Paradigms and Approaches in Educational Research

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Abstract

This article aims to discuss the concepts of paradigms and approaches in educational research. It is a literature review based on the significant and recognized books on the subject. The results indicate that at least three main paradigms are used in educational research and that the basic approaches are quantitative, qualitative, and mixed methods.

Keywords: research; education; paradigm.

1. Introduction

This paper discusses the concepts of paradigm and approaches in the theory and practice of educational research. These concepts are sometimes used in the same sense, which is problematized in the article.

This article aims to reflect on how paradigms and approaches are combined and used in research in education.

The next section presents the methodology used to produce the article. The following section presents the research results, followed by its discussion. The conclusion summarizes the flow of the article, highlights its contributions, indicates its limitations, and points to future research.

2. Methodology

This article conducts a literature review of significant works on educational research. Recognized books and articles were read, and notes were taken already in the form of an IMRAD (Introduction, Methodology, Research, Discussion) article.

Both authors discussed the main ideas in these texts, producing a framework for working with paradigms and approaches in educational research.

The writing process involved debates and discussions, extra readings based on the books' indications, backward search (references on the books and articles), and forward search (articles that quoted the basic bibliography used to produce this article).

3. Results

According to Thomas Kuhn (2017), the sciences are determined by paradigms and cultural and historical matrices that define their objects of study. The paradigm would function as the map or roadmap of science, providing criteria for delimiting problems, formulating questions, determining what should be observed, collecting data, and analyzing results.

Therefore, it would correspond to a set of practices that characterize a particular science, incorporating the values and beliefs of scientists in the area. In this sense, a paradigm, also called by several authors "worldview", would bring together several perspectives, such as ontology (how we conceive the being and reality), epistemology (how we conceive knowledge), axiology (how we conceive beliefs and values) and methodology (how we conceive research).

"Normal science", an expression also used by the American physicist and philosopher, would seek to solve problems with the scientific community's conceptual, methodological, and instrumental assumptions, which would constitute the paradigm itself. Normal science would expand and deepen the conceptual framework of the paradigm without, however, changing it.

However, when the progress and development of knowledge begin to require explanations that the current paradigm can no longer provide, science enters a crisis, which can give rise to a scientific revolution. Guided by a new paradigm, scientists adopt new instruments and direct their eyes in new directions, even seeing new and different objects when observing, through familiar instruments, phenomena of reality already examined. When paradigms change, so does the universe of scientists.

In the 1980s, education research experienced a so-called "paradigm war" between quantitative approaches, prevalent at the time, and qualitative or emerging approaches (Gage, 1989). Patton (2015) considers that this historical debate between quantitative and qualitative methodologies served to illuminate the contrast, and even opposition, between two paradigms or worldviews: on the one hand, the use of quantitative and experimental methods to generate and test hypothetical-deductive generalizations; on the other hand, the use of qualitative and naturalistic approaches to understand, inductively and holistically, human experience in specific contexts.

Although the variety of research approaches has expanded beyond the simplistic dichotomy between quantitative and qualitative paradigms, and this discussion has occurred mainly in the United States, the debate is part of our methodological heritage in education and is still alive. Therefore, exploring it can help in making methodological and strategic decisions.

For Merriam and Tisdell (2016, p. 15), for example, the four essential characteristics to understand the nature of qualitative research would be: the focus is on the process, understanding, and meaning; the researcher is the main instrument for data collection and analysis; the process is inductive; and the product is richly descriptive. Quantitative research, on the other hand, is experimental, empirical, and statistical; uses instruments for data collection such as scales, tests, and questionnaires; and is deductive. These are general differences, which will be covered in more detail.

From the idea of "dialogue between paradigms" (Guba, 1990), the war would have been partially overcome. In the quantitative/qualitative debate, the authors explore the approach of mixed methods, which could be called the "radical medium". It is not enough that mixed methodology researchers occupy an

epistemological space between quantitative and qualitative epistemological spaces.

Instead, the mixed researchers should aspire to what is the radical environment, which should not be a passive and comfortable space in which the status quo between quantitative and qualitative epistemologies is maintained, but rather a new theoretical and methodological space in which a socially just and productive coexistence among all research traditions is actively promoted, and in which mixed research is consciously local, dynamic, interactive, situated, contingent, fluid, strategic and generative. (Onwuegbuzie, 2012, p. 192 apud Patton, 2015, p. 90).

In this conception, the mixed research methodology is not limited to the mixture of data but constitutes an epistemology, approach, axiology, paradigm, methodology, and vision of projects and methods (Cohen et al., 2018).

However, several authors resist the idea of understanding qualitative, quantitative, and mixed methodologies as paradigms, suggesting that approaches be considered in a more restricted way. In addition, Denzin (2010) argues that, after the 1980s, the paradigm war continued, but beyond quantitative/qualitative polarity, involving, for example, post-positivism and the evidence-based research movement. In this sense, the literature on research methodology generally considers three significant paradigms: positivist, interpretive, and critical or transformative.

Positivism, founded by Auguste Comte (1798-1857), is directly associated with the scientific method and natural empirical sciences and, therefore, more quantitative approaches. Positivism argues that science should follow the principles of objectivity and neutrality of the researcher. Other denominations referred to developments or revisions of the movement, such as neo positivism and post-positivism. According to Cohen et al. (2018), one of the contributions of post-positivists is to draw attention to the fact that no observation is devoid of theory.

Popper (2002, 2013), in turn, seeks to distinguish sciences from pseudo-sciences: for statements to be classified as scientific, they must be able to conflict with possible or conceivable observations. Therefore, a critical or scientific attitude would imply that we are ready to test, refute, and change our hypotheses.

The **interpretative paradigm**, also called constructivist by many authors, is an umbrella that encompasses several approaches to research, such as narrative, phenomenology, ethnography, grounded theory, case study, and interactionism. It is important to note that these approaches are also often simultaneously philosophies, theoretical references, and methodologies. Moreover, instead of more quantitative approaches, they proved fruitful to support education research.

A common characteristic of phenomenological, ethnomethodological, symbolic, and constructionist interactionist perspectives, which make them attractive to the researcher in education, is how they naturally fit into the type of action found in classrooms and schools. Another shared feature is how they can preserve the integrity of the situation they are employed. The researcher's influence in the structuring, analysis, and interpretation of the situation is present to a much lower degree than would be the case in a more traditional research approach. (Cohen et al., 2018, p. 23).

The third paradigm, **critical or transformative**, proposes not only to understand reality but also to modify it, often with an express political agenda. In this sense, it began to wage another war with the two previous paradigms, positivist and interpretive, evaluating them as excessively technical. The critical paradigm is also an umbrella for various approaches: critical theory, postmodernism, post-structuralism, critical

ethnography, critical pedagogy, feminist theory, postcolonial theory, queer theory, critical theory of disability, and critical race theory.

As in the case of the other two paradigms, critical theory has its research agenda and its methodologies, such as action research, participant research, and critical ideology. As Merriam and Tisdell state (2016, p. 59): thinking more generally about critical research, what makes it specifically critical is the theoretical framework that underlies the study; in the case of research studies - cryptic action, the goal is specifically to help people understand and challenge power relations in the study process and make something happen while the study is in progress.

There are many other types of qualitative studies based on critical or feminist theory, queer theory, critical race theory, disability, or post-structuralist/postcolonial theory (collectively called "critical studies") that do not necessarily intend to make something specific happen or solve a problem in practice while the study is ongoing. The point is that these types of studies are collectively critical in the sense of the theoretical framework that underlies the study and its analysis of power relations. In light of the theoretical framework and the power relations in society, the analysis of data determines how people construct meanings and makes the study critical.

Other approaches are also widely mentioned in the literature and applied in studies in the area of education, sometimes classified outside the field of the three paradigms mentioned, such as pragmatism (widely used in the United States and associated, in general, with the methodology of mixed methods), arts-based research (collection and analysis of data in the field, in addition to studies of artists and the artistic process) and complexity theory (schools and educational institutions, for example, can be conceived as complex adaptive systems). It is worth remembering that Donmoyer (2006) had been warning for a long time about the proliferation of paradigms in education research.

It is essential to say that both quantitative/qualitative/mixed approaches and positivist/interpretative/critical paradigms, as observed, are not fully closed, with areas of overlap between them, with a certain degree of paradigmatic permeability. Moreover, there is no determining and close relationship between these levels: not all quantitative approaches are positivist, and not all qualitative approaches are interpretive. Quantitative approaches can capture opinions, perceptions, probabilistic causality, and processes (e.g., structured observation). In contrast, qualitative approaches can be used in experiments — identifying causality, and surveys — identifying patterns and trends in data (Cohen et al., 2018).

In this sense, some essential questions are naturally raised. What is the relationship between paradigms and other stages of the research process, such as the definition of the theoretical framework, the elaboration of the research project (which includes its problem and objectives), the methodology and methods of data collection and analysis? How does the paradigm or approach of research shape the design and procedures of a study? Are the paradigms determinant of what the researcher does?

As Creswell and Poth (2018) claim, whether we are aware or not, we always bring certain philosophical beliefs and assumptions to our research; the difficulty would be to become aware of these beliefs and assumptions. However, it is worth remembering that Merriam and Tisdell (2016), for example, identify that most qualitative research does not assume any paradigm. It is possible to do research without, at least consciously, choosing and explaining a paradigm.

According to Cohen et al. (2018, p. 9), paradigms do not necessarily guide research, which is, in essence,

guided by its objectives. We can ask if we need a paradigmatic thought to research. Instead, it is necessary to say that the objectives and nature of the research can be clarified based on one or more of these paradigms; paradigms can clarify and organize thinking about research.

It is possible, then, to conceive that paradigms do not determine but guide the approaches, the theoretical framework, the problem, the methodology and the methods used in the research, the standards of validation and evaluation of the results, and even the style of the presentation of the reports. An appropriate word to describe this relationship is "alignment", which refers to the idea that the various stages of the research are aligned: the paradigms (the philosophical bases and the worldview that underlie the research, including ontology, epistemology, and axiology), planning and methodology (involving the problem, objectives and methods and instruments chosen by the researcher for data collection) and the analysis, discussion, and interpretation of the data.

However, it is worth mentioning that a researcher can use more than one paradigm in his/her research, primarily if he/she works with mixed methods, which can be called "paradigmatic pluralism". The choices of paradigms and research approaches are determined, in practice, by several variables, among which are the worldview and the experience of the researcher, the time and resources available for research, the problem, and the research objectives.

4. Discussion

According to the read texts and discussed ideas, the following concepts are essential in educational research:

a)   alignment and congruence between the proposed stages for the research, that is, objectives, questions, and interconnected and interrelated methods, so that the study appears as a cohesive whole and not as isolated and fragmented parts (Richards & Morse, 2012 apud Creswell & Poth, 2018);

b)   methodological adequacy, assuming that different methods are suitable for different situations (Patton, 2015);

c)   paradigmatic flexibility and flexible emerging design, especially in the case of qualitative approaches, which are being built as the research develops (Patton, 2015);

d)   paradigmatic, epistemological, theoretical, and methodological pluralism (Cohen et al., 2018; Suri, 2013), critical multiplism (Shadish, 1993), and selective eclecticism (Suri, 2013); Patton (2015) proposes to replace the idea of the gold standard of research, the randomized clinical trial (ECR), with a new standard, platinum: pluralism and methodological adequacy; for Cohen et al. (2018), for example, one can adopt a constructivist approach in the development of a research problem and then adopt a pragmatist, post-positivist or transformative paradigm to investigate it.

As Cohen et al. (2018, p. 29) claim, planning and conducting research in education cannot follow simple recipes but it is a complex, deliberative and iterative process. At the same time, research is a process of construction and discovery.

Starting from a theme and a problem that is still general and not very delimited, a literature review is conducted, which should build both state of the art on the theme and the problem, as well as the theoretical framework to support the research, which is already partially determined by the paradigm and continues to be built in the following stages. The literature review thus contributes to delimiting the problem and

delineating the investigation, with the definition of objectives, questions, and hypotheses and planning strategies for data collection and analysis.

Data collection occurs, then, through the instruments defined in the planning. The results are analyzed and interpreted by returning to the correlated studies identified in the literature review and the theoretical framework adopted by the research. The conclusion of the process is the writing and publication of the research results in the format of works, articles, chapters, dissertations, theses, and even books.

5. Conclusion

This review discussed the concepts of paradigm and approaches in educational research.

One of its significant contributions is the proposed framework for educational research that incorporates paradigms and approaches as a general orientation.

One of its limitations is that it was not based on a systematic literature review, including databases searches, but was mainly based on recognized books on the area.

Future research could include other books in the review, such as Denzin and Lincoln (2018), Guba and Lincoln (1988), and Mertens (2020).

6. Acknowledgement

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