The priority of method in pedagogical research

La prioridad del método en la investigación pedagógica

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Abstract

This article considers the importance of the method in educational research. The method is necessary for achieving the aims of research. We present methodological complementarity and complexity and the firm correspondence between them as principles of educational research since science and research are, without any question, primarily based on the method. The field of education is an area of reality that can be known in various ways and that requires a global approach that might not be limited to knowledge of education as this provides only a partial position. Depending on the type of educational problems under consideration, knowledge of education will be required and the form of knowledge that is most appropriate to the object of study will be applied as it corresponds to the proper use of methodological complementarity as a principle of pedagogical research. The text concludes with a reflection on our situation as educators and researchers.

Keywords: Research methodology, educational research, methodological pluralism, empirical research.

Resumen

El artículo aborda la importancia del método en la investigación educativa. El método es necesario para llegar al fin de la investigación. Presentamos la complementariedad y complejidad metodológica y la correspondencia objetual como principios de investigación pedagógica. Porque la ciencia y la investigación descansan fundamentalmente y sin ningún género de discusión sobre el método. El campo educación es un ámbito de realidad susceptible de ser conocido de diversas formas y reclama una respuesta amplia que no puede ser restringida al conocimiento de la educación que proporcione una posición parcial. Según el tipo de problemas educativos que estemos planteando necesitaremos conocimiento de la educación y aplicaremos la forma de conocimiento más adecuada al objeto de estudio tal como corresponde al uso adecuado de la complementariedad metodológica como principio de investigación pedagógica. El texto termina con una reflexión en torno a nuestra situación de educadores y la investigación.

Descriptores: Metodología de investigación, investigación educativa, pluralismo metodológico, investigación empírica.

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1. Statement of the problem

The criteria for scientific rigour in pedagogical research have evolved from positions linked to positivist approaches, passing through the establishment of qualitative, philosophical, and hermeneutic criteria, to the current situation where these criteria are based on integration. This is primarily integration of methods, although there is an ongoing debate about epistemological questions.

The different positions relating to the production of scientific pedagogical knowledge are based on two basic questions that Eisner (1998) calls *ontological objectivity* and *procedural objectivity*. Ontological objectivity refers to the fact that people who do research into education wish to perceive, understand, and verify the reality that actually exists, eliminating subjectivist perceptions, beliefs, fantasy, ideology, or the researcher's desires. Procedural objectivity refers to a form of objectivity attained through «the development and use of a method that eliminates, or aspires to eliminate, the scope for personal judgment in the description and appraisal of a state of affairs» (p. 60). The author accepts and underlines that pristine objectivity and pure subjectivity are both impossible. In other words, the production of scientific knowledge in education must navigate between the Scylla of objectivity and the Charybdis of subjectivity, knowing that the former will never be absolute, and the latter will never be entirely pure.

If we pause to consider procedural objectivity in research through the development and use of the method, we find that it is true that the method is associated with the development of scientific knowledge. Reflection on the method is a result of scientific progress, and this progress in methodological procedures leads to improved reliability of theories, thus revealing more truth about the world. And, «what the tool of method does not achieve must —and really can— be achieved by a discipline of questioning and inquiring that guarantees truth» (Gadamer, 2012, p. 585). This refers to the rigour of the rational dynamism that is common to the method. Consequently, the method must allow for the construction of ever more rigorous and profound knowledge of reality, as well as defining theories that allow no room for contradiction. To which we could add that it is important to overcome the worship of the method as ideological, political, and moral questions permeate its development (Orden & Mafokozi, 1999), an idea we will develop in the section on methodological scepticism. In other words, it is important to avoid the oppressive appeal of methodology as something that should be worshipped for having resolved all scientific problems. This is not the case (Khun, 1982).

The connecting thread that links all of this article describes how the scientific method is the result of a very particular attitude by the scientific researcher towards the object being examined. This attitude involves, among other things, objectivity as an aspiration, clarity, rigour, and honour as an imperative, impersonal curiosity, distrust of prevailing opinion and a sensitivity towards the new (Bunge, 2000).

Methodological procedures form something that has been called the «scientific method». They are one of the basic

elements that is built by specialised scientific research and can be applied to various areas of human activity. «The main overlap between the scientific method and the method in general is the existence of an ordered way of proceeding» (González, 1988, p. 54). At the same time, the method unites the possibilities of science and epistemological principles (Kaplan, 1964). The method is the path that makes it possible to meet our intended objectives, allowing us to proceed directly to the objective that is known in advance, as the archer aims at the target before letting the arrow fly. And all of this is carried out in pedagogical research.

Every year there are conferences, seminars, and other events where all types of claims are made about education. And yet how many of these questions have been examined using a precise methodology? Similarly, journals are published that specialise in education, theory of education, and pedagogy. How many articles set out the methodological rigour with which they have reached their conclusions?

Some basic principles are set out below regarding methodology that should be considered and must be used in pedagogical research with their corresponding arguments:

1. The power of pedagogical knowledge resides in the method.
2. The Fundamental Principle of Methodology: correspondence of the object to the methodology as a general methodological condition.
3. Methodological pluralism.
4. Methodological scepticism when examining the reality of education.

We start by noting that the method comes first in pedagogical research. In these pages, we intend to reflect on the importance of maintaining the correspondence between the object and methodology as a basic general condition and methodological complementarity as a principle of pedagogical research. This is because science is based on the method, and in science and research the method is almost everything: the method as a set of techniques or specific procedures used in a science; the method as epistemology or a theory of knowledge; the method as intellectual willingness, a way of thinking, a way of reacting, or a way of acting; as an attitude for separating what is a matter of opinion from what is true, establishing itself in thoughts without prejudice and are open to control and self-control of findings in the sciences; the method as description, explanation, and justification for methods in general, and more particularly, for the scientific method, understood as a general research procedure in the field of science (Kaplan, 1964).

2. The power of pedagogical knowledge derives from the method

When speaking about the method, we refer to a way of asking questions and suggesting answers. The scientific method fulfils this role as it enables us to clarify the sense and meaning of a theory, allowing a greater and more profound knowledge of reality. As Zubiri notes (1983), when we ask ourselves about theory, we should ask ourselves about reality. By so doing we avoid making the error of reducing science to our own thinking, to mere subjective appreciation, and we embrace

what characterises scientific knowledge: objectivity. We also prevent any one science —biology, physics, mathematics— from being able to or attempting to monopolise the scientific method. This can include other sciences, such as social and human sciences.

There is no doubt that the method was of crucial importance for establishing the scientific mentality in the Modern Age. Over time, the method has become the backbone of science. One of the major concerns of the period of the Scientific Revolution from the sixteenth and seventeenth centuries onwards was the question of the method. The literature on this topic reflects the conscience of the new era, when it was believed that the solid principles and procedures that typified the method were more important for the advancement of knowledge than intuition and the intellect.

According to Cohen (1989), «the seventeenth-century treatises generally start with a discussion about method or conclude with a methodological declaration» (p. 140). Even, a work such as Descartes' *Discourse on the Method* (1637) was written and published as an introduction to three scientific works. The same can be said of Newton's piece on methodology, the «*General Scholium*» (1713), in which the nature of explication and role of the hypothesis are analysed.

The method-based critique of knowledge and wisdom using the criterion of authority was to be the starting point of modern thought. This is the era of the rise of empirical research into nature. As Cohen observes (1989), «in previous eras knowledge was sanctioned by the schools, the councils, the wise men, and the authority of the saints, revelation, and Holy Scripture; in contrast, in the seventeenth century it was argued that science was based on empirical foundations» (p. 140). By using the method, anyone who understood the art of performing experiments —formulating hypotheses, explaining them— could test scientific truths. The method appeared as the factor that introduced a basic difference between this new science and traditional knowledge. With the scientific method, knowledge was no longer the preserve of the guru, shaman, or visionary of the moment.

In addition, the method was easy to learn and made it possible to perform experiments, make discoveries, or find new truths, something that introduced a fundamental difference between the new science and traditional knowledge. Furthermore, for Cohen, it was one of the most powerful democratising forces in the history of civilisation: «discovering the truth had ceased to be a grace conceded to a few men and women with singular spiritual or mental gifts» (Cohen, 1989, p. 140). Descartes himself (1993) in the introduction to his method stated: «I have never presumed that my mind was in any respect more perfect than anyone else's» (p. 41). Therefore, no aspect of science has been as revolutionary as the method and its consequences. In science, the method is almost everything; without the method there is no science. And so we want it to be our companion in the field of scientific pedagogical research.

Science is fundamentally, and without any question, based on the method. The

method assures us of the validity and reliability of the conclusions of scientific and pedagogical research because the method is what gives science efficacy and security to meet the aim that is the characteristic and the desire of all people of science. The method is, in general, the path that thought follows to acquire the truth. By seeking to reach the truth using the method, we must simply follow its need to adapt itself to the conditions under which the truth is made available to us, and when this is not just any truth, but *scientific* truth, the method must be adapted to the conditions that make science possible and real.

In the case of empirical educational research, we, as thinkers about phenomena in the field of education (Bueno, 1995), wish to attain a theoretical knowledge that is suitable for understanding and governing the field of education. This is something we currently lack. This is undoubtedly because of the complexity of precisely defining education as an object of knowledge and the difficulties that are intrinsic and extrinsic to it. As Touriñán and Sáez Alonso state (2015),

> Developing a conceptual representation of education that explains educational events and elaborates appropriate intervention strategies for producing changes in educational status requires us to act guided by some special conditions that the *methodology* must justify in the disciplinary field of competence. The form of researching is inscribed in the specific setting of each science. The theory dictates in each science how research must be done. (Touriñán & Sáez Alonso, 2015, p. XVIII).

And research must be linked to a theory, in such a way that the theory is a phase in it. As the sciences advance and mature, they tend to take an ever-greater interest in theory, and, from a certain perspective, the level of development of most sciences can be inferred from the extent to which they take an interest in theory.

What is stated above leads us to believe that science has had great success in developing theories. These evolve, changing over time, and making possible an ongoing progress of knowledge about the functioning of the world, in our case the world of education. This means that it is important to demarcate the object and the method of the theory of education as an area of knowledge to create pedagogical knowledge using the current scientific method. The methodological question has an important role in the changes that it is hoped to experience in the theory of education.

The field of knowledge, education, is the «object intellectual concern that with functional autonomy creates its own concepts and proofs» (Touriñán, 2016, p. 18). Similarly, we know that the field of education is surprisingly short of simple explanations. And, despite this, educators «must build their own *education* principles and theories that apply to humans (...) and they must seek to construct principles and theories that have wide-ranging power and relevance to educational events» (Novak, 1998).

Education is a field that can be known in various ways, obtaining valid knowledge to explain, understand, and transform the conditions of things, events, and educational actions, and to create principles

for educational and pedagogical intervention. This is the purpose of pedagogical research. Any form of research with education as the area of reality that can be known must present its method. Philosophical, psychological, and sociological theories, practical theories, and applied research are currently used to acquire knowledge of education. Each branch has a specific ability to solve educational problems. But the methodology used must be stated. We sometimes encounter very strong conclusive statements on education and the question that arises is: what methodology was used to reach this conclusion?

We are aware of the difficulties of knowledge and the tendencies towards error and illusion that affect scientific human knowledge (Bunge, 2000; Echeverría, 1999; Lakatos, 1974; Morin, 2014). We are familiar with the permanent risks of error and illusion that continuously plague the researcher (Popper, 1980; Feyerabend, 1981; Khun, 1982). Therefore, it is necessary to introduce and develop an appropriate methodology for each case. As Morin states (2015):

> There is a major and always unknown problem: namely promoting a knowledge that can comprehend fundamental global problems and inscribe partial local knowledges in them.
>
> The dominance of a knowledge that is fragmented along disciplinary lines often makes it impossible to operationalise the connection between the parts and the whole and it must surrender its place to a form of knowledge that can grasp its objectives in their contexts, in their complexities, in their groupings.
>
> It is necessary to teach *methods* (the emphasis is ours) that make it possible to capture the mutual relationship and influence between the parts and the whole in a complex world. (Morin, 2015, p. 77).

The sciences have enabled us to acquire many certainties, and during the twentieth century also revealed innumerable areas of uncertainty or error to us (Degos, 2013). By recognising errors, we can overcome them. Even so, error is inseparable from human knowledge. The risk of error is inherent to knowledge. Therefore, the theory of education, which is not a doctrine, a mantra or a dogma, enables us to refute, analyse, explain, interpret, and discover the elements of new knowledge by and with empirical research.

If these arguments are correct, we choose to research political decisions or educational decisions and the field-object of education in general and demand all types of study, using the forms of knowledge that are most appropriate, so that we can describe, explain, understand, interpret, and transform education to create specific concepts with meaning that is intrinsic to the field of education. We start to do this by developing the principle of correspondence between the object and the methodology as a general methodological condition.

3. The Fundamental Principle of Methodology: Correspondence between the object and the methodology as a general methodological condition

Education has research methods. Here we are interested in showing the potential

of the research method as a fundamental component for meeting education's theoretical, technological, and practical problems from Pedagogy.

To do this we rely on the fundamental principle of methodology. González Álvarez states (1947, p. 10): «Every science, as the human product that it is, relies on two basic factors: *the object* which it is about and *the subject* that elaborates it. This implies a fundamental truth: the method of a discipline must be coherent with the noetic structure of the object that it investigates and adapted to the cognitive contexture of the subject that receives it».

This definition provides support for the method being a guide to the study of reality, of actuality, of the empirical, of empirical research, of philosophical research, of the perspectives and possibilities we wish to know about and the type of question posed. In other words, the correspondence of the object to the methodology is the general methodological condition for all research.

The basic principle of methodology affirms that the method depends on the object or the aspect of reality that we wish to know, whether this be in the field of educational research, the subjectivity of the agent and what is understood by educational truth, specific educational judgment, education as action, or education as an object of analysis and research. This means that not just any method can be use in any piece of empirical or philosophical research.

If this is the case, we can, on the one hand, confirm that not every method is suitable for all research and, on the other, the need to adapt to the conditions under which the (educational) truth is offered to us. This was noted by Colbert (1969) for whom the correspondence of the object to the methodology must be a methodological condition that is present in every methodological action, as between method, subject, and object, a dependence relationship is established: «The method depends on the object or on the aspect of reality that we wish to know, in other words, the method cannot be formulated before appreciating the study of the object, because a method described 'a priori' will often be inadequate for the object. And neither can we go far in the study of the object without acquiring a method, because this study will proceed in a disorganized manner» (Colbert, 1969, p. 667).

In other words, we can state that the more precise our knowledge of the object we wish to know, the better we can define the appropriate method for studying it. And this is true for both empirical research and philosophical research. Therefore, the better we know the noetic type of the corresponding science, the more easily a methodology can be developed. The inverse is also apparent: where the knowledge of the structure of a science is still not perfect, the methodology will proceed by fumbling and more or less successful approximations, seeking out the method with which it is definitively established (González Álvarez, 1947).

Therefore, there is neither priority nor parity between the philosophy of education and empirical educational research, for example, but instead analysis of the method used in both fields of knowledge will guide us in affirming whether the method

used is coherent with the noetic structure of the object of research and whether it is adapted to the cognitive contexture of the subject that receives it. This methodological guide will confirm whether the results of the research, rather than the research, are acceptable or should be rejected.

We sometimes read articles with arguments that are antagonistic to empirical research in pedagogy. What does this line of thinking have against empirical scientific educational research? Does empirical statistical scientific educational research not have a thinking that is discursive, argumentative, and committed to education? We are educators who are aware of what empirical scientific educational research, among other sciences, offers us. And we operate as such, with these areas of knowledge.

We can state, without any doubt, that scientific methods are indispensable for attaining knowledge of reality, understood even in the essential sense as a path for seeking and acquiring the truth. So, we can recall Spinoza (1971), for whom the method is the way of following a path that will lead us to this destination we long to reach: the Truth.

The fundamental principle of methodology therefore requires all pedagogical research to advance by accepting the correspondence of the object to the methodology as a fundamental condition of methodology, in other words, the method must be suited to the objects that it investigates. As is stated above, the method depends on the object or the aspect of reality that we wish to know. We are methodologically obliged by the principle of correspondence between the object and the methodology to advance in the theoretical development of the object of research, to focus pedagogical research on the object *education*.

It should even be supposed that there are as many methods as there are ways of thinking and acting, but the fundamental principle of methodology does not lead to this conclusion. Instead, a consequence is derived from this principle that today defines the methodology of scientific and, therefore, pedagogical research: methodological pluralism, the pluralism of methods in science. The new position in science is to accept a pluralism of methods, as we describe below.

4. Methodological pluralism

From what was stated in the previous point about the methodological principle of correspondence between the object and the methodology, we now direct our attention to pedagogical research on the object of knowledge —education— and we deduce that methodological complementarity is also a principle of pedagogical research. It is a principle that is adapted to functional autonomy, to disciplinary dependence and, also, to the complexity of the object of knowledge *education* (Touriñán, 2015). Education should be researched with methods of action and methods of thought and reflection. The two are interrelated, as the action performed will be inspire new reflections and thought has a profound influence on action. Similarly, we can add general methods (phenomenological, semiotic, axiomatic, or reductive methods) and particular methods (Bochenski, 1981).

Education as a field of reality can be known in various ways, for example, through speculative, systematic, and positive philosophy, among others (Ferraris, 2013, p. 179). Each of these ways is applied to obtaining the best possible knowledge of education. This reminds us of Dewey's statement that «all of the methods and all of the facts or principles of any matter that make it possible to address the problems of education and instruction in a better way are relevant to it» (Dewey, 1929, pp. 51-52).

Research, in any area of the human sciences, has become not only a theoretical aspiration but a practical need, performed by professionals who practise educational methods with focuses that are supported by scientific results based on research. Therefore, the community of people who work in the field of education, in any area of it, aims to produce a corpus of reliable research that not only seeks to prove things to which the researchers are already committed, but also uses research to refine and develop beyond educational theory and practice.

Science has been described as the systematic process of creating and testing theories, in which these theories are evaluated (Böhm & Schiefelbein, 2004). Many scientists deny that there is a clear scientific method in the processes of science, claiming instead that what scientists really work with is an approach to science, in other words, they work with a critical attitude towards the findings of their work and maintain an expectation and perspective about their scientific explanations as though they were only tentative stages in a never-ending process of successive approximations. However, research always creates theories, tests hypotheses, formulates laws and models discovered in the empirical findings, discovers mathematical relationships between variables, and clarifies scientific concepts, and the explanatory power of the hypotheses that are under consideration. Scientists evaluate the consistency of laws and examine arguments in depth. Conceptual analysis increases the conceptual clarity of a theory. This is all thanks to the methodological pluralism employed.

The methods used in the scientific process are based on key principles of brevity, consideration of plausible and alternative hypotheses, replication, and care and precision in thought. The method in a process such as this includes various principles, procedures, practices, and techniques related to the behaviour under investigation.

If arguments about, or more accurately understanding of, the conceptual debates of one science over another persist and are not based on correspondence of the object to the methodology and methodological pluralism in pedagogical research, we can end up building walls that are more like fundamentalist bastions than pillars supporting the opening that always accompanies research methodology. Therefore, from these walls the method makes it possible to advise educators that the data their empirical studies provide must be interpreted in light of the methodology used. This gives them certainty and significance for educating.

Nowadays we have well-founded works that explain the difference between

knowing, teaching, and educating, between educational design and instructional design, teaching function and educating function, accepting that in their full sense the laws of education establish and are defined by educational objectives, not just teaching objectives (we speak of primary, secondary, professional education, not just primary, etc. teaching). Following the same line of thinking, the philosophy of education cannot be confused with theory of education, and the truth is that there is much interest in conflating the philosophical sense of education with the pedagogical sense that establishes features typical to all education because they are inherent to its meaning. People who are dedicated to the theoretical study of education feel no anxiety when using research methods to understand the educational problems of the moment. On the contrary, empirical scientific data do not give them absolute certainties about what it means to educate, but rather a critical clarification of educational questions for the humanising development of people.

The theory of education has contributed to the development of the field of pedagogy, teaching, social education. And it must continue to do so, creatively adapting itself to the spirit of the present times. This means that research must be done that allows it to take its place in the list of focuses that are empirically, scientifically, and robustly validated, providing a new respect for this area of knowledge.

Perhaps the time has come for a new generation of specialists dedicated to the field of educational research in the area of knowledge of theory of education so that this perspective is not left behind by other sciences where support for research is increasing. Doctors operate on humanists and liberals, socialists, democrats, and republicans, and education must similarly prepare its educationalists so that students can learn to decide, empowering them to choose *THEIR* meaning of life. This is the key to the ability to resolve problems that correspond to the significance of knowledge about education.

Consequently, we repeat and rely on what we have stated in these pages. The method is the path that science follows, «The method is the manner of proceeding in any field, that is of organizing activity and of coordinating its objectives» (Bochenski, 1981, p. 28). The method is a path, a means that is related to and refers to the objective. Science rests fully on the method. In science, the method is almost everything. Without method, there is neither science nor research. As Gaviria states (2015): «Therefore science is incontrovertibly based on the method. The method allows us to be sure that auxiliary assumptions are acceptable in a given context and, therefore, the research conclusions are valid. In science, the method is almost everything. Without method, there is no science. Statistical inference is no more than a form of causal inference for a given type of phenomenon, but it is not an alternative to science as such» (Gaviria, 2015, p. 502).

The method is required to attain this objective, but it lacks meaning in itself. It is not self-contained. The method's reason of being is not within itself. It is a way of channelling processes of thought and action. As we stated above, proceeding in an orderly and coherent way, establishing

the objective to be pursued in advance, or acting and passing through a set of stages established in a process are all inherent to the method.

Therefore, in philosophical, scientific, and pedagogical research, the method is valid insofar as it is useful and helps to achieve the proposed objective. The method is directed towards achieving this objective. The objective is, therefore, the limit sought for the method with which it should not be confused. Nonetheless, it can be the case that the objective is never attained absolutely, and then we should speak of successive ever more refined attempts to achieve it. In this sense, there are a series of partial realisations of the objective.

In accordance with what is set out above, we note that we sometimes speak of the scientific method in singular and other times about scientific methods in the plural. In our concept of the methodology of science, and in the field of pedagogy, there must be room for a plurality of methods in science for research into and knowledge of educational reality.

Speaking of methodological pluralism in a science, in this case pedagogy, means accepting that the realities that the science in question considers can be approached from different angles or perspectives for carrying out research in the field of education. This pluralism originates in the complex nature of the field of study, in the type of questions or problems raised when researching it, and the various concepts on which the methods are based and justified (M.E.C., 1989; Touriñán & Sáez Alonso, 2015).

Allowing for methodological pluralism means accepting that the realities of the object of study can be approached by different methods that are, to some extent, independent. A plurality of methods is not incompatible with the existence of certain constants that appear in all scientific methods (Popper, 1980).

Listing the methods mentioned —and others that can be added in accordance with the temporal dimension or of the form of research— does not mean settling into separate compartments; there is usually an overlap between some methods and others. In other words, it is hard for us to talk of pure methods (Bunge, 2012; Chalmers, 2000; Gómez Rodríguez, 2003).

In conclusion, adopting this position means distancing ourselves from reductionism, for example, the reductionism of naïve inductivism or logical positivism, that identified physical science as the model of knowledge, applying a methodological monism to all of the sciences (Monserrat, 1992; Blanco, 2001; Kimberly, 2014). Each type of knowledge of the complexity of the object *education* not only has its own forms of proof regarding the truth and validity of its propositions, but they make reality the principle of correspondence of the object to the methodology as a methodological condition and the principle of methodological complementarity as a principle of pedagogical research. Each method is valid for resolving a particular type of problem, and all of them contribute to achieving the best evidence and basis for what we state.

Finally, to protect us from any type of exclusionary dogmatism, in the next

point we will reflect on the need to adopt a certain methodological scepticism when performing empirical research in the field of education.

5. Methodological scepticism when researching the reality of education

The principles of pedagogical research methodology are also defended from methodological scepticism for researching the reality of education.

How much, therefore, would adopting and practicing Descartes' famous method of doubt help us to develop scientific clarity, rigour, and honour? This comprises the four precepts that must govern his method and that appear in his *Discourse on the Method of Rightly Conducting One's Reason and for Seeking Truth in the Sciences*, written in 1636 and published in 1637, and which Bunge describes thus: «It is an initial mistrust with regards to extraordinary perceptions, information, and thought. This does not mean that sceptics close their minds to strange events, but that, before admitting that such events are real, they wish to monitor them through new experiences or arguments» (Bunge, 2010, p. 101).

Sceptics do not naively accept the first thing they perceive or think. They are not credulous, but neither are they neophobes; they are merely critical. Before believing, they want to see proof. And, as stated above, the methods specific to the acquisition of knowledge are an essential component of each science. The major scientific advances have gone hand in hand with major changes and advances in methodology. In other words, there is a positive correlation between science and method.

The method of doubt is the nucleus of methodological scepticism (Descartes, 1993). My doubt does not concern the possibility of knowing educational reality, but rather it includes many educational statements and suggestions. Mine is a *methodological* or scientific scepticism, based on methodic but not systematic doubt. As Bunge so astutely puts it: «Methodological scepticism is both a methodological position and a practical and moral one. In effect, those who adopt it believe that it is foolish, imprudent, and morally erroneous to affirm, practice, or advocate important ideas that have not been tested or, worse still, that have conclusively proven to be totally false, inefficient, or harmful» (Bunge, 2010, p. 103).

Sceptics of this sort (methodological sceptics) are not credulous, but nor do they question all arguments at the same time. They believe what has been proven or has been shown to have a strong empirical support, but they mistrust anything that clashes with logic or with the bulk of scientific knowledge and its underlying philosophical hypotheses. For Bunge:

> Theirs is a nuanced scepticism, not an indiscriminate one. Methodological sceptics uphold numerous principles and, above all, trust that humans will progress further in knowledge of reality. Their faith is critical, not blind; it is the faith of the explorer, not that of the believer. In the absence of relevant proof, they do not believe anything, but they are willing to explore new and audacious ideas if they find grounds to suspect that they have some possibility (...). They are open-minded people, not empty-minded people; and they are quick to filter out intellectual rubbish. (Bunge, 2010, p. 128).

This is what adopting the famous method of doubt of Descartes and methodological scepticism means. It does not mean doubting the possibility of knowledge and research. In contrast, it trusts in these. It doubts claims, principles, and content regarding things that are not verifiable.

To clarify concepts, we should note that the method of doubt is the nucleus of *methodological scepticism*. And we must distinguish between this class of scepticism and *systematic scepticism*. The systematic sceptic denies the possibility of knowing and the possibility of any knowledge, supposing, therefore, that the truth is inaccessible and the search for it is in vain.

Bunge goes on to say that sceptics of both types «critique naivety and dogmatism, but while methodological scepticism encourages research, systematic scepticism is an obstacle to research and, so, leads to the same results as dogmatism» (Bunge, 2010, p. 102).

6. Final considerations: Each method is valid for resolving a particular type of problem

We have provided a conceptual approach to the priority of the method for investigating the reality of education where education is an area of reality that involves knowledge and action. Once the methodological principle of correspondence between the object and the methodology has been established, the explanation, understanding, description, interpretation, and transformation of the states of things, events, and educational actions can be understood better.

As education is an area of reality that can be known and an activity that is performed through the educational relationship, methods of thought and methods of action are both applicable to it.

This dual condition shapes the complexity of the «education» object for pedagogical knowledge that always derives from study of the theory-practice relationship. And each form of knowledge has its peculiarities, its own forms of proof regarding the truth and validity of its propositions according to their methodological level. Each method is valid for solving a particular type of problem and, depending on which problem it is, we use one or another; all of them contribute to achieving the best evidence and basis for what we state.

The method offers us guidelines derived from the methodological conditions for opening, prescriptiveness, correspondence of the object to the methodology, and methodological pluralism that meet the needs of pedagogical research. The object «education» therefore requires all types of studies to improve and increase the use, construction, and development of the «education» area of reality that is the objective and goal of the pedagogical endeavour.

The current epistemological pluralism described and specified in the paradigms leads to a methodological pluralism where complementarity and synergy are the most productive pathway for research into educational realities. There is not one reason for disregarding empirical educational research.

We know that the reality of education is not simple, neither as reality, nor

as practice, nor as theory. We therefore maintain that it must be approached from the complexity of the human being and of all of the elements that comprise it: people, intelligence, emotions, and values, elements that cannot be considered in isolation or in sealed compartments, but instead as an overall integrated structure.

Therefore, the pluralism of paradigms, methods and techniques specified in empirical research prevent us from adopting the simplistic position of affirming that one paradigm, one method, or one technique are valid for researching all of the field of education or should be a priority. As we have maintained throughout these pages, no discipline is prioritised over any other. This is not the correct approach.

No paradigm can fully explain educational reality. It is insufficient, even though it has its necessary weight and role, and these need to be present. It is insufficient, as each piece of research studies a particular reality, education, but they do not see the same things, or, more accurately, they do not see them in the same way. This places us before the indispensable task of going into greater depth in the methodological description of each research situation, of a powerful and comprehensive conceptual framework of reference that is empirically based, sufficiently complex and, at the same time, sufficiently flexible and objective, from which the areas of education can be reflected on and researched as a limited and partial approximation to the real.

Performing scientific educational research that explains educational events, compels us to act in accordance with some particular conditions according to the fields of study that methodology must justify. The methods are what allow us to be sure of the validity and reliability of research conclusions, opening up a range of possibilities to us. The opposite gives messages that are gloomy, dangerous, and dark, about the empirical disciplines in educational research. If this happens, it is usually the result of the misuse of the tools, of the methods.

We are educators. All research is necessary and helps us to function as educators. And the more the measurement in one piece research is refined, the more the others will be illuminated. We use research to develop and refine educational theory and practice. All of this is incontrovertibly based on the method, the procedure or set of procedures that are a tool for achieving the objectives of the research.

Empirical educational research is, therefore, a great educational ally; it has a specific importance for approaching and understanding the phenomenon of education. And we know that it will not attribute dogmatic certainties to pedagogy; its role will depend on the methodology and the methods on which it is based. Its presence offers a new stronghold from which to create pedagogical knowledge.

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