Epistemological Paradigms in Positivism, Interpretivism, and Action Research in Educational Research: A Literature Review

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Abstract:

This study elaborates the three prominent paradigms in educational research: positivism, interpretivism, and action research. I epistemologically elucidate these paradigms through literature reviews, offering insights and critiques. Positivism emphasizes empirical explanation, typically focusing on observable behavior. Interpretivism highlights contextual understanding. Action research emphasizes participation and dialectical processes. The result of this study does not claim that there is only one best approach to educational research. However, it provides a philosophical overview of each paradigm.

Keywords: Educational Research, Positivism, Interpretivism, Action Research

INTRODUCTION

One of the most popular discourses worldwide is how to cope with new trends in education to determine the who, what, and how in the teaching and learning process (Pham, 2018). Rapidly changing trends challenge our understanding of learners and require innovative curriculum, pedagogy, assessment, and leadership approaches to ensure an effective education system. (Pham, 2018; Tan et al., 2018; 2011).

From this perspective, research has played a fundamental role in providing essential insights into the unmet needs of students, teachers, and stakeholders, subsequently defining educational strategies, policies, and innovations. Through a literature review, this paper outlines several main paradigms in educational research: positivism, interpretive, and action research, especially to dig deeper and then criticize to remain able to produce critical views.

METHODOLOGY

The method in this research uses a literature review with eight steps, as explained in Figure 1. Firstly, I found issues related to the debate on the three mainstream paradigms in education: positivism, interpretive, and action research (Carr & Kemmis, 2014). Secondly, I developed a protocol to make finding and validating literature easier. Thirdly, I sought scientific literature that discussed the three paradigms. Fourthly, review the abstract and highlight important points, then group them. Fifthly, I tested it by finding the complete text and studying it carefully. Sixthly, data will be extracted with coding, primarily to expand the inductive review. Seventhly, I analyzed the data by combining the codes created according to themes or essential points, then synthesized and combined the results textually using a qualitative study method. I analyzed by finding descriptive themes and filtering them into analytical themes. Furthermore, eighthly, write the results.
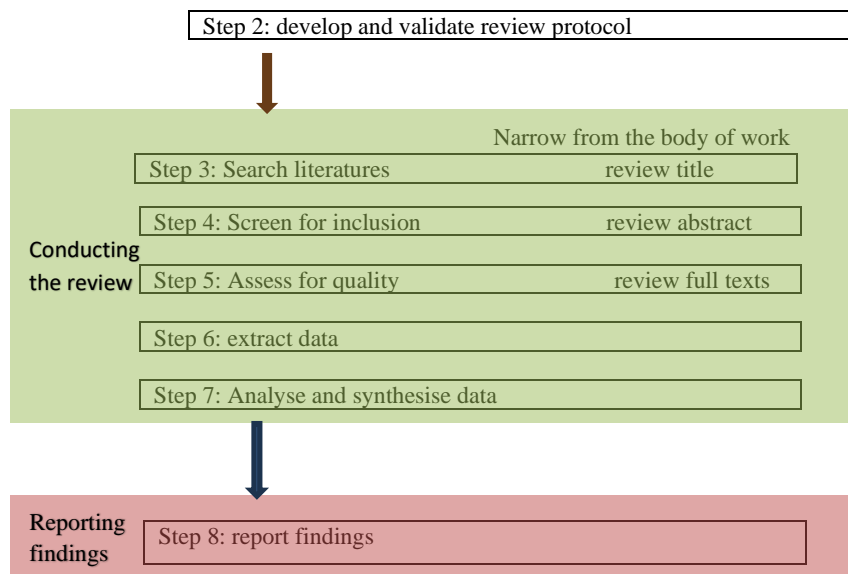
Planning the review

Step 1: formula the problem

Step 2: develop and validate review protocol

Conducting the review

	Narrow from the body of work
Step 3: Search literatures	review title
Step 4: Screen for inclusion	review abstract
Step 5: Assess for quality	review full texts
Step 6: extract data	
Step 7: Analyse and synthesise data	

Reporting findings

Step 8: report findings

Figure 1. Process of systematic literature review.

FINDING AND DISCUSSION

Positivism: the dominant paradigm

In The Structure of Scientific Revolutions, the renowned philosopher Thomas Kuhn (1963) first used "paradigm" as a philosophical way of thinking. The term "paradigm" in educational research delineates the researcher's' world view' (Kivunja & Kuyini, 2017; Mackenzie & Knipe, 2006). Sort of perspective, thought, school of thought, or a shared set of beliefs that inform the meaning or interpretation of research data.

In this section, I will elaborate on the positivist paradigm, the most dominant paradigm in the research world. The Positivist paradigm was first proposed by a French philosopher, Auguste Comte (1798–857), which defines a worldview to research that is grounded in what is recognized in research methods as the scientific method of investigation (Kivunja & Kuyini, 2017). Comte (1856) postulated that experimentation, observation, and reason based on experience should be the basis for understanding human behavioor and, therefore, the only legitimate means of extending knowledge and human understanding (Kivunja & Kuyini, 2017).

Positivism is epistemologically a methodological philosophy in quantitative research when we will apply the natural science method to find social science studies (Crotty, 1998; Lee, 1991). Here, the understanding of phenomena, in reality, must be measurable and supported by evidence (Jean Lee, 1992; Lee, 1991). As said by D.J.O. Connor in 'Becoming Critical,' the scientific notion of theory provides the logical standard to assess empirically (Carr & Kemmis, 2004). In its genuine form, the scientific method implicates a process of

experimentation that is employed to inquire about observations and answer questions. It is used to investigate cause-and-effect relationships in nature (Kivunja & Kuyini, 2017). According to Fadhel (2002), this is the preferred worldview for research, which seeks to interpret observations in terms of facts or measurable entities.

Research on the positivist paradigm rests on deductive logic, which formulates hypotheses based on theory and tests them (Kivunja & Kuyini, 2017; Lee, 1991). In addition, it offers operational definitions and mathematical equations, calculations, extrapolations, and expressions to acquire conclusions (Lee, 1991). It aims to dish up explanations and plan predictions based on measurable results. The measurable results are supported by four assumptions described by Cohen, Manion, and Morrison (2017), which explain determinism, empiricism, parsimony, and generalizability.

I want to elaborate on these four assumptions based on Kivunja and Kiyuni (2017). The assumption of determinism suggests that external factors influence the observed phenomenon. Therefore, to comprehend causal relationships between factors, we should predict and control for the probable impact of explanatory factors on the dependent factor. It assumes empiricism that we need to gather verifiable empirical data, bolsters the theoretical framework chosen for research and allows us to test the planned hypotheses. Empirical means that it can be measured as 'visible-tangible.

In the assumption of parsimony, the positivist paradigm refers to the attempts of researchers to explain the phenomena they are studying most efficiently and economically. Ultimately, the generalizability assumption informs us that the results from research projects performed in a positivist paradigm in a particular context ought to apply to another context with inductive conclusions. Positivist researchers must be able to observe events within the particular phenomena they have studied and can generalize about what to expect elsewhere in the world. In one context, results obtained from a research project conducted within the Positivist paradigm should be applied to other situations by inductive inferences. This means that positivist researchers should be able to observe occurrences in the phenomenon they have studied and generalize what can be expected elsewhere.

Another strength is that the positivist paradigm aids researchers in clearly and accurately understanding objects through empirical tests that use methods of determining population, sampling, measuring, questionnaires, and focus group discussions. Indicate that the concept provided by positivist researchers might have high-quality standards of validity and reliability

(Cohen et al., 2017) and then generalize to large-scale populations (Johnson & Onwuegbuzie, 2004).

Dörnyei and Griffee's (2010) findings showed that reliability can be measured through statistical analysis by identifying internal consistency or correlation among variables, employing Cronbach's alpha reliability coefficient. Moreover, it must be acknowledged that the validity level of the research results is one of the critical determinants of this approach (Pham, 2018). Virtually experimental research or survey research and then using precise sampling methods, instrumentation, and statistical processing of the data, quantitative findings will acquire an intensive answer to each research question (Cohen et al., 2011).

Interpretivist: criticize against the dominant paradigm

It is distinct from the positivism paradigm, which argues that a general pattern or law, such as the functionalists, is accepted in social reality. The interpretive paradigm views social reality as a raised social process created by the individuals concerned. Social reality is less than a network of assumptions and meanings that are shared inter-subjectively (Awa et al., 2015; Bogdan & Knopp, 2003; Kivunja & Kuyini, 2017). The development of interpretive theory and qualitative research methods can be traced to the work of Wilhelm Dilthey in the 19th century. In his work, Dilthey emphasizes that it is crucial to understand and study people's life experiences through their historical and social context, which refers to the belief that it is pivotal to explore life experiences in social research to link specific actions understudy with their social and historical facet (Al-Habil, 2011; Awa et al., 2015; Tekin & Kotaman, 2013).

Unlike atoms, molecules, and electrons, people produce and enclose their meaning to the world around them and the behavior that manifests in that world. According to this School, humans and the physical and social artifacts they construct are distinct from the physical reality's inquiry by natural science (Lee, 1991; Pham, 2018). So, the interpretive says that the natural science method needs to be revised to understand social reality.

Interpretivists argue that the objectivity and value-free positivism prides itself on is a myth. Value-free claims cannot be accepted because positivism rests heavily on theory. In contrast, theory is constructed in a particular time, place, and community bound to the community's values and beliefs (Carr & Kemmis, 2004). Even according to Thomas Kuhn, knowledge is not an aim- and value-free product, as positivism suggests. Instead, it is subjective, context-bound, normative, and, in an important sense, always political (Carr & Kemmis, 2004). This means that positivism cannot avoid specific influencing values as well.

The interpretive paradigm emphasizes research with qualitative methods (Awa et al., 2015; Jean Lee, 1992) to show social realities - such as education, which is a social field - and is related to ethnography, hermeneutics, phenomenology, and case studies (Awa et al., 2015; Lee, 1991). Lewis and Grimes (1999) observed that although functionalism-positivism remains dominant, theorists are increasingly interested in adopting a more critical and interpretive paradigm.

From an interpretive perspective, researchers achieve a deeper understanding of the complexity of a phenomenon within a specific context, rather than aiming for generalizations across populations (Creswell, 2007). Similarly, Hammersley (2007) emphasizes that interpretive researchers should strive to comprehend diverse perspectives and experiences across various contexts and cultures to develop insights into human relationships. Researchers must avoid bias by examining events and individuals without imposing their interpretations.

Thus, interpretive epistemology means that researchers make meaning of the data by analyzing their thinking and then cognitive data processing that is informed through their interactions with participants. The researchers will construct social knowledge due to their real-life experiences in the natural environment studied (Punch, 2005). According to Kivunja and Kuyini (2017), mingling, having a dialogue, asking, listening, reading, writing, and recording research between the researcher and the subject are part of the qualitative research process.

The assumption of a relativist ontology means that researchers believe that the situation under study has complex realities and that those realities can be explored or uncovered and then interpreted or reconstructed through human interactions between the researcher and the research subject and among the study participants (Dardis, 2012; Kivunja & Kuyini, 2017). The researcher employs data collected through interviews, discourse, text messages, and reflection sessions, acting as participants' observers in assuming a naturalist methodology (Carr & Kemmis, 2004). Lincoln and Guba (1985) identify that typically, Interpretive paradigm research displays the following characteristics: 1) Reality is complex and socially constructed, 2) The inevitable interactions between researchers and participants, 3) Context is crucial for knowledge, 4) Knowledge created by findings, can be loaded with values and values need to be made explicit, 5) The necessary to understand individuals rather than universal laws, 6) Cause and effect depend on each other, 7) Contextual factors need to be considered in a systematic search for understanding.

Guba (1981) proposed that in the interpretivist paradigm research - if the positivist paradigm has the strength of internal-external validity and reliability - interpretivism is

replaced by four criteria of trust and authenticity, namely credibility, dependability, confirmation, and transferability. Despite being initially opposed (Lincoln, 1995), it is nevertheless well-received by many educational research scholars (Kivunja & Kuyini, 2017).

Therefore, the interpretivist paradigm affirms that individual distinction exists in learning. According to interpretivists, each student has his/her peculiarities. A central curriculum that ignores individual needs, interests, and characteristics is not good. Indeed, students cannot be generally standardized, that is not just. This type of curriculum is even a tool to force the hegemonic values of a system. Hence, this paradigm adopts a decentralized education system that considers the needs of all groups in society and focuses on individuals, interests, needs, talents, and tendencies during the educational process (Tekin & Kotaman, 2013). As such, interpretivists reject positivist notions of objective facts and laws and, therefore, have no problem with generalization.

Action research: convergence of theory and practice

To 'fight' the dominance of positivism and interpretive paradigms, thus an action research approach arose. We can trace the historical foundation of action research to the pre-World War II era. Action research is known as participatory research (Brydon-Miller et al., 2003), collaborative inquiry, emancipatory research, action learning, and contextual action research, but all vary on a theme (O'Brien, 1998). A figure widely known as pioneering action research is Kurt Lewin (Toledano & Anderson, 2020). Even the cycles in action research created by Lewin are widely used by academics. Carr and Kemmis' book (2004), 'Becoming Critical,' action research states that it is a synthesis since it has gone through a dialectical process between theory and practice.

Action research aims to apply social theories developed in the social sciences and assess their effectiveness by employing experimental methods; as such, action research started to function as a link between scientific theory and real-life application (Tekin & Kotaman, 2013). In addition, to advance better curricula for schools to elevate the effectiveness of education by providing teachers a research role. Action research emphasizes understanding the implementation and ongoing interventions and intends to remedy them with a democratic approach that preserves human values (Bargal, 2008; Tekin & Kotaman, 2013).

However different these traditions are, linking them is a crucial question of how we produce valid knowledge vital to the well-being of individuals and communities and to bring forward larger-scale social democratic change. Action research challenges the claim of a

positivistic view of knowledge that states that to become credible, research should be objective and value-free (Brydon-Miller et al., 2003). Action research also criticizes interpretive, which tends to interpret educational practice and situations as merely an expression of practitioners' intention, perspective, value, and understanding, and thus falls prey to a rationalist theory of action, which suggests that idea alone guides action (Carr & Kemmis, 2004).

Referring to (Gergen, 2003), Action research, as a process of realistic coordination to establish a democratic community participatory action, is essential. Coordination shall bring various elements into effective coordination in education since the role of each of these elements (student, teacher, society, institution, or stakeholder) is crucial. Given that they are what constitutes education, we cannot ignore them. Critical theory cannot go alone in setting attainable goals and reforming education, and maintaining the vitality of collaboration requires the possibility of concrete action. Discursive collaboration itself is limited in potential; only if it is regarding concrete actions can the fruits of the democratic process be realized (Gergen, 2003) so that prudent, just, and rational decisions can be achieved (Carr & Kemmis, 2004).

Two things are essential in action research: first, theory facts cannot be detached from practice, so action research is bound in context (Rauch et al., 2014; Toledano & Anderson, 2020); second, there must be community involvement to achieve consolidated learning and social change, thus, as mentioned above, a participatory approach is used for knowledge creation (Reason & Torbert, 2001; Toledano & Anderson, 2020). In all of the above ideas, dialogue ultimately leads to concrete action to materialize the implications of a shared vocabulary of values and visions (Gergen, 2003).

The point of action research is that reforming is not merely an abstract construction. Instead, it is the main focus among the 'co-actors' of the investigation, so what is significant is how actual participants act, learn, hope, or give up, and, most importantly, change (Toledano & Anderson, 2020; Walker, 2007). For instance, participants sort members of an organization, stakeholders, or communities work with researchers to seek understanding, improvements, and practical solutions that alter situations that concern them (Toledano & Anderson, 2020). It should be understood, however, that action research exceeds the idea that theory can illuminate practice; instead, it must be confessed that theory is able and must be generated through practice and that theory is only helpful if it is put into the service of practice concerned with achieving positive social change (Brydon-Miller et al., 2003).

One can use action research to find appropriate solutions to social problems, especially educational problems; hence, action research is long-term and sustainable. Teachers can initiate

action with everyday problems. Teachers can create hypotheses about the problem without creating hypotheses about the problem since this can limit teacher choices and narrow their perceptions of the phenomenon (Tekin & Kotaman, 2013). Instead, it collected data on the problem from various sources related to the problem. From this data, the teacher tries to determine the reasons for the problem. Action researchers must be open-minded to their surroundings and apply democracy, involving all elements. Therefore, the relationship between action researchers and those who constitute education, teachers and students, parents, administrators, and others in education must be honest and open (Brannick & Coghlan, 2007; Feldman, 2007).

Action research offers the advantage of being a sustainable approach, using suitable data collection methods that motivate teachers to analyze student problems and progress and reconstruct their curricula (co-creator) and programs effectively. This process allows teachers to function as both educators and researchers, impacting instructional activities while empowering them to refine their practices effectively. As practitioners of curriculum and educational programs, teachers are also a variable in educational settings. Action research recognizes that the teaching process is dynamic and human.

Despite the ideas and concepts of action research seeming ideal and claiming to be a synthesis due to their thinking having gone through a dialectical process, action research is only a few famous. It can shift the dominance of positivism and interpretation, especially in the Indonesian context. In reality, implementing the idea of 'participatory' action research takes work, constantly clashing with hierarchical, bureaucratic rules and teacher knowledge factors. In addition, action research still uses either a quantitative or qualitative approach in implementing the methodology, collecting data, and analysing.

CONCLUSION

Each paradigm has strengths and weaknesses, so the three paradigms find relevance in specific contexts and problems; as long as the researcher can apply the methodology appropriately, each approach can solve the problem under study. I believe the idea of action research, which is that teachers are researchers, is brilliant. However, teachers cannot be limited to using a specific paradigm; they should not use the action research paradigm but should be open to determining their perspective. Above all, a teacher must have critical thinking, not merely 'believe' in the paradigm and continue the status quo, since they will be conscious of and understand the education problems and intend to reform them.

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