

Desktop Review on the Current Debates Relating to Paradigmatic Issues in Education Field and the Three Methodological Approaches

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ABSTRACT

The general purpose of this paper was to conduct a qualitative desktop review on the existing debates on paradigmatic foundations relating to education field of study and showed how these debates are shaped by salient theoretical perspectives. This review offers an overview of four prominent research paradigms used to guide research: positivists or post positivists, constructivists or interpretivists, the critical or transformative view and the pragmatic paradigm. Each paradigms explained within a framework of its ontological, epistemological and axiological assumptions. Furthermore, these paradigms in turn shape the methodology to be used in a research projects. It means that choosing a paradigm for research implies that the research will be nested in a particular epistemology, ontology, and axiology and that these elements will guide researchers towards a particular methodology: qualitative, quantitative and mixed. Therefore, the choice of a paradigm implies a near certainty about particular methodologies that flow from that paradigm. This relationship is significant because the methodological implications of paradigm choice permeate the research question/s, participants' selection, data collection instruments and procedures, and data analysis. In conclusion, the choice of the proper methodologies needs to be informed by a good understanding of the different aspects of research paradigms in line with what can work best for us in a given context. So, this paper can helps those boarding on post graduate research journey to gather an awareness about the four major research paradigms and help them to choose a relevant methodologies based on their aim of research, or situational margins.

Key Words: Methodology, Mixed, foundational Paradigms, Qualitative, Quantitative

INTRODUCTION

To better understand the concern of this review, the reviewer of the paper believed that having the conceptual meaning of terminologies in mind can lead significant discussions to fruition. Hence, the terminologies like research paradigm, epistemology, ontology, methodology, axiology, and related others have been evidently explained here under. In educational research, the term paradigm describes a researcher's 'worldview' (Mackenzie & Knipe, 2006). This worldview is the perspective, thinking, school of thought, or set of shared beliefs, that informs the meaning or interpretation of research data. Alternatively, as Lather (1986) explains, a research paradigm inherently reflects the researcher's beliefs about the world that he/she lives in and wants to live in. It is the conceptual lens through which the researcher examines the methodological aspects of their research project to determine the research methods used and how the data will be analyzed. Similarly, Guba and Lincoln (1994), leaders in the field, define a

paradigm as a basic set of beliefs or worldviews that guides research action or an investigation.

In the same vein, Thomas Kuhn (1962) used the term ‘paradigm’ in two ways: i) to represent a particular way of thinking that is shared by a community of scientists in solving problems in their field and ii) to represent the “commitments, beliefs, values, methods, outlooks and so forth shared across a discipline” (Schwandt, 2001). Hence, it can be said that once you have a topic to study, consider how to investigate it. Your approach will depend upon how you think about the problem and how it can be examined, such that the findings are reliable to you and others in your discipline. Every researcher has a view of what constitutes truth and knowledge. These views guide our thinking, beliefs, and assumptions about society and ourselves, and it frames how we view the world around us, which is what social scientists call a paradigm (Schwandt, 2001).

According to Lincoln and Guba, 1985 as cited in Kivunja & Kuyini, 2017, a paradigm comprises four elements: ontology, epistemology, axiology, and methodology. Having a firm understanding of these elements is crucial because they comprise the basic assumptions, beliefs, norms, and values that each paradigm holds. Thus, in locating your research proposal in a particular research paradigm, the understanding is that your research will uphold and be guided by the assumptions, beliefs, norms, and values of the chosen paradigm. It is, therefore, essential to demonstrate what each of these elements means.

Crotty (1998) argues that researchers can choose which stage to begin: ontological, epistemological, axiological, or methodological. Other authors stress that research is best conducted by identifying your ontological assumptions first. According to Grix (2004), research is best done by: setting out the relationship between what a researcher thinks can be researched (ontological position), linking it to what we can know about it (epistemological position), and how to go about acquiring it (methodological approach), you can begin to comprehend the impact your ontological position can have on what and how you decide to study. Moreover, your ontological assumptions inform your epistemological assumptions, which inform your methodology, and these all give rise to your methods employed to collect the data (Mack, 2010).

• **Ontology of a Paradigm**

It is the philosophical study of the nature of existence or reality, being or becoming, and the basic categories of things that exist and their relations. It examines your underlying belief system as the researcher about the nature of being, existence, and reality. It helps you conceptualize the form and nature of reality and what you believe can be known about it. Philosophical assumptions about the nature of reality are crucial to understanding how you make meaning of the data you gather (Kivunja & Kuyini, 2017). Therefore, the reviewer of the current literature at hand can stress on the benefit of assumptions, concepts, or propositions to orientate researchers’ thinking about the research problem, its significance, and how he/she might approach it to answer his/her research question, understand the problem going to be investigated and how its solution can be proposed.

In addition, ontology makes the researchers seek the answers to the following questions: Is there reality in the social world, or is it a construction created by one’s mind? What is the nature of reality? In other words, Is the reality of an objective nature or the result of individual cognition? What is the nature of the situation being studied? Thus, ontology is essential to a researcher because it helps to understand the things that constitute the world as it is known (Scott & Usher, 2004). It seeks to determine the fundamental nature of the foundational concepts that constitute themes we analyse to make sense of the meaning embedded in research data (Kivunja & Kuyini, 2017). Ontology deals with the philosophical standpoint about the nature of reality or existence, and it can be called a theory of reality. As Scotland (2012) says, ontology is a branch of philosophy concerned with the assumptions we make to believe that something makes sense or is real or the very nature or essence of the social phenomenon we are investigating (Khatri, 2020). Hence, from the points of the reviewer, ontology helps the researchers in a position to shape their thinking about

epistemological and methodological beliefs in a way to respond to the research questions and be part of solutions for the problems communities are facing.

• Epistemology of a Paradigm

Epistemology is “the branch of philosophy that studies the nature of knowledge and the process by which knowledge is acquired and validated” (Gall, & Borg, 2003). It is concerned with “the nature and forms [of knowledge], how it can be acquired, and how communicated to other human beings” (Cohen, Manion, & Morrison, 2007). It is the epistemological question that leads a researcher to debate “the possibility and desirability of objectivity, subjectivity, causality, validity, generalizability” (Patton, 2002). Adhering to an ontological belief system (explicitly or implicitly) guides one to certain epistemological assumptions. Consequently, if a singular verifiable truth is assumed, “then the posture of the knower must be one of objective detachment or value freedom in order to be able to discover ‘how things are’ and ‘how things really work’ (Guba & Lincoln, 1994). Conversely belief in socially constructed multiple realities leads researchers to reject the notion that people should be studied like objects of natural sciences; they get involved with the subjects and try and understand phenomena in their contexts (Rehman & Alharthi, 2016).

By the same token, in research, epistemology describes how we come to know something; how we know the truth or reality; or, as Cooksey and McDonald (2011) put it, what counts as knowledge within the world. It focuses on the nature of human knowledge and comprehension that you, as the researcher or knower, can acquire to extend, broaden and deepen understanding in your field of research. Schwandt (1997) defines it as the study of the nature of knowledge and justification. For instance, if you rely on forms of knowledge such as beliefs, faith, and intuition, then the epistemological basis of your research is intuitive knowledge. If you rely on data gathered from people in the know, books, and organization leaders, then your epistemology is grounded on authoritative knowledge. If you emphasize reason as the surest path to knowing the truth, this approach is called rationalist epistemology or logical knowledge. On the other hand, if you emphasize the understanding that knowledge is best derived from sense experiences and demonstrable, objective facts, then your approach leans towards empirical epistemology (Kivunja & Kuyini, 2017). Hence, it can be said that epistemology is essential because it helps anyone researching to establish faith in his/her own data, and it affects how you will go about uncovering knowledge in the social context that you will investigate.

• Methodology of a Paradigm

The methodology is “an articulated, theoretically informed approach to the production of data” (Ellen, 1984). It refers to the study and critical analysis of data production techniques. The “strategy, plan of action, process or design” informs one’s choice of research methods (Crotty, 1998). It “is concerned with the discussion of how a particular piece of research should be undertaken” (Grix, 2004). It guides the researcher in deciding what type of data is required for a study and which data collection tools will be most appropriate for his/her study. The methodological question leads the researcher to ask how the world should be studied (Rehman & Alharthi, 2016).

In the same vein, the methodology is a broad term that refers to the research design, methods, approaches, and procedures used in an investigation that is well-planned to discover something (Keeves, 1997). For example, data gathering, participants, instruments used, and data analysis are all parts of the broad field of methodology. In sum, the methodology articulates the logic and flow of the systematic processes followed in conducting a research project to gain knowledge about a research problem. It includes assumptions made, limitations encountered, and how they were mitigated or minimized. It focuses on how we come to know the world or gain knowledge about a part of it (Moreno, 1947). In considering the methodology for my research proposal, I should ask myself the question: What prior procedures do I have to follow, what materials do I have to develop before actually taking part in collecting the required data, and how shall I go about obtaining the desired data, knowledge and understandings that will enable me to answer my research

question and thus make a contribution to knowledge? (Kivunja & Kuyini, 2017). Hence, from the look of the reviewer, it is imperative for researchers to early identify the paradigm, then methodology to have a clear direction for where to start, aware of prior procedures regarding developing different tools in a way to respond to the research questions and the feasibility of ideas that are going to be researched.

In addition, from my own point of view, before departing to the next, let's see methods as part of methodology; methods/techniques are the specific means of collecting and analyzing data, such as questionnaires, open-ended interviews, observation, focus group discussions, document analysis, etc. What methods to use for a research project will depend on the design of that project and the researcher's theoretical mindset? However, it must be noted that using particular methods does not entail ontological and epistemological assumptions (Rehman & Alharthi, 2016).

• Axiology

Axiology is an ethical issue that must be considered when planning a research proposal. It considers the philosophical approach to making decisions of value or the right decisions (Finnis, 1980). It involves defining, evaluating, and understanding concepts of right and wrong behavior relating to the research. It considers what value we shall attribute to the different aspects of our research, the participants, the data, and the audience to which we shall report the results of our research. For instance, we can put it simply in a way to address the questions: What is the nature of ethics or ethical behavior? In order to answer this question, it is essential to consider your regard for the human values of everyone involved with or participating in your research project. The following questions facilitate this consideration. What values will you live by or be guided by as a researcher? What ought to be done to respect all participants' rights? What are the moral issues and characteristics that need to be considered? Which cultural, intercultural, and moral issues arise, and how will you address them? How shall you secure the goodwill of participants? How shall you conduct the research in a socially just, respectful, and peaceful manner? How shall you avoid or minimize risk or harm, whether physical, psychological, legal, social, economic, or other? (ARC, 2015, cited in Kivunja & Kuyini, 2017).

Answers to these questions are best guided by four criteria of ethical conduct, namely, teleology, deontology, morality, and fairness (Mill, 1969), from the views of scholars I reviewed to work on this paper. Technically, teleology is the theory of morality that postulates that doing what is intrinsically good or desirable is a moral obligation that should be pursued in every human endeavor. Thus, teleology refers to attempts to ensure that the research results in a meaningful outcome that will satisfy as many people as possible. Deontology is the understanding that every action undertaken during the research will have its consequence intended to benefit participants, the researcher, the academic community, or the public (Scheffler, 1982). It also allows for flexibility in dealing with individual participants or observations. The morality criterion refers to the intrinsic moral values that will be upheld during the research. For example, the researcher will be truthful in interpreting the data. Finally, the fairness criterion draws the researcher's attention to the need to be fair to all research participants and ensure their rights are upheld. Implementation of this criterion is guided by questions such as, how fair will my research actions be? Will all research participants treated in the same way? Will my actions show favoritism or discrimination towards any participants? (Kivunja & Kuyini, 2017).

Thus, in the section on ethical considerations for my higher degree research proposal, I should demonstrate the best ethical conduct by understanding right or wrong behavior as I conduct the research. This consideration will be founded on the understanding that all humans have dignity, which must be respected, and they have a fundamental human right to make choices which I must respect as a researcher. Implementing ethical considerations focuses on four principles that researchers or I need to uphold when dealing with subjects of study and the data. These principles have the acronym PAPA namely: Privacy, Accuracy, Property, and Accessibility, and are briefly unpacked below, following (Sidgwick, 1907 and

Slote, 1985, as cited in Kivunja & Kuyini, 2017).

1. **Privacy:** Under this principle, researchers need to consider what information participants must reveal to you or others about themselves, their associations, or organizations.
2. **Accuracy:** This principle considers who is responsible for information's authenticity, fidelity, and accuracy.
3. **Property:** Under this principle, researchers must consider who owns the data. Will there be any payment for the data? If so, what will be the just and fair prices for data exchange?
4. **Accessibility:** This principle considers who will have access to the data. How will the data be kept safe and secure? Under what conditions and safeguards will researchers and participants have access to the data? How will access to the data be gained? From these, the reviewer of this paper understands that as a prospective researcher, I have to follow all the principles of PAPA as part of stepping in about implementing ethical considerations when dealing with participants or subjects of the study and related data-gathering process.

THE MAIN REVIEW PART

The main part of the review focused on a review of the existing debates on the epistemological and methodological issues relating to the educational field of study and the prominent epistemological positions in the education field linked to the four paradigm positions and three major methodological approaches: qualitative, quantitative, and mixed. From the desktop review, the reviewer understood that scholars on the areas started to discuss by raising the question of why this topic has attracted controversy among researchers over time.

There is considerable diversity in the term paradigm used within research contexts. According to Kivunja & Kuyini, 2017 from their view of their own higher students' research supervising experiences and evidence from other literature, it is evident that many higher-degree research students and early career researchers are often confused about the use of the term paradigm. At the broader level, this confusion stems from using the term paradigm in everyday discourses in contrast to its use in educational research. Paradigm in everyday practice does not include the qualities of epistemology, ontology, axiology, or methodology, which, as we have seen above and discussed here under, are integral to the term in the field of research.

Ontology refers to the nature of reality and what human beings can know about it (Guba & Lincoln, 1994). The researchers must visibly define their ontological position to research or explore something. The researchers need to mention how their research states the nature of reality. They should have a clear position on whether there is subjective or objective reality derived from the research work. Concerning this, the researchers must know a specific research paradigm because it provides a clear framework and guidelines to the researchers about the worldview of reality (Khatri, 2020). For instance, if the researched phenomenon is about the relationship between different variables and testing of the hypothesis, it leads toward the objective reality. In contrast, the researcher's ontological beliefs will be multiple realities if the phenomena to be researched are about human experiences and social-cultural processes. Thus, the researcher should explicitly understand the research paradigm during the research.

Epistemology refers to the theory of knowledge, meaning the nature of the relationship between the knower and what can be known (Guba & Lincoln, 1994). As explicitly known that research is a process of generating knowledge following specific procedures, and the researcher can be based on a particular framework and research paradigm. Besides, the researcher needs to be aware of epistemological questions such as: What is the nature of knowledge and the relationship between the knower and the would-be known? Guba & Lincoln (1994). To answer these questions, the researcher can consult a particular research paradigm from which he/she can direct the research process to generate knowledge. Consequently, the

research paradigm provides a clear framework to the researcher for determining the type, nature, and sources of knowledge that his/her research generates after the completion. Therefore, the researcher needs to have a concrete understanding of a particular research paradigm before starting the research journey. Similarly, the researcher needs to be clear about the notion that the epistemological standpoint varies according to the research paradigm from which he/she determines the epistemological assumptions of his/her research (Khatri, 2020).

In academic research, the researchers have to specify the subjects, tools, measures, and techniques to be employed in their research work. In methodological considerations, the researchers should clearly define how they will discover the meaning of the phenomenon to be researched. Guba & Lincoln (1994) state that methodological assumptions refer to how the researcher can discover the social experience, how it is created, and how it gives meaning to human life. A detailed understanding of the methodological assumptions can lead to a clear vision of the research paradigm that will guide researchers to the appropriate methodologies that will be employed. Therefore, the methodology is the theory and a disciplined approach that informs how researchers gain knowledge in research contexts.

Similarly, the research paradigm is equally instrumental for the researchers to define and determine the value system that their research addresses. In the research process, the researchers need to consider the ethical issues. The researchers should be clear about whether their research is value-free or value-laden. In this case, the research paradigm provides the researcher with a clear framework and guidelines. However, different paradigms have different assumptions about the value system being value-free or value-laden. Axiological standpoints of the research paradigm help the researchers to think about the subjects of study, the contexts, and their entire research works. It will help researchers to determine what good and acceptable activities are and what are not. Moreover, the researchers need to be aware of the ethical issues to be followed by them from their side and the side of the participants. Thus, insight into the research paradigm is essential for the researcher to address the ethical and aesthetic issues in the research work (Khatri, 2020). It is, therefore, important for higher-degree students to be cognizant of this reality.

A review of the related literature reveals that the term paradigm has conjured up considerable controversy. The controversy was in the main center, first of all, around the historical development of the term and how various authors defined it and, secondly, by what became known as **'inter and intra disciplinary power wars'** or **'paradigm wars'** in the social sciences (Guba & Lincoln, 2005), which were rampant, especially in the 1980s. An analysis of the definitions given by leaders in the field, such as Guba and Lincoln (2005), Creswell (1998) and Creswell & Miller (2000), betrays a lack of agreement about what constitutes a paradigm and an overlap in definitions and explanations. For example, while Creswell's (1998) definition of a paradigm as "...a basic set of assumptions that guide their [researchers'] inquiries" aligns with the worldview perspective of a paradigm, Lincoln's (1990) definition (as alternative world views with such pervasive effects that ... permeates every aspect of a research inquiry) goes beyond this and encapsulates other perspectives of paradigm without being specific. This considerable and glaring overlap of definitions and explanations has to do, in part, with the fact that social behavior is fluid, and how we think or behave cannot be classified entirely with clear-cut boundaries. As such, to think about a paradigm as a worldview or epistemological stance does not preclude the cross-over of ideas. Thus, no matter the position we start from, how we know and go about knowing is linked or overlaps and affects how we conceive and explain paradigms. This is a significant contributor to the confusion in the social sciences that higher-degree research students and early career researchers experience in trying to articulate what constitutes the research paradigm for their projects. The controversy concerning the historical development concerns Kuhn's (1962) original use and explanations of the term in his early work and how researchers in different fields of study came to understand and use the term (Kivunja & Kuyini, 2017).

For example, Morgan (2007) asserts that the social scientists' use of the term differs from that in other

scientific studies. He argues that Kuhn's initial articulation of the notion of a paradigm was confusing and culminated in the term used by researchers in science studies to mean the consensual set of beliefs and practices that guide a field. At the same time, the term has been used in social science research in about 3 to 4 different ways. These include that a paradigm means a worldview, an epistemological stance, and a paradigm is a set of shared beliefs among members of a specialty area. A paradigm is a model example of research (Morgan, 2007, cited in Kivunja & Kuyini, 2017).

In casting a paradigm as a worldview, Morgan (2007) presents the term as "... all-encompassing ways of experiencing and thinking about the world, including beliefs about morals, values, and aesthetics". This all-encompassing position could mean that researchers might question what can be researched or whether some topics should be researched on moral grounds. Such a position could help direct ethics and ethical decision-making within research, which aligns with questions about axiology. Nevertheless, it might also be restrictive regarding the human desire to explore and understand our world. Therefore this view of a paradigm could potentially be a source of confusion, de-motivation, or incoherence for higher-degree students (Kivunja & Kuyini, 2017).

The interpretation of paradigms as epistemological stances has its roots in the meaning of epistemology, which, as we saw above, relates to the questions about what it means to know and how we can know. Therefore this view of the paradigm assumes that research inherently involves epistemological issues about the nature of knowledge and knowing. In this sense, researchers will align their notion of paradigm with the most popular epistemological stances (e.g., realism and constructivism) as distinctive belief systems (Morgan, 2007). Researchers who are guided by either stance are directed by that position to ask particular types of research questions and also answer them in a particular way. The interpretation of paradigms as shared beliefs among members of a specialty area focuses on what members of a particular field of research think are the fundamental principles that govern research. Additionally, an analysis of a paradigm as a model example of research draws on the notion that paradigms are research models in a given field (Kuhn, 1970; Morgan, 2007, as cited in Kivunja & Kuyini, 2017).

Concerning the 'inter and intra-disciplinary power wars,' the issue was about who could name and define a paradigm. With such a diverse sense of what constitutes a paradigm, it is unsurprising that higher-degree students and early career researchers experience difficulties understanding paradigms and choosing one for their research. In this regard, critical personalities in particular disciplines have, over time, sought to 'create' and 'add' new paradigms, which were often challenged or dismissed by colleagues and cross-disciplinary researchers. For example, in the late 1990s, the field of special education saw the emergence of a 'new' tradition of research into special educational needs, which Skidmore (1996) called an 'organizational paradigm.' While some in the special needs field (e.g., Avramidis & Smith, 1999) accepted this as a new paradigm, other researchers in the social sciences disagreed with Skidmore's new paradigm. This raised the question of who had the power to name and keep a paradigm. In this regard, Morgan (2007) writes, "paradigms in social science research methodology are not abstract entities with timeless characteristics; instead, what counts as a paradigm and how the core content of a paradigm is portrayed involve a series of ongoing struggles between competing interest groups." This conclusion endorses the reality of inter-and intra-disciplinary power wars. It is buttressed by the many 'new' paradigms added to the list of social science research paradigms in the last two decades. Despite this complexity in the history of paradigm development, there is now general agreement about the significant paradigms applicable to educational research. We turn to these in the following section by raising a critical question (Kivunja & Kuyini, 2017).

Dominant Research Paradigms Applied in the field of Education

In order to link the major epistemological positions in the education field to the four paradigm positions and the three major methodological approaches: qualitative, quantitative, and mixed, the reviewer of this paper based on the literature reviewed started to discuss on the areas by raising the key questions 'Which are the

dominant research paradigms applied in Educational Research?’ to have a better understanding about the concern of the inquiries.

Researchers have proposed many paradigms, but Candy (1989), one of the leaders in the field, suggests that they all can be grouped into three main taxonomies: Positivist, Interpretivist, or Critical paradigms. However, other researchers such as Tashakkori and Teddlie (2003a; 2003b) propose a fourth that borrows elements from these three, known as the Pragmatic paradigm (Kivunja & Kuyini, 2017). Let us briefly look at each of these.

• Positivist Paradigm

First proposed by a French philosopher, Auguste Comte (1798 – 1857), the Positivist paradigm defines a worldview to research grounded in what is known in research methods as the scientific method of investigation. Comte (1856) postulated that experimentation, observation, and reason based on experience should be the basis for understanding human behavior and, therefore, the only legitimate means of extending knowledge and human understanding. In its pure form, the scientific method involves a process of experimentation that is used to explore observations and answer questions. It is used to search for cause-and-effect relationships in nature. It is chosen as the preferred worldview for research, which tries to interpret observations in terms of facts or measurable entities (Fadhel, 2002). The research in this paradigm relies on deductive logic, formulation of hypotheses, testing those hypotheses, offering operational definitions and mathematical equations, calculations, extrapolations, and expressions to derive conclusions. It aims to provide explanations and to make predictions based on measurable outcomes (Kivunja & Kuyini, 2017).

Therefore, the Positivist paradigm advocates using quantitative research methods as the bedrock for the researcher’s ability to be precise in describing the parameters and coefficients in the data that are gathered, analysed, and interpreted to understand relationships embedded in the data analysed. Thus, in terms of the four foundational elements or assumptions of a paradigm, the Positivist paradigm, its epistemology is said to be objectivist, its naive ontology realism, its methodology experimental, and its axiology beneficence. Again, unpacking these elements should help the researcher understand this paradigm better. Objectivist epistemology holds that human understanding is gained through the application of reason (Fadhel, 2002). This implies that through research, we can acquire knowledge that increasingly approximates the fundamental nature of what we investigate. In other words, through research, we can gain knowledge that helps us to become more objective in understanding the world around us. The naïve realist ontology assumes the acceptance of the following five beliefs:

1. There exists a world of material objects.
2. Some statements about these objects can be confirmed through sense experience.
3. These objects exist whether they are perceived or even when they are not perceived. These objects of perception are assumed to be largely perception-independent.
4. These objects can also retain properties of the types we perceive as having, even when they are not perceived. Their properties are perception-independent.
5. We perceive the world directly and as it are through our senses. In the main, our claims to know of it are justified (Putnam, 2012; Searle, 2015, as cited in Kivunja & Kuyini, 2017).

The experimental methodology element means that the research will involve the manipulation of one variable to determine whether changes in that variable cause changes in another variable (Smith & Heshusius, 1986). The former variable is the explanatory or predictor variable, and the latter is the explained or dependent variable (Burns, 2000). This methodology can only apply if we can control what happens to the variables or subjects we study. Such control enables the researcher to test and accept or reject hypotheses. The beneficence axiology refers to the requirement that all research should maximize good outcomes for the research project, humanity in general, and the research participants in particular (Martens,

2015). It also implies that the research should aim at avoiding or at least minimizing any risk, harm, or wrong that could occur during the research (Kivunja & Kuyini, 2017).

To further substantiate the ideas discussed above: Let's see the characteristics of research located within the positivist paradigm and criteria's for validating research in positivists' paradigm.

• Characteristics of Research Located Within The Positivist Paradigm

Below are summarized viewpoints that could help researchers to understand the essential features of research that are generally located within the Positivist paradigm:

1. A belief that theory is universal and that law-like generalization can be made across contexts.
2. The assumption that context is not important
3. The belief that truth or knowledge is 'out there to be discovered' by research.
4. The belief is that cause and effect are distinguishable and analytically separable.
5. The belief is that the results of inquiry can be quantified.
6. The belief that theory can be used to predict and control outcomes
7. The belief that research should follow the Scientific Method of investigation, rests on formulation and testing of hypotheses, employs empirical or analytical approaches, pursues an objective search for facts, and believes in the ability to observe knowledge.
8. The researcher aims to establish a comprehensive universal theory, to account for human and social behaviour.

As researchers wrestled with the understanding that many of these characteristics cannot be fully applied in contexts where humans are involved, that the social world cannot be studied in the same way as the natural world, that the social world is not value-free and that it is not possible to provide explanations of a causal nature, modifications were made for relaxing some of the assumptions. Accordingly, the **Post positivist paradigm** has tended to give the worldview for most research on human behaviour typical of educational context (Neurath, 1973; Fadhel, 2002; Burns, 2000 as cited in Kivunja & Kuyini, 2017).

• Criteria for Validating Research Located in the Positivist Paradigm

The Positivist paradigm is usually validated by applying four criteria: internal validity, external validity, reliability, and objectivity (Burns, 2000). We can explain briefly what each means and involves. Internal validity is the extent to which the results obtained in a study are attributable to the independent variable that explains their occurrence and not other factors. This criterion helps us to answer some critical questions. For example, can we say that the changes in the independent variable are responsible for the variations we have observed in the dependent variable? Further more, are we satisfied that the variation in the dependent variable might not be attributable to some other causes? Additionally, how confident are we that the changes we have obtained in the dependent variable are caused by the independent variable studied? Do we have enough evidence to conclude that changes in the independent variable explain the changes we observed in the dependent variable? Answers to these questions are important because only if the results of our data analysis show a high degree of internal validity are we entitled to claim that the analysis has identified cause-and-effect relationships (Kivunja & Kuyini, 2017).

If the data analysis yielded low internal validity, then we would have no basis for claiming causality, and we would have to conclude that there is little or no evidence of causality. Internal validity, therefore, defines the extent to which we can eliminate confounding variables within the study. In contrast, external validity refers to the degree to which the results obtained in a study can be generalized to other contexts (Prochaska, 2017). This often indicates that our data were drawn from a sample representative of the population. It helps us to

answer the question, based on our study's results, can we say that the same thing happens or would happen in another or other settings? Thus, if the results of our research can readily be generalized to the population at large, we can legitimately say that our results have a high level of external validity (Kivunja & Kuyini, 2017).

Reliability is the degree to which a research instrument produces stable or consistent results (Kirk & Miller, 1986). According to Joppe (2000), *reliability* is defined as “the extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability and if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable.” In everyday language, the term is used to mean consistency or repeatability of measurement. Objectivity in research is quite a broad criterion. It refers to the degree to which you, as the researcher, utilize precise instruments, approach the research without bias and with honesty, and remain open to participants' suggestions (Myrdal, 1969). In research methods, objectivity means that all sources of bias are minimized, and that personal or subjective ideas are eliminated as humanly possible. In the strict positivist sense, this criterion requires that as far as possible, you, the researcher, should remain distanced from what you study so that the findings of your research will depend on the nature of the data rather than on your preferences, personality, beliefs, and values (Kivunja & Kuyini, 2017).

• The Interpretivist Paradigm/Constructivist Paradigm

The principal endeavor of the Interpretivist paradigm is to understand the subjective world of human experience (Guba & Lincoln, 1989). This approach tries to “get into the head of the subjects being studied,” so to speak, and to understand and interpret what the subject is thinking or the meaning he/she is making of the context. Every effort is made to try to understand the viewpoint of the observed subject rather than the observer's observer. Emphasis is placed on understanding the individual and their interpretation of the world around them. Hence, the fundamental tenet of the Interpretivist paradigm is that reality is socially constructed (Bogdan & Biklen, 1998). This is why sometimes this paradigm has been called the Constructivist paradigm (Kivunja & Kuyini, 2017).

In this paradigm, theory does not precede research but follows it to be grounded on the data generated by the research act. Thus, following this paradigm, data are gathered and analyzed consistently with grounded theory (Strauss & Corbin, 1990). This paradigm assumes a subjectivist epistemology, relativist ontology, a naturalist methodology, and a balanced axiology. These elements are briefly explained below. The assumption of a subjectivist epistemology means that the researcher makes meaning of their data through their thinking and cognitive processing of data-informed through their interactions with participants. There is the understanding that the researcher will construct a knowledge society due to personal experiences of real life within the natural settings investigated (Punch, 2005 as cited in Kivunja & Kuyini, 2017).

There is the assumption that the researcher and their subjects are engaged in interactive processes in which they intermingle, dialogue, question, listen, read, write, and record research data. The assumption of a relativist ontology means that you believe that the situation studied has multiple realities and that those realities can be explored and meaning made of them or reconstructed through human interactions between the researcher and the subjects of the research and among the research participants (Chalmers, Manley & Wasserman, 2005). In assuming a naturalist methodology, the researcher utilizes data gathered through interviews, discourses, text messages, and reflective sessions, acting as a participant observer (Carr & Kemmis, 1986). A balanced axiology assumes that the research outcome will reflect the researcher's values, trying to present a balanced report of the findings (Kivunja & Kuyini, 2017).

We can also see some of the characteristics of research and its associated criteria's in case of Interpretivists approach too, here are discussed in below:

• Characteristics of Research Located within the Interpretivist Paradigm

According to Lincoln and Guba (1985), and Morgan (2007), research conducted under the Interpretivist paradigm usually exhibits the following characteristics (Kivunja & Kuyini, 2017).

1. The admission that the social world cannot be understood from the standpoint of an individual.
2. The belief that realities are multiple and socially constructed
3. The acceptance that there is inevitable interaction between the researcher and his or her research participants.
4. The acceptance that context is vital for knowledge and knowing.
5. The belief that the findings create knowledge can be valued laden, and the values need to be made explicit.
6. The need to understand the individual rather than universal laws.
7. The belief is that causes and effects are mutually interdependent.
8. The belief is that contextual factors must be considered in any systematic pursuit of understanding.

• Criteria Used to Validate Research Located within the Interpretivist Paradigm

Guba (1981) suggests that in research conducted within the interpretivist paradigm, the positivist criteria of internal and external validity and reliability discussed above should be replaced with four standards of trustworthiness and authenticity. These include credibility, dependability, confirmability, and transferability. Although these criteria were initially challenged (Lincoln, 1995), they are now well accepted by many scholars in educational research (e.g., Merriam, 1998; Erlandson et al., 1993; Silverman, 2000; Bouma & Atkinson, 1995) and therefore, higher degree students should be familiar with their meanings, which are outlined here under. The credibility criterion is used in research within the interpretivist paradigm to refer to the extent to which data and data analysis are believable, trustworthy, or authentic (Guba, 1981). This criterion should be used in research located within the interpretivist paradigm in preference to the criterion of internal validity of the Positivist paradigm. In agreement with Guba (1981), Merriam (1998) explains that this criterion relates to the researcher's ability to investigate the question: How do the findings align with reality constructed by the researcher and the research participants? Guba (1981) suggests that the criterion of dependability should be used in interpretive research in preference to the criterion of reliability of the Positivist paradigm. Guba (1981) explains that this criterion refers to the ability to observe the same outcome or finding under similar circumstances (Kivunja & Kuyini, 2017).

Whereas research located within the Positivist paradigm can utilize research methods that can demonstrate that if activities were repeated in the same context and with the same methods and research participants, we could achieve similar findings, Guba argues that because the interpretivist researcher deals with human behavior which is by its very nature continuously variable, contextual, and subject to multiple interpretations of reality, s/he is not able to reproduce the same results. At best, the researcher can make inferences influenced by the researcher's construction of meaning. Those inferences and interpretations depend on the researcher's ability and skills to ensure the findings genuinely emerge from the data gathered and analyzed for the research. The criterion of confirmability is used by the interpretivist researcher in preference to the criterion of objectivity, which is applied by the positivist researcher (Guba, 1981). It refers to the extent to which the findings of your research project can be confirmed by others in the field (Kivunja & Kuyini, 2017).

The overriding goal of this confirmability criterion is to ensure that your biases are minimized, and preferably eliminated, from contaminating the results of the data analyzed. Shenton (2004) explains that for the research to achieve this criterion, "steps must be taken to help ensure as far as possible that the work's findings are the result of the experiences and ideas of the informants, rather than the characteristics and

preferences of the researcher.” The criterion of transferability is used in interpretivist research in preference to the criterion of external validity used in the positivist paradigm (Guba, 1981). Interpretivist research is context-specific, concerning locale and participants; generalizability of research findings within the interpretivist paradigm is practically impossible, and it advocates for using qualitative research methodology (Kivunja & Kuyini, 2017). Lincoln and Guba (1985) explain that this criterion represents the researcher’s efforts to provide enough contextual data about their research so that readers can relate those findings to their contexts.

• **The Critical Paradigm/Transformative Paradigm**

The Critical paradigm situates its research in social justice issues. It seeks to address the political, social, and economic issues which lead to social oppression, conflict, struggle, and power structures at whatever levels these might occur. Because it seeks to change politics to confront social oppression and improve social justice in the situation, it is sometimes called the Transformative paradigm. This paradigm assumes a transactional epistemology (in which the researcher interacts with the participants), the ontology of historical realism, especially as it relates to oppression, a dialogic methodology, and an axiology that respects cultural norms.

Examining conditions and individuals based on social positioning and ethnomethodology and situating knowledge socially and historically can be paradigm characteristics (Kivunja & Kuyini, 2017). The characteristics related to the critical paradigm have been mentioned in below in order to strengthen the ideas discussed above:

• **Characteristics of Research Located within the Critical Paradigm**

According to Guba and Lincoln (1988), as well as Martens (2015) we can attribute the following characteristics to research conducted within the Critical paradigm (Kivunja & Kuyini, 2017).

1. The concern with power relationships set up within social structures.
2. The conscious recognition of the consequences of privileging versions of reality
3. The respect for cultural norms
4. An examination of conditions and individuals in a situation, based on social positioning.
5. The treatment of research as an act of construction rather than discovery.
6. A central focus of the research effort on uncovering agency, which is hidden by social practices, leading to liberation and emancipation.
7. And endeavor to expose conjunctions of politics, morality, and ethics.
8. The deliberate efforts of the researcher to promote human rights, and increase social justice, and reciprocity.
9. The deliberate efforts of the researcher to address issues of power, oppression and trust among research participants.
10. The use of ethnomethodology, situating knowledge socially and historically.
11. An application of action research and the utilization of participatory research.

• **The Pragmatic Paradigm**

This Paradigm arose among philosophers who argued that it was impossible to access the ‘truth’ about the real world solely under a single scientific method advocated by the Positivist paradigm, nor was it possible to determine social reality as constructed under the interpretivist Paradigm. For them, a mono-paradigmatic orientation of research was not good enough. Rather, these philosophers (such as Alise & Teddlie, 2010; Biesta, 2010; Tashakkori and Teddlie, 2003a and 2003b; Patton, 1990) argued that what was needed was a worldview that would provide methods of research that are seen to be most appropriate for studying the

phenomenon at hand. So, these theorists looked for research approaches that could be more practical and pluralistic approaches that could allow a combination of methods that, in conjunction, could shed light on the actual behaviour of participants, the beliefs that stand behind those behaviours, and the consequences that are likely to follow from different behaviours (Kivunja & Kuyini, 2017).

This gave rise to a paradigm that advocates using mixed methods as a pragmatic way to understand human behaviour – hence the Pragmatic Paradigm. It is characterized by adopting a worldview that allows for a research design and methodologies that are best suited to the purpose of the study and responds to both qualitative and quantitative questions simultaneously (Kivunja & Kuyini, 2017). So, as explained briefly in the brackets, this Paradigm advocates a relational epistemology (i.e., relationships in research are best determined by what the researcher thinks appropriate to that particular study), a non-singular reality ontology (that there is no single reality and all individuals have their own and unique interpretations of reality), a mixed methods methodology (a combination of quantitative and qualitative research methods), and a value-laden axiology (conducting research that benefits people). Further, here are discussed in below the characteristics associated with the pragmatic paradigm:

a) Characteristics of Research Located within the Pragmatic Paradigm

This paradigm was developed to end the two opposed positions of the Positivist (and post-positivist) on one side and the Interpretivists on the other, and thus end what was referred to as ‘Paradigm Wars’ (Gage, 1989). Drawing on the work by Creswell (2003), Tashakkori and Teddlie (2003a), Patton (1990), and Martens (2015), the research located within this paradigm demonstrates the following characteristics (Kivunja & Kuyini, 2017).

1. A rejection of the positivist notion that social science inquiry can uncover the ‘truth’ about the real world.
2. An emphasis of ‘workability’ in research.
3. The use of ‘what works’ so as to allow the researcher to address the questions being investigated without worrying as to whether the questions are wholly quantitative or qualitative in nature.
4. Adoption of a worldview that allows for a research design and methodologies that are best suited to the purpose of the study.
5. Utilizing lines of action that are best suited to studying the phenomenon being investigated.
6. A rejection of the need to locate your study either in a Positivist (post-positivist) paradigm or an Interpretivist (constructivist) paradigm.
7. Seeking to utilize the best approaches to gaining knowledge using every methodology that helps knowledge discovery.
8. Choice of research methods depending on the purpose of the research.
9. A search for useful points of connection within the research project that facilitate understanding of the situation.

METHODOLOGICAL IMPLICATIONS OF PARADIGM

To discuss the methodological implications of Paradigm choice, this review report explains a vital relationship between paradigm and methodology because the methodological implications of paradigm choice pervade the research question/s, participants’ selection, data collection instruments, and procedures, as well as data analysis. For example, regarding data analysis, the Positivist paradigm means that the data to be gathered will be quantitative and most likely to be analyzed using quantitative procedures. In contrast, the choice of the interpretivist paradigm aligns with research methodologies and methods that will gather and analyze qualitative data. For example, narrative approaches to data analysis are based on the social constructionist school of thought (Polkinghorne, 1988). In telling a story or narrative, a person can describe

their moral and ethical choices. The process can transform the person's experiences (Kivunja & Kuyini, 2017).

In this process, the data are critically analyzed regarding the historical, social, and cultural context of the story, allowing the researcher to examine the existing discourses and the issue of power (Foucault, 1982; 1987). When the Interpretivist paradigm is often chosen, data-gathering methods follow a grounded theory approach. It is well suited to generating a theory from real-life occurrences in which the social processes and their meaning are explained. It is based on the symbolic interactionist theory (Strauss & Corbin, 1990). In some studies, the symbols or symbolism within the data provides the basis for theorizing about the participant experiences being investigated, their behaviors, responses, processes, and the meanings embedded in these (Kivunja & Kuyini, 2017).

Another example that helps elucidate the link between paradigm choice and methodology can also be drawn from research in the interpretivist paradigm and seeking to discover the 'essence' of participants' experience in a context. Such research often asks, 'What is it like to have that experience? Therefore, phenomenology becomes the ideal methodology to apply in that research. Phenomenology would be the ideal methodology to apply in this case because, as Taylor and Bogdan (1984) say, data analysis in such a research project focuses on the social constructionist principle that "what people say and do (is) a product of how they define their world. Phenomenology would therefore be the suitable methodology because this principle means that how people define their world is related to 1) the interactions they have with others, 2) how they perceive others to perceive them, 3) how they have learned to deal with life experiences and 4) the amount of perceived control they have, and 5) the significance of perceived control to them (Kivunja & Kuyini, 2017).

Another example, again taken from the choice of the interpretivist paradigm, helps to illuminate the relationship between paradigm and methodology choice. For example, in trying to understand teachers' experiences of participation in the decision-making process in a school, one could choose the interpretivist paradigm. As we saw earlier, this paradigm's ontology assumes that no single reality exists. This position will require an epistemology that allows interpreting the participant's perceptions of their realities. In this case, an interpretivist epistemology would be ideal because it undergirds that meaning or knowledge is not there to be discovered but individually or socially constructed. This paradigm tells us that people make their reality by the meaning interpretations they give to their experiences and that there are multiple truths. Reality results from our own making (Furlong, 2013). From this paradigmatic understanding, you would ask yourself, how can I know the participants' world or experiences, or how can I gain knowledge of their perceptions of their experiences?

The search for the answers to these questions about how the participants experience their world will constitute the methodology you will use. Moreover, it becomes evident that the 'how' will imply who should be invited to share their experiences and how they should share those experiences. It will require you to consider how you will gather and store the data, analyze them, and evaluate and interpret the participants' experiences as embedded in your research data. In answering these questions, the experience of the world or events (unique to each of us) remains the core of your data analysis and interpretation. This implies that a suitable methodology that could guide this kind of research would be phenomenology. This is because a critical component of phenomenology is the description of peoples' experiences (Moustakas, 1994, as cited in Creswell, 2007). Therefore, as a research design, this methodology would be ideal because it seeks to understand, describe, and interpret human behavior and the meaning individuals make of their experience" (Carpenter, 2013, as cited in Kivunja & Kuyini, 2017).

Another illustration of the link between paradigm choice and methodology is taken from the field of special education. For example, writing about the implications of paradigm choice for special education research, Avramidis and Smith (1999) mentioned special education research using the interpretivist paradigm will require that the researcher will not consider the 'label' or 'syndrome' as a concept, which is unitary and

valid across individuals and contexts. Instead, the perceptions of teachers, learning support assistants, parents, and the children – young adults – will be sought to gain a better understanding of the particular needs of the given individual. Here again, we see that the paradigm chosen influences what will constitute trustworthy data and how the data will be analyzed. It can be seen that when a study is interpretivist in nature and seeks to understand the experiences of a broad range of stakeholders, the ability to interpret their experiences becomes an essential methodological consideration. Thus, while it is not possible within the scope of this review to go into the details of what each research methodology entails, however, the following last sections of my discussion will provide a snapshot of research methodologies researchers mostly use in the different paradigms (Kivunja & Kuyini, 2017).

1. Research methodologies suited to the Positivist Paradigm or the research conducted under the Positivist paradigm often utilize the following methods: experimental, quasi-experimental, correlational, causal-comparative, randomized control trials, and survey research methodologies.
2. Research methodologies suited to the Interpretivist Paradigm or research conducted under the interpretivist paradigm, have a wide choice of methods for researchers, including Ethnography, naturalist, narrative inquiry, case study, grounded theory, phenomenology, hermeneutics, phenomenography, action research, heuristic inquiry methodologies.
3. Research methodologies suited for use in the Critical Paradigm or many research projects conducted under the Critical paradigm apply the following methods, Neo-Marxist, feminist theories, cultural studies, critical race theory, Participatory emancipation, post-colonial/indigenous, queer theory, disability theories, and action research methodologies. As discussed above, the Critical paradigm is suited to studies about social justice and giving voice to the voiceless or those less powerful. In educational research, one of the areas that easily fit this type of research is the field of special education. Using people with disabilities as researchers or research assistants allows for developing knowledge and skills about their conditions or experiences. The Critical paradigm is interested in empowerment and removing oppressive structures around research subjects. Therefore, action research is one methodology that could be used well within this paradigm. This is because the application of action research would ensure that the power difference between the expert and researcher, with so much power (knowledge, expertise, and other resources), is minimized against relatively powerless research subjects. This change would align well with the paradigm's emancipatory worldview and lead to social transformation. Thus, when applied in special education, this could lead to empowerment. According to Barnes (1992), such an approach allows researchers to learn how to put their knowledge and skills at the disposal of people with disabilities.
4. Commonly used research methodologies suited for use in the Pragmatic Paradigm include Naturalist, narrative inquiry, case study, phenomenology, ethnography, action research, experimental, quasi-experimental, and causal-comparative methodologies. Because by definition, the Pragmatic paradigm advocates using both qualitative and quantitative research methods according to need, and the research conducted within this paradigm draws on mixed methodologies.

SUMMARY AND CONCLUSION

Research paradigm is a philosophical outlook of the researcher from which research phenomena are explored. The comprehensive belief system and philosophical worldview guide the process and actions of the whole research activity. Similarly, the research paradigm is a philosophical standpoint of the researcher to deal with the nature of reality, whether it is external or internal (i.e., ontology); the nature, type, and sources of knowledge generation (i.e., epistemology); a disciplined approach to generate that knowledge (i.e., methodology); the ethical issues that need to be considered in research (i.e., axiology). Besides, the research paradigm guides the researcher to frame and precede his/her research activity and to derive a particular meaning from the researched phenomena. Henceforth, the researcher should create a clear position regarding the reality that his/her researcher believes, the nature and sources of knowledge that the

research derives, and the methods he/she employs to gain meaning from the researched phenomenon and finally the researcher needs to be equally sensitive to the values of the research activity. From the above-summarized thoughts, the key learning could be researchers must base their research on certain research paradigms and their ultimate philosophical outlooks so that the paradigm researchers' base will determine the basic philosophical dimensions, such as ontology, epistemology, methodology, and axiology of their research work.

Hence, the four prominent research paradigms used to guide research has been described within a framework of its ontological, epistemological, axiological, and methodological assumptions, and its associated data collection methods are part of it.

Positivists and post-positivists view reality as being objective and knowable. Such research is value-free and based on precise observation and verifiable measurement. Typical research designs include quantitative approaches, such as experimental and quasi-experimental, correlational, and causal-comparative research designs.

Constructivists or interpretativists view reality as being socially constructed and hold that there are multiple realities. Knowledge is subjective and idiographic and the truth depend on the context. This paradigm is value-laden and emphasizes that values influence how we think and behave and what we find necessary. Some typical research designs associated with it are qualitative approaches, such as phenomenology, ethnography, symbolic interaction, and other naturalistic designs.

The Critical or Transformative view focuses on studies about social justice and giving voice to the voiceless or those less powerful. Culture, politics, economics, race, gender, ethnicity, and disability could be shaped by it. Typical research designs may involve quantitative or qualitative approaches, such as action and participatory research.

The pragmatic paradigm argued that it was impossible to access the 'truth' about the real world solely under a single scientific method as advocated by the Positivist paradigm, nor was it possible to determine social reality as constructed under the interpretivist paradigm. Hence, theorists in the areas looked for approaches to research that could be more practical and pluralistic that could allow a combination of both methods (Positivists-Quantitative methodology and Interpretivists-Qualitative methodology).

In final concluding remark, the critical learning that higher degree researchers must take into consideration could be having a sound understanding about paradigms (epistemology, ontology, and axiology) as a positions which significantly guide to the methodology to be used in a research projects. Because each paradigm is undergirded by specific assumptions, as discussed earlier, choosing a paradigm for research implies that the research will be nested in a particular epistemology, ontology, and axiology and that these elements will guide researchers towards a particular methodology. Therefore, the choice of a paradigm by researchers implies a near certainty about particular methodologies that flow from that paradigm. This relationship is significant because the methodological implications of paradigm choice permeate the research question/s, participants' selection, data collection instruments and procedures, and data analysis. Hence, research in any of the four primary paradigms has a wide range of research methodologies and the choice of the proper methodologies needs to be informed by a good understanding of the different aspects of research paradigms and so researchers must be curious about the choice of paradigm before undertaking any research work.

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