

# Review of Epistemological and Methodological Debates of Educational Research and Its Links to Theoretical Perspectives in Education

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## Abstract

Research activities are based up on research paradigms such as positivism, interpretivism, critical paradigm and pragmatism. The paradigm is based on the four components of research paradigms: such as ontology, epistemology, axiology and methodology. The research paradigms suggest different research methodologies on how to approach reality, create knowledge, and values. Epistemological questions were also forwarded from investigator that direct to contestation on the option and appeal of objectivity, subjectivity, causality, validity and generalization of research findings. Educational activities are based on distinct theoretical viewpoints that have strong linkage with the epistemological and methodological research paradigms. Therefore, this study is intended to review the epistemological and methodological debates in educational research and its links to theoretical dimensions of educational theories. The study employed qualitative research approach in reviewing the existing research paradigms, and components of research paradigms, educational theory perspectives and continuous debates existing among these divergent philosophical thoughts. However, reality, knowledge and values are perceived to be contextual rather than universally agreed particularly in the contemporary global academic scenario. The study implies that though there are persistent debates concerning research paradigms; intermingling different research paradigms are vital to suggest solutions for social researches such as in educational problems.

**Keywords:** Epistemology, interpretivism, methodology, ontology, positivism, pragmatism, research paradigm.

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## I. Introduction

This paper focused on the discussion of the epistemological and methodological debates in education research by considering main epistemological positions in educational studies, paradigms and the three methodological approaches. The research paradigms such as positivism, interpretivism, critical approach and pragmatism, and research paradigm components like ontology, epistemology, axiology and methodology are discussed distinctly in association with research methodologies (quantitative, qualitative and mixed research methodology) suggested in each of them. Besides, how the epistemic and methodology are informed by the main theoretical perspectives in education were examined and escorted with reflection and conclusions.

### Objective of the study

This paper is anticipated to accomplish the following objectives.

- ❖ Clearly identify the epistemological and methodological debates in education research.
- ❖ Describe the characteristics of positivist, interpretive, critical and pragmatic research paradigm in education.
- ❖ Indicate the relationship between the research paradigms, components of research paradigms and research methodologies in the process of carrying out educational research.
- ❖ Discuss the major criticisms that are raised on the four research paradigm in educational research.

## II. Research Paradigms

As to Guba and Lincoln (1994) there are four components of research paradigms in which scholars are investigating. These include ontology, epistemology, axiology and methodology. The research paradigms focus on different aspects of research which are crucial for understanding, knowledge creation and problem solving processes. Based on major concepts the paradigms are discussed as indicated in the next section.

**2.1 Ontology.** It refers to assumptions of the nature of belief about reality (Richards, 2003). The ontological assumptions shape the way in which the researcher see and study research object. Assumptions about reality made by researchers may be explicit or implicit, how reality exists and what can be known about it. The kind of reality exist is a key questions emphasized. Reality may be “a singular, confirmable, reality and true or reality that is socially constructed and multiple realities” (Patton, 2002). On the other hand, some researchers raise questions that deal with the investigation of a belief of reality and understanding from both solitary verifiable

reality and diversified socially constructed realities (Scotland, 2012). In the process of creating this understanding; beliefs and searching for reality follows distinct approaches. Therefore, the nature of reality and beliefs of human being vary, similarly the how of reality is also different.

**2.2 Epistemology.** Refers to the study of the nature of knowledge and the process by which knowledge is constructed, acquired and authenticated (Gall, Gall & Borg, 2003). It emphasizes on the nature and forms of knowledge. How knowledge is acquired and it is communicated to others (Cohen, Manion & Morrison, 2007). Researchers raise epistemological questions that lead them to debate on “the possibility and desirability of objectivity, subjectivity, causality, validity and generalizability” (Patton, 2002:34). Sticking to an ontological belief system in an explicit or implicit manner may guide to certain epistemological assumptions. In this case, if a singular verifiable truth is assumed then the investigator position is referring to objective epistemology that could be generalized how things really are and work. On the contrary, when truth is assumed as socially constructed, multiple, subjective and ungeneralizable; and realities are attempted to be studied and understand phenomena in their contexts is interpretive epistemology (Flick, 2004). The belief and understanding of reality from different perspectives are also associated with research paradigm assumptions that follow their own approach in investigation.

Pragmatism as a research paradigm refuses to get involved in the controversial metaphysical concepts such as truth and reality. Instead, it accepts that there can be single or multiple realities that are open to empirical inquiry (Creswell and Clark 2011). Pragmatist scholars have offered their particular opinion that there is an objective reality that exists apart from human experience. However, this reality is grounded in the environment and can only be encountered through human experience (Tashakkori and Teddlie 2008). A major underpinning of pragmatist philosophy is that knowledge and reality are based on beliefs and habits that are socially constructed (Yefimov 2004). Pragmatists generally agree that all knowledge in this world is socially constructed, but some versions of those social constructions match individuals’ experiences more than others (Morgan 2014a). Pragmatists refuse that reality can ever be determined once and for all rather it is changing (Pansiri 2005). They view reality as a normative concept and maintain that reality is what works. Therefore, they argue that knowledge claims cannot be totally abstracted from conditional beliefs, habits, and experiences (Howe 1988). Pragmatists believe that reality is true as far as it helps us to get into satisfactory relations with other parts of our experiences (James 2000). Truth is whatever proves itself good or what has stood the analysis of individual use over time (Baker and Schaltegger 2015, Ray 2004). However, there is a need to remember that pragmatism does not simply mean that “if it works then it is true (Boisvert, 1998). Pragmatist researchers’ choice of one version of reality over another is governed by how well that choice results in anticipated or desired outcomes (Tashakkori and Teddlie 2008).

As a research paradigm, pragmatism orients itself toward solving practical problems in the real world and it was emerged as a method of inquiry for more practical-minded researchers (Creswell and Clark 2011). Pragmatism rejects traditional philosophical dualism of objectivity and subjectivity (Biesta 2010), and allows the researcher to discard the forced dichotomies which are post positivism and constructivism (Creswell and Clark 2011).

Unlike positivist researchers, who assert an objective knowledge acquired by examining empirical evidences and hypothesis testing, and constructivists, who propose that knowledge is relative and reality is too complex, pragmatists believe that the process of acquiring knowledge is a continuum rather than two opposing and mutually exclusive poles of either objectivity and subjectivity (Goles and Hirschheim 2000). Thus, pragmatism is positioned somewhere in the middle of the paradigm continuum in terms of mode of inquiry. Post positivism typically supports quantitative methods and deductive reasoning, whereas constructivism emphasizes qualitative approaches and inductive reasoning, however, pragmatism embraces the two extremes and offers a flexible and more reflexive approach to research design (Feilzer 2010 and Morgan 2007). In this stance, the pragmatist researcher is able to select the research design and the methodology that are most appropriate to address the research question. Pragmatism is typically linked with abductive reasoning that moves back and forth between deduction and induction. In this way, the researcher is vigorously involved in creating data as well as theories (Morgan, 2007). Mixed-methods researchers promote pragmatism as a paradigm by suggesting that it is directly linked to the needs of mixed-methods research. Scholars maintain that pragmatism provides philosophical foundation for social science research, in general, and mixed-methods research, in particular (Morgan 2014a). Critics of pragmatism, however, have noted several practical challenges associated with the identification of a socially situated research problem.

As a paradigm, pragmatism struggle with analyzing contemporary social issues and engages with themes of social inequality, power, and politics (Collins 2017). Pragmatism has always applied to activists who have found in it a movement within which they could work for a new social order (Seigfried 1996). Pragmatism focuses on consequential research, which for early pragmatists began with the desire for a better world (Wolfe 1999).

## Critical Paradigm

Critical paradigm is derived from critical theory that describes human emancipation out of situations that enchain them. Critical theory challenges the status quo explored and confirmed by traditional theory to establish balanced and democratic society. Bohman (2005) states that critical theory is concerned with the issue of power relations within the society and interface of race, class, gender, education, economy, religion and other social institutions that contribute to a social system. Such complex social issues require flexible research methodology in tackling societal problems.

Critical research paradigm demands flexibility to adopt any methodology which could facilitate in suggesting betterment in the unbalanced social system may be using qualitative, quantitative or mixed methods (Hussain, Elyas and Naseef, 2013). Critical research methodology seeks the choices that allow connecting theories and methods as an enduring procedure that is contextually bound and not prearranged (Morrow, 1994). The constructive and critical researches are different. The former is instinctive reformative drives, while critical action research is a discourse analysis that is typical tools for critical research (Cohen, Manion & Morrison, 2000; Faircough, 2003). In education, action research is a research that impacts on, and focuses on practices. It harmonizes power to those who are operating in the context of school, curriculum etc in empowering practitioners by giving them voice. It empowers practitioners' practices in classroom and improves the qualities of education for their pupils by engaging in competent critical research (Kincheloe, 2003). Significantly informed research in practice can offer resistance to positivistic tendencies in curriculum development that are evident in non-reflective and authoritarian standardized formats (Swann & Pratt, 2003). Hence, critical research paradigm employs highly contextualized, flexible and problem-centered deductive or inductive research approach by applying qualitative and/or quantitative research strategy.

**2.3 Axiology.** Axiology refers to the role of values and ethics within the research process. Finnis (1980) stated that axiology refers to the ethical issues that need to be considered when planning a research project. It considers the philosophical approach to make decisions of value the research attribute to the overall process of the research including participants. Heron (1996) argues that researchers' values are the guiding reason for all human action in demonstrating axiological skills. According to ARC (20015) axiology addresses the importance of human values of everyone that involved in the research, values the researcher guided by respect for all participants' rights, address cultural, intercultural and moral issues, and how to minimize risk or harm in any type.

Axiologically, in positivist assumption research is undertaken in a value free way, the researcher is independent of the data and maintains an objective stance, work on the numeric data based on the objective procedures identified (Saunders et al., 2009). In an interpretive assumption research is value bound, the researcher is part of what is being researched, cannot be separated, subjective and produce contextual meaning. In the critical approach assumption, axiology also recognizes research is value laden; the researcher is related on world views, cultural experiences and upbringing that may put an impact on the research. The pragmatic assumption considers the role of values to be large in interpreting results, the researcher adopting both objective and subjective points of view in all the process of the research (Saunders et al., 2009). Therefore, regardless of assumptions of paradigms, research paradigm and methodological disparities; in any research activity 'the role of values in research' based on the respective salient assumption must be respected to obtain dependable results.

**2.4 Methodology.** Research methodology is the broad term employed to refer to the research design, methods, techniques and procedures used in an exploration that is carefully planned to discover something intended (Keeves, 1997). Methodology include type of design, sources of data, data gathering tools, data gathered and data analysis are all parts of the broad field of methodology. It describes the logic and flow of the orderly processes followed in conducting a research project to gain knowledge about a research problem. It also focuses on how we come to know the world about the case under study (Keeves, 1997). Generally, research methodology entails that the practical aspect of a given research in which researchers think on how they shall obtain the desired data to answer research questions and contribute to knowledge. A good research methodology contributes to scientifically sound findings out of the investigation in guiding the researcher on the right track. Research paradigms employ different research methodologies based on the philosophical backgrounds, nature of data demanded and analysis carried out. These research paradigms are reviewed in the subsequent section.

## III. Research Paradigms

Reserachers suggested that positivism, interpretivism, critical and pragmatism as a research paradigms which approach problems from various perspectives (Paul and Erik, 2014; Guba and Lincoln, 1994).

**3.1 Positivism.** Positivism is a dominant assumption of the early ninth century that considers the existence of reality independent of humans (Creswell, 2003). Ontologically, it assumes single reality implying that reality is objective, quantifiable, and measurable independent of the investigator (Fard, 2012). It attempts to understand the social world like the natural one where the cause-effect relationship between phenomena once established, they can be predicated with certainty. It implies reality is context free and different researchers in different times and places come up with the same conclusion about a given phenomena. Epistemologically, positivist assumes

objectivism which entails the researcher and object to be studied are different entities that none of them influence each other (Guba & Lincoln, 1994; and Fard, 2012). The assumption of the investigator is separated from the research participants and as a result objective knowledge is expected. It recognizes knowledge as being “out there” and available for study in “a static form” in applying rigorous scientific method.

A research that is situated within the positivist paradigm has its own features. Fadhel(2002)states some features as; truth is “out there” to be discovered by research, context is not important, scientific methods employed, focus on formulation and testing hypothesis, inquiry result is quantifiable, and theory precedes research. It is possible to conclude that positivist paradigm advocates the use of quantitative research approach. However, many scholars have forwarded their criticisms on positivism research paradigm saying that; it fails to be successful in studying social phenomena and become immature (Richards, 2003). The paradigm powerfully advanced in its influential power, in power of predication and accuracy. Furthermore, the paradigm attempts to overcome criticisms related to social phenomena by suggesting rules and laws that make it understandable (Denscombe, 2002). The paradigm uses quantitative research methodology that investigates problems for enlightenment, predictions and generalizations. It often employs methodology such as: experimental, quasi-experimental, correlational, causal comparative, survey research, and randomized control trials methodology (Creswell, 2002). Latter on based on the weakness of positivism, interpretivist paradigm was suggested as an alternative to fill the gaps identified.

**3.2 Interpretivism.** Interpretivism paradigm assumption is a response that was given to the over-dominance of positivism (Grix, 2004). The notion is emerged by rejecting all the beliefs and nature of knowledge suggested by positivism. It believes and promotes socially constructed, multiple realities and knowledge is created and highly changing. Interpretivist epistemology is subjective, construct realities based on individuals perception within the environment (Flick, 2004). Reality is interpreted, created, and contextual. Ontologically, interpretivism follows relativist ontology which assumes that knowledge can be gained or created from the individuals view point. Interpretive methodology understands social phenomena through the eyes of the participants rather than the researcher (Cohen et al., 2007). Interpretive researchers employ methods that generate qualitative data, obtained through open ended interviews, observations, field notes and others. The credibility (internal validity), transferability (external validity), dependability (reliability), and conformability (objectivity) of research enhances its trustworthiness (Guba and Lincoln, 1994). Research located in interpretivist paradigm is characterized by multiple realities and socially constructed meanings (Morgan, 2007and Guba & Lincoln, 1985). Nonetheless, due to the changing nature of the world and inquisitive mind of human being; scholars further come up with critical or transformative paradigm.

### **3.3 The Critical Paradigm/Transformative Paradigm/**

Critical paradigm is a social science research proposed based on critical theory and claims about liberation (Freire, 1996). Although, some other diverse perspectives are included in it, the critical paradigm, in general includes ideas developed by early social theorists, such as Max Horkheimer (Calhoun et al., 2007). It is focused on power, inequality, and social change. Researches in the critical paradigm situates in social justice that seeks to address the political, social and economic issues, which may lead to social oppression, conflict, struggle, and power structures at whatever level might occur (Valerie,2020). This arises from demanding to change the politics and confront social domination and improve the social justice in the situation and is recognized as the transformative paradigm. It assumes a transactional epistemology that the researcher interacts with the participants, historical realism ontology mostly in relation to oppression, methodologically it is dialogic, and an axiology that respects cultural norms of a society Creswell (2009). Critical paradigm like the interpretive paradigm employs qualitative research methodology in order to examine such complex social issues found in the society.

Ontologically, reality in the critical research paradigm is described within a political, cultural, historical, and economic context. Reality is created and shaped by social, political, cultural, economic, ethnic and gender-based forces that have been reified or crystallized over time into social structures that are taken to be natural or real (Kincheloe and McLaren (1994). Epistemologically, the critical theory researchers stress on the significance of the interactive relation between the researcher and the participants and the impact of social and historical factors that influence them. Giroux (1988), and Guba and Lincoln (1988) state that research located in critical paradigm is characterized as: it concerns with power relationships within social structures, the respect for cultural norms, research is an act of construction rather than discovery, and attempting for liberation, emancipation, morality, promotion of human rights, power, increase social justice, and application of action researches are the major features of this paradigm research. Apart from the above three research paradigms, pragmatism paradigm came up with the use both quantitative and qualitative research methodology suggested as an alternative.

### **3.4 The pragmatic Paradigm**

Philosophical contradictions found between the positivist and interpretivist paradigm was aimed to be solved by

the pragmatic paradigm. The paradigm argued that as the positivist assumes it was not possible to comprehend the “truth” of the actual world exclusively by a single scientific method, and it was not also possible to decide social truth as constructed under the interpretivist paradigm (Kelemen and Rumens, 2008). The pragmatic paradigm discourages the sole paradigmatic orientation in research activities and recognizes mixed methods for better understandings of social phenomena. Ontologically, pragmatism assumes all individuals have their own peculiar understanding of reality in recognizing multiple realities in a context Goldkuhl (2012). Epistemologically; pragmatic paradigm assumes the relationship that best determined by what the researcher thinks appropriate to a particular study. As to Kelemen and Rumens, (2008) pragmatic paradigm recognizes that there are different ways of interpreting the world and undertaking research, that no single view can ever give the complete picture due to existence of multiple realities. Creswell (2003) and Martens (2005) assert that researches associated with pragmatic paradigm are characterized as: rebuff of the positivist view that social science inquiry can discover the “truth” about the real world, focusing on “workability” in research and the use of “what works” without worrying about the quantitative or qualitative nature of a research to fully address research question, and adoption of research design and methods based on the purpose of the study. It advocates for a mixed or eclectic research approach which is a combination of quantitative and qualitative research approaches. It suggests that researchers can use method/methods that they believe appropriate to investigate a given societal problem.

#### **Iv. Theoretical Perspectives in Education**

Education is a progressive, psychological and scientific process that results in the development of a student to the maximum extent (Rogers, 1990). Educational process is carried out by models such as formal, informal and non-formal models of education (Dib, 1988; Carron and Carr-Hill, 1991). This paper however emphasizes on the formal aspect of education in all its discussions. Dale (2012) and Alan (2009) discussed the five theoretical perspectives of education as behaviorism, cognitivism, constructivism, and humanism. These theories suggest distinct approaches to education.

Behaviorism is learning theory that engages students based on their interaction with environment suggesting behaviors are influenced and learned from external sources rather than internal ones Akinsanmi (2008). In behaviorism learning is considered as the base for psychology that can be observed and quantified, objective, rationale, realize effective learning, and learning reinforcement is used as a popular element of behaviorism (Capper, 1995). Teachers are central role players in an active manner while students are passively attending the instructional process. Teachers focus on the objectivity of the teaching process to achieve instructional outcomes rather than encouraging subjectivity (Crotty, 1998). In a positivist research paradigm researchers are also responsible to conduct investigations objectively applying quantitative research approach (Creswell, 2008; Fard, 2012). It is a scientific research paradigm that strives to investigate, confirm and predict procedural patterns of behavior, and is used to test theories or hypothesis. Hence, behaviorism as learning theory has strong link with positivist research paradigm.

Cognitivism refers to the way people think mental process and learn out of it. It suggests both internal thoughts and external forces as an important part of cognitive process (Simon 2001). Students’ internal conception, cognitive processing, intrinsic motivation determines their learning (Sobel, 2001). Students create knowledge actively and any account of knowledge makes essential references to cognitive structures. Knowledge comprises active systems of intentional mental representations derived from learning experiences. Learners interpret experiences and information in the light of their existing knowledge, their stage of cognitive development, their cultural background and personal history (Merriam and Caffarella, 1999). These factors used by learners to organize their experiences and to select and transform new information. Therefore, knowledge is actively constructed by the learner rather than passively absorbed based on the standpoint from which learners approach it.

Constructivist theory is another learning approach that focuses on students’ active learning. It is the creation of knowledge through experiencing things and reflecting on those experiences (Rhodes and Bellamy, 1999; Bauersfeld, 1995). Constructivism is based on the analogy that people construct much of what they learn through experience. The theory suggests constructing meaning is learning. It nullifies the traditional concept of learning that encourages passive learning with external motivation on the application of the learned experience in real life setting. Learning occurs only when the learners discovers the knowledge through the spirit of experimentation and doing (Hein 1991; Kalender, 2007). Students inter-relate old and new experiences and create knowledge by accommodation process to create new mental frameworks (Kim, 2005). Kim also describes knowledge creation that engages assimilation process in creating new mental framework in integration with old experiences. Therefore, constructivist theory promotes facilitative design of learning rather than pre-specified. The knowledge construction is more subjective in which the learner can understand numerous realities in dealing with real life circumstances.

Humanistic learning theory was proposed to complement and enhance academic learning, intellectual growth, and the development of knowledge and skills (Nava, 2001). Humanistic learning theory depicts learning

in terms of individual growth and the full development of each human's potential not on just an academic level, but also on an emotional, psychological, imaginative, societal, physical, and even spiritual level (DeCarvalho, 1991; Maslow, 1971; Morris, 1978).

The theory assumes that all humans have a natural tendency to grow, to learn and develop fully. Human being has intrinsic wish to actualize his/her instinctive inner potential that Maslow identified the term as "self-actualization" to describe humans' innate, natural progression to their highest state (Maslow (1968). Hence, these analogy best describes students learn when they are free and practice in line to their natural desires. Consequently, students learn more in a meaningful manner and deeply rather than engaged in learning coercively.

These theoretical perspectives of education approach to learning and knowledge is presented in distinct ways. The behaviorism approach puts teachers at the center of learning and knowledge acquisition in an active manner and students at a periphery assuming them as passive recipients of knowledge by using what Fereier said Banking method (Freire, 1996; Freire, 1998c). This approach of learning and knowledge acquisition dehumanize students and consider teachers as the sole source of knowledge from where knowledge is 'flowing' for students assuming knowledge as objective rather than subjective. Students' personal efforts of knowledge formation are only examined in line to the pre-sated objective. A student who is believed to met the objective assumed as who has gained knowledge accordingly while the others not.

The cognitivism and constructivism theoretical perspectives provide chances for students to create their own knowledge in their active involvement. Students learn subjectively rather than in an objective way as in behavioral theory. Teachers facilitate learning environment for students and students are expected to learn by doing and by interaction with the environment. Nearly, in similar fashion humanism theoretical perspective assumes that humans in general and students in particular could create knowledge by their own distinct innate potential and they have an ability to realize their pick potential. Hence, teachers serve as guiders and facilitators towards the actualization of the students learning, knowledge formation and talents.

In consideration with these theoretical perspectives of education; the construction of reality, knowledge, values and methodology used are distinctly recognized and practiced. The behavioral theory for instance is directly related with positivist research paradigm, cognitivism and constructivism learning theories are connected with the interpretivist research paradigm while humanism theory emphasizes humanistic views that promote human beings freedom of exercising full potential of intellect, knowledge and skills. Students are respected in an unconditional positive regard. They are accepted for who they are, unreservedly. The respect is for students to promote their own self-respect and sense of self-efficacy which in turn improves their learning (Rogers, 1961). It respects humanity and work for construction of knowledge based on interpretivist research paradigm.

## **V. Summary of Epistemological and Methodological debates**

As discussed in the above sections there are debates in epistemological and methodological aspects of researches. This is basically originated from how individuals understand reality (ontological), perceive knowledge (epistemological), value issues (axiological) and approach reality, knowledge and values (methodological). These are also associated with research paradigm assumptions (positivism, interpretivism, critical approach and pragmatism) differently based on the philosophical backgrounds attached to them. In positivist research paradigm assumption; the way reality recognized, truth perceived, valuing of the research process in general, and quantitative method of dealing the research is purely different from the interpretivist research paradigm. It quantifies every data, reality, knowledge and the world in general. On the contrary, interpretivist sees reality qualitatively being value laden in its axiological perspective. It believes reality, knowledge, truth and a phenomenon in the world are beyond numbers. To understand complex social issues such as power, inequality, race and others critical paradigm was suggested to solicit solutions qualitatively. For these oppositions, scholars brought up the mixed approach that is proposed by pragmatic research paradigm. Therefore, there is serious and continuous debate among the epistemological and methodological issues in research. In the world of continuous change; reality and approach to understand it will vary without interruption since reality could be the perceived elucidation.

## **VI. Conclusion**

From the above discussions and literature reviewed, it is shown that paradigms as positions about epistemology, ontology and axiology, that identify the methodology to be used in a research. Since paradigms are supported by explicit assumptions as conversed earlier, choice of a paradigm for a research implies that the research will be nested in a particular epistemology, ontology, and axiology, and that these positions will therefore guide a researcher towards a particular methodology. The selection of paradigm directly or indirectly helps the researcher to know the methodology to be used. This connection is very important because the methodological implications of paradigm choice infuse the research questions, participants' selection, and data gathering tools, data collection procedures, and data analysis.

Thus, investigation located in any of the four primary paradigms has a range of research methodologies to

opt from. It is also possible to mingle several research methodologies within a research. However, identifying the correct methodology requires a good understanding of the different aspects of research paradigms.

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