengthen research validity and credibility (Grix, 2004; Creswell, 2009; Bryman, 2008) through complementarity, convergence and dissonance among the findings (Erzerberger & Prein, 1997). Its benefits include 'increasing confidence in research data, creating innovative ways of understanding a phenomenon, revealing unique findings, challenging or integrating theories, and providing a clearer understanding of the problem' (Thurmond, 2001, p. 254). For example, using interviews as well as questionnaires add depth to the results that would not be possible using a single-strategy study, thereby increasing the validity and utility of the findings.

The nature of mixed-method research reflects the practical orientation of an approach that equips a researcher with a variety of tools to be used in different contexts in line with the research design. However, philosophically oriented writers question the possibility of mixed-method research as it mixes paradigms or worldviews. It is believed that paradigms or worldviews have rigid boundaries and mixed-methods research is untenable due to the incompatibility of the paradigms underlying them (Guba & Lincoln, 1994). Also, methods are linked to paradigms, and mixing of methods results in mixing paradigms (Holmes, 2006), whereas the process of combining two different paradigms in the same study is challenged by researchers (Foss & Ellefsen, 2002), who have a purist stance and believe in the "incompatibility thesis" (Howe, 2004; Pring, 2000). For them, mixed-methods research is unfeasible and fundamentally flawed (Johnson et al., 2007).

On the other hand, some scholars acknowledge the fact that there is no direct correspondence between paradigms, methodology and methods. In fact, "…research methodologies are merely tools, instruments to be used to facilitate understanding" (Morse, 1991). Since, strategies related to types of data and methods of data collection and analysis do not have paradigmatic characteristics, there is no issue with using numbers, text, visual and

sensory data synthetically in combination (Gorard, 2012). Moreover, both qualitative and qualitative methods may be simultaneously used with any research paradigm with the increasing support for mixed-methodologies (Guba & Lincoln, 2005, p. 200).

**Conspectus**

This paper has critically viewed three major research paradigms and offered some foundational literature on researchers' worldviews, theoretical frameworks and study designs. In the domain of educational research, the positivist paradigm seeks to generalize, the interpretive paradigm aims to understand, and the critical paradigm attempts to emancipate. Since, each paradigm has its own ways of realizing its goals, the literature has revealed the fact that a comprehensive understanding of these paradigms is essential to a research endeavour. Troudi (2010) asserts that it is imperative for researchers to establish a clear link between the paradigmatic nature and the theoretical framework of their studies, which will help them choose a suitable research design, methodology and method(s). In choosing a method, we should be more flexible in order to maximise our research potential and produce valid and reliable research results. However, the ontological and epistemological beliefs of a qualitative researcher should not prevent them from utilizing data collection methods typically used in quantitative research approach (Johnson & Onwuegbuzie, 2007). If a researcher utilises any data collection method, qualitative or quantitative, that should not be interpreted as an indicator of an ontological or epistemological position (Troudi, 2010).

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