Evidence-based education. Scientific dangers and political advantages

Educación basada en la evidencia. Peligros científicos y ventajas políticas

Manuel Fernández Navas
https://orcid.org/0000-0002-9445-2643
Universidad de Málaga

Ana Yara Postigo Fuentes
https://orcid.org/0000-0001-7965-1911
Heinrich-Heine-Universität

Abstract

This paper argues that one of the dangers of the new democracies, whose complexity has increased unprecedentedly in modern societies, is, according to Innerarity (2020), their simplification. One characteristic of these modern and complex democracies is what the same author calls dataism, which consists of linking quantification with truth, relating it to a false idea of objectivity and misleading certainty that prevents a thorough knowledge of reality, which would allow decisions to be made in a way that is more in line with the real problems. Faced with the constant problems and complexities of societies, this dataism produces a demand for data in order to legitimise political decision- making, linking it to a fallacious idea of science. It is in this context that evidence-based education and research have become relevant. The problem is that this perspective is based on very different assumptions from those that epistemologically constitute education as a discipline of knowledge. Therefore, this evidentialist perspective is forced, on the one hand, to assume what Wrigley (2019) calls reductionisms in order to deploy its theories and research; on the other hand, to understand education as a technical matter, an educational vision that already had its time of splendour and that seemed to have been overcome precisely because it did not

offer quality answers to classroom practices. Our approach is that, far from an honest political concern for improving education, the underlying idea is the creation of political narratives that give legitimacy to their policies. Nothing better in the age of dataism than to use data and evidence-based languages to connect with mental frameworks of objectivity, truth or science, which give legitimacy to these narratives.

Resumen

En este trabajo se plantea que uno de los peligros de las nuevas democracias, cuya complejidad ha aumentado sin precedentes en las sociedades modernas, es, según Innerarity (2020), su simplificación. Una característica de estas modernas y complejas democracias es lo que el mismo autor denomina dataísmo y que consiste en vincular la cuantificación con la verdad, relacionándola con una falsa idea de objetividad y de certidumbre engañosa que impide un conocimiento cabal de la realidad, lo que permitiría una toma de decisiones más ajustada a la problemática real. Ante los constantes problemas y complejidades de las sociedades, este dataísmo produce una demanda de datos para poder legitimar la toma de decisiones política, vinculándola a una idea falaz de ciencia. En este contexto es donde la educación y la investigación basadas en la evidencia han cobrado relevancia. El problema es que dicha perspectiva parte de unos presupuestos muy diferentes a los que epistemológicamente constituyen la educación como disciplina de conocimiento. Por lo cual, esta perspectiva evidencialista se ve obligada, por un lado, a asumir lo que Wrigley (2019) llama reduccionismos para poder desplegar sus teorías e investigaciones; por otro lado, a entender la educación como un asunto técnico, una visión educativa que ya tuvo su época de esplendor y que parecía superada justo por no ofrecer respuestas de calidad a las prácticas de aula. Nuestro planteamiento es que, lejos de una preocupación política honesta por mejorar la educación, la idea que subyace es la creación de relatos políticos que den legitimidad a sus políticas. Nada mejor en la época del dataísmo que usar lenguajes basados en datos y evidencias para conectar con marcos mentales de objetividad, verdad o ciencia, que den legitimidad a estos relatos.

Introduction

Innerarity (2020, p. 9) states that "[l]a principal amenaza de la democracia no es la violencia ni la corrupción o la ineficiencia, sino la simplicidad"

and that "[l]a uniformidad, la simplificación y los antagonismos toscos ejercen una gran seducción sobre aquellos que no toleran la ambigüedad, la heterogeneidad y plurisignificación del mundo, que son incapaces de reconocer de manera constructiva la conflictividad social".

In this sense, the same author, Innerarity (2021), talks about how the paradigm of measurement promises to manage this complexity of modern democracies, and how this has been constituted in what he calls *dataism*:

> Mi hipótesis es que el dataísmo, es decir, la creencia de que la cuantificación produce la verdad, privilegia una falsa idea de la objetividad y proporciona una certidumbre engañosa que impide un conocimiento cabal de la realidad, sobre el que deberían adoptarse las correspondientes decisiones.

On this phenomenon of oversimplification in education and policy decision-making, Wrigley (2019, pp. 1-2) says

> examine inadequate theorisation and mechanistic causal assumptions in education which result in a loss of complexity, openness and values. This seems particularly appropriate at present for England and similar systems, where reductionist approaches have become hegemonic in many aspects of schooling. In recent years, a strident ideological campaign, led by government ministers, has sought to reconceptualise and reconfigure what counts as educational achievement, high-quality teaching, social justice and research evidence.

Other authors such as Denzin (2009) join in this criticism. Although for us one of the main consequences of this situation is, as we will see below, the return to the consideration of education as a technical matter (Wrigley, 2019, p. 2): "This involves not only the depoliticisation of politics and policy (Harvey, 2010: 218–219), but also a shift towards a technical discourse when considering curricular and pedagogical issues and practices."

In the end, in this search for *evidence-based objectivity*, the only way to make social science problems, and especially education problems, fit into their scientific perspective and methods is to reduce their complexity by removing elements, connections, keys or cultural structures from the problems.

In this paper we present how this same phenomenon that occurs in politics is occurring in educational research and in the reception of

its findings by teachers, an issue that feeds back into and conditions educational research itself. Because, furthermore, how it is received by teachers is, inescapably, a political question. We are therefore going to try to describe the problems presented by this hegemony of the evidence-based perspective, as well as to delve into the reasons for its dissemination in the educational and political world.

Some background: knowing the past to understand the present

The Paradigm War

Fernández-Navas and Postigo-Fuentes (2020) explain the end of what has come to be called the *Paradigm War* (Denzin, 2010; Gage, 1989; Given, 2017; Maxwell, 2010), which is how the confrontation between the positivist paradigm, on the one hand, and the interpretive and critical paradigm on the other, which took place in the 1980s and 1990s, came to be known.

Thus Fernández-Navas and Postigo-Fuentes (2020) explain that the educational research that had flourished in the 1960s and 1970s, heavily influenced by positivism and extolling what was then known as the scientific method for researching and developing teaching, gave rise to a hierarchy of scientific methods and conceptions for producing valid knowledge based on fundamentally quantitative methods. However, these did not produce the expected results.

In the face of this unease, criticisms of this way of understanding education and educational research flourished (Fernández-Navas and Postigo-Fuentes, 2020):

> que los actos de los seres humanos, incluyendo la enseñanza y el aprendizaje, están estrechamente ligados a las intenciones, objetivos y propósitos que les dan significado. La perspectiva positivista de la ciencia parte de la idea de que existen vínculos causales directos y unidireccionales. Sin embargo, muchos teóricos sostienen que no existen conexiones causales entre el comportamiento del maestro y el aprendizaje del alumno. (p. 47)

In this sense, the researchers of the positivist paradigm understood the study of behaviour as an objective matter, without assuming that the behaviours of human beings are the result of the interpretations we make of the situations we are presented with. Thus, the causality that the

mechanical, chemical or biological perspectives allowed the positivists, by which they established cause-effect explanations between variables and their "hypothesis of uniformity" and by which they understood that phenomena occur in the same way in different places and at different times, was questioned.

The critique was complemented by the contributions of the critical paradigm that demanded the need to understand education in relation to society, as well as the ideology underlying the constructions of concepts such as knowledge, curriculum or teaching, posing education as another space of class and power struggle.

As we will see below, we find ourselves in a situation of a new reconfiguration of paradigm warfare in which what has come to be called evidence-based education plays a prominent role.

The origin of the evidentialist perspective

Before delving into the implications of evidence-based education, it is necessary to understand its origin. According to Fernández-Navas and Postigo-Fuentes (2020), it is the reflection of Hargraves (1996) that openly raises the problem that educational practice is not taking into account the advances that have been made in research in this field.

In the same sense, Hederich, Martínez Bernal and Rincón Camacho (2014, p. 24) state:

> [s]e identifica la conferencia de D. Hargreaves (1996), [...], como el evento fundacional de lo que más adelante pasaría a llamarse una "enseñanza basada en la evidencia". Como se mencionó, inicia Hargreaves (1996) su conferencia con la idea de que la enseñanza no es, en este momento, una profesión basada en la investigación, lo cual explica muchas de las dificultades que enfrenta. De acuerdo con el autor, para llegar a serlo deben darse cambios profundos; por un lado, en el tipo de investigación que se hace en educación, y por otro, en los modos en los que esta investigación se organiza y se disemina.

The problem here is that, while what Hargraves (1996) calls for is reasonable and even desirable, it is not what "evidence-based education" represents, which puts forward a very specific perspective of what it means to educate and what it means to research (Wrigley, 2018).

Ferrero (2018) states that this evidentialist perspective is "aquella basada en las mejores pruebas disponibles" and that it is based on: large samples, use of control and experimental groups and measurement of the "effect size", measuring efficacy through statistical analyses whose aim is replicability and whose star methodology is usually meta-analysis and systematic reviews.

Authors such as Biesta (2007) have long been raising the dangers of the shift of "evidence- based education" towards a technocratic perspective on education.

> On the research side, evidence-based education seems to favor a technocratic model in which it is assumed that the only relevant research questions are questions about the effectiveness of educational means and techniques, forgetting, among other things, that what counts as "effective" crucially depends on judgments about what is educationally desirable. On the practice side, evidence-based education seems to limit severely the opportunities for educational practitioners to make such judgments in a way that is sensitive to and relevant for their own contextualized settings. The focus on "what works" makes it difficult if not impossible to ask the questions of what it should work for and who should have a say in determining the latter. (p. 5)

The problem, as the authors see it, is that evidence-based education systematically forgets to make explicit that its quality criteria and the perspectives of the areas of knowledge on which they are based (fundamentally the cognitive-behavioural perspective of psychology) are just that, a concrete perspective of the many available within methods and disciplines. Ignoring this issue, taking advantage of this culture of dataism (Innenarity, 2021) mentioned above and together with the new needs for political legitimisation which we will discuss later, this evidentialist perspective is becoming widespread among teachers and politicians which, in turn, feeds back into the strength of this trend.

The epistemological problem, situated knowledge and transferability

The criticisms of the positivist paradigm described in the previous section crystallise what we call the epistemological problem of the evidence-based perspective.

First of all, it should be noted that education is framed within the social sciences and that these, due to their idiosyncrasies, have very different characteristics to the natural sciences (Vasen 2012, 2018).

In this type of science, the fundamental way of conducting research is based on the search for causality and for this purpose the experimental or quasi-experimental method is used. Through which we see what effects are caused by the changes introduced in the variables. With this we guarantee causality. In other words, the effects produced are only due to the changes introduced (Maxwell, 2012).

This is why it is very important in this type of methodology to "isolate external variables". In other words, the experiment must not be contaminated by anything that could produce that change and, therefore, lead us to make a mistaken attribution of causality.

The epistemological problem with the *evidence-based* approach to education is that the use of experimental or quasi-experimental methods is quite complicated in education, given the nature of the problems it studies. How can one guarantee without a high degree of uncertainty that the observed effects are due solely and exclusively to the changes introduced and not to the immense variety of variables that occur in the social sciences? Isolating variables is controversial in our field.

In addition to all this, there is the *problem of the abstract*: the educational concepts we deal with are complex constructs that often do not have an exact or universal definition, which makes the translation of these concepts into experiments to achieve causal relationships in education and social sciences complicated, to say the least. Biesta (2007) explains it clearly as follows

> the most important argument against the idea that education is a causal process lies in the fact that education is not a process of physical interaction but a process of symbolic or symbolically mediated interaction. If teaching is to have any effect on learning, it is because of the fact that students interpret and try to make sense of what they are being taught. It is only through processes of (mutual) interpretation that education is possible.(p. 8)

This is why, in social sciences, we should speak of situated knowledge, i.e. context-dependent, so that there are few universalities (Maxwell, 2019; Flyvbjerg, 2004). These cause-effects, the object of search from the positivist paradigm, are rarely found in social sciences, where,

as in the Paradigm War, as the interpretive paradigm proposed, they depend on the contexts, culture and the meanings we attribute to these cause-effects (Alcaraz-Salarirche, 2014; Pérez-Gómez, 2000; Bruner, 1990; Erickson, 1986; House, 1991; Mohr, 1996; Pawson, 2006; Sayer, 1992; Bhaskar 1989). In the words of Gage (1989, p. 5): "The effects on people's actions of their interpretations of their world create the possibility that people may differ in their responses to the same or similar situations".

This is why different authors (Maxwell, 2010, 2012; Korstjens & Moser, 2017; Lincoln & Guba, 1985; Tracy, 2021) point out that in social science we should focus on transferability, i.e. that by understanding complex processes and realities, issues can be found that can be implemented in different contexts by another researcher or practitioner (Flick, 2018).

However, and despite the criticisms that already motivated the Paradigm War in the 80s and 90s, for the "evidence-based" perspective, the claim of what the educational world should aspire to goes in the opposite direction (Denzin, 2009).

Although this conception of what science is about is equally controversial (Feyerabend, 2017), it has the advantage that it is closer to the idea of science that circulates in the social imaginary. Feyerabend (2017) argues that the idea that science must follow fixed universal rules is unrealistic and harmful, as it assumes a simplistic view of human creativity and the circumstances that drive it. Moreover, this idea harms both individuals and science itself, as it neglects the complex physical and historical conditions that influence scientific change.

Wrigley's reductionisms

As we have seen, there is a critique of the evidence-based perspective that goes back to those that positivism received in the Paradigm War. These critiques have become commonplace over time and whose new value with respect to the previous paradigm is represented by what Wrigley (2019) calls "reductionism" and which maintains the illusion that the evidentialist paradigm represents a solution to the unsolved problems of previous paradigms. According to Kuhn (2011), this illusion is crucial for a paradigm shift to take place.

These reductionisms can take many forms, but are basically defined as a loss of complexity that prevents an adequate understanding of real-

ity from one perspective. They can range from the inappropriate use of one scientific discipline to explain issues that require a different one, for example, trying to explain biological phenomena mainly through chemistry, or education as solely a learning process (Biesta, 2017), to one of the most frequent, that is, the omission of important causes of a multicausal situation.

In this sense, Wrigley (2019) identifies several of these reductionist simplifications that evidence-based education commits in order to address educational problems from its presuppositions, thus resulting in a reductionist understanding of education.

Experimental reductionism

In the first place, there is this reductionism, which we have already hinted at in previous sections and which has to do with the limitations of experimental methodology as a way of producing knowledge in the social sciences and especially in education.

The purpose of experiments is to simplify and artificially isolate a situation in order to make a relationship between study variables more visible. Experiments are designed to isolate or eliminate other relationships in order to observe the impact of the dependent and independent variable of the research. Reductionism becomes a danger when the experiment is assumed to reflect reality, rather than being a simplified and reduced model of very specific aspects in an isolated situation. In the words of Rose (2005):

> What happens in the test-tube may be the same, the opposite of, or bear no relationship at all to what happens in the living cell, still less the living organism in its environment. Reductionism is not enough when I come to try to interpret my own experiments (p. 79)

In this sense, to reduce the social world to the actions and decisions of individuals or groups is to fail to understand how social structures, although often not directly visible, are determinant in creating an understanding of causality. Reductionism, in this case, is to remove from the situation of study questions about how norms, even if tacit, regulate behaviour, how roles determine their effects, and that role relations

involve the establishment of emergent powers that cannot be reduced to those of individuals in isolation (Bruner, 1990). Despite all the efforts of positivists, it is difficult to maintain the belief that "army is just the plural of soldier and all statements about the army can be reduced to statements about the particular soldiers comprising it" (Jarvie, 1959, pp. 151 cited in Wirgley, 2019).

The reductionism of a certain hegemonic psychological perspective

On the other hand, there is the psychology of education perspective, which Wrigley (2019) explains as follows

> The history of 20th-century pedagogical theory can be written as a struggle against reductionism, a struggle which was itself seminal in its two leading figures, Dewey and Vygotsky. Reich et al. (2016) summarise Dewey's contribution as a 'constant struggle against behaviourism and instrumental reductionism... insistence on context', with behaviourism guilty of forgetting 'emotional, social and cognitive aspects of experience'. (p. 152)

The link with positivism is explained by Fernández-Navas and Postigo-Fuentes (2020, p. 55) referring to the influence of psychology in education: "A trend for which psychology is largely responsible - let us not forget that the "war of paradigms" was also a "war of disciplines" (Gage, 1989) - a field that has been configured during the 20th century as a fundamentally positivist science".

Thus, experimental sciences are gaining influence in the social and human sciences, for example, biologically based analyses and theories are increasingly present in psychology and sociology.

In order to simplify the problem of studying human behaviour and to ensure the control of variables through experimental reductionism, human behaviour is studied as the behaviour of a mammal. The whole cultural part, social structure or role is removed from this equation. What consciousness and psyche contribute to human behaviour is ignored. This problematic trend in psychology has already received a devastating critique from Bruner himself (1990) when he argues that the solution to the problem of universals lies in questioning a fallacy inherited from the 19th century, which suggests that culture is a "superimposed layer"

on biologically determined human nature. The author argues that the real causes of human behaviour are culture and the search for meaning within it, while the biological substrate is not a cause, but rather a constraint or condition.

Another reductionism of the psychological current that supports the evidentialist perspective is physicalism (Wrigley, 2019), i.e., the attempt to analyse the human mind in terms of brain functions. Thus, the mind is conceived of as just a functioning brain.

Examples of this way of understanding the human mind can be seen constantly in education: the conception of reading and writing as exclusively phonic correspondences, resorting to stimulus- response techniques; the rise of brain scans and derivatives based on the belief that they provide an adequate description of thinking, which has been criticised by Biesta (2017); or the idea associated with the possibility and accuracy of measuring learning, understanding it as reproduction and confusing information and knowledge (Pérez-Gómez, 2012).

Bruner (1990), who explains how psychology took a turn away from talking about meanings and began to talk about information processing in the computational metaphor, also makes a similar statement:

> Este nuevo reduccionismo proporcionó un programa sorprendentemente libertario para la ciencia cognitiva que estaba naciendo. Su grado de permisividad era tan elevado que incluso los antiguos teóricos del aprendizaje E-R y los investigadores asociacionistas de la memoria pudieron volver al redil de la revolución cognitiva, en la medida en que envolvieron sus viejos conceptos con el ropaje proporcionado por los nuevos términos del procesamiento de la información. No había ninguna necesidad de trapichear con los procesos «mentales» o con el significado. El lugar de los estímulos y las respuestas estaba ocupado ahora por la entrada (input) y la salida (output), en tanto que el refuerzo se veía lavado de su tinte afectivo, convirtiéndose en un elemento de control que retroalimentaba al sistema, haciéndole llegar información sobre el resultado de las operaciones efectuadas. En la medida en que hubiese un programa computable, había «mente». (pp, 23-24)

In contrast, Vygotsky's insistence on the connection of the individual mind to culture, history and society, together with the fundamental importance of active meaning-making through speech and other sign systems, lays the foundation for a wide range of pedagogies that are not limited to the reproduction and acquisition of pre-established facts.

Social class reductionism and academic performance

Another common source of reductionism that comments on the evidentialist perspective in order to address educational problems is often the relationship between poverty and underachievement.

Understanding this complex relationship requires drawing on many areas of knowledge and different paradigms within them. In this sense, having data is important, but data alone does not identify the underlying causes. Understanding them requires a systemic approach that includes complex issues such as mechanisms of exploitation or forms of circulation of financial capital. The same applies to the concept of the lower classes, which in the last decade has been blurred by the concept of precariousness, which normally includes the middle classes whose position in the economic world is defined by the fact that they do not own the means of production. This issue is further exacerbated by the globalisation of the economy (Castells, 2001).

Understanding these issues requires familiarity with deep theoretical understandings of the concept of social class, moving away from reductionisms such as lifestyle and recognising the strong influence of parental qualifications on children's performance, which is not to deny economics, but to recognise the cultural means by which economic advantage is transmitted between generations (Bourdieu and Passeron, 2018).

Reductionist interpretations of the relationship between social status and educational performance take many forms, but crucially omit key layers and causal relationships. (Wirgley, 2019). For instance, placing teacher responsibility for student underachievement at the centre ignores economic, cultural and psychological pressures.

Conversely, theories of genetically inherited intelligence represent a highly biased reduction from psychological and cultural to biological levels of explanation.

The 'lack of aspiration' argument and the demand for greater personal 'resilience' shift the burden onto the individual, forgetting that it is difficult to maintain high aspirations without appropriate opportunities or without taking into account the role of cultural capital (Bourdieu and Passeron, 2018).

The recent neoliberal reformulation of social justice as "social mobility" (and more recently the frequent calls for a "social lift") within a

supposedly fair meritocracy (Littler, 2018) is a denial of the power-maintaining structures of the higher social classes that holds the individual responsible for their failure, despite all the data from different research highlighting the reproduction and legitimisation of social classes that this meritocratic idea entails (Barragué, et al, 2022).

A non-reductionist attempt to "close the gap" must look both outside and inside the school. This would imply, on the one hand, actions at the societal level, as well as bringing together different educational and sociological analyses and theories.

On the other hand, it also requires taking into account pedagogical issues such as promoting perspectives away from the simplification of education, understood as the academic performance of students, the development of activities that allow students to build a value of knowledge use (Santos-Guerra, 2001) or making curricular issues more flexible and away from the bureaucracy and technocratic perspective.

Efficiency reductionism

Another one of the reductionisms necessary for this evidence-based perspective to generate the illusion of functioning has to do with the perspective that understands education as effectiveness.

School evaluation and school development are understood in many countries through the paradigms of effectiveness and school improvement. This has much to do, as we have seen, with the influence of a certain psychological perspective in education, a danger of which Gimeno-Sacristán (1982, p. 16) warned us about: "[e]l rendimiento cuantitativo se asoma ya al terreno pedagógico como en algún modo equivalente a cualidad o la calidad de la educación: Una concepción rentable y eficientista de la calidad de la educación."

This reductionism includes the tendency of neoliberal accountability systems to treat schools as isolated entities operating under the industrial metaphor, disconnected from the lifeworlds of learners, beyond school, society, economy or culture (Wrigley, 2019; Zeichner, 2022). The same applies to specific teaching areas in which evidentialism simplifies the objects of study and tends to ignore processes of learning.

The similarity of this reductionism of efficacy to another aspect of the evidentialist perspective we have already discussed is striking. This idea

that measurement becomes the objective, thus obscuring the appropriateness of objective and measurement. In the words of Gimeno-Sacristán (1982, p. 21): "La eficacia adquiere valor en sí misma, sin poner claramente de manifiesto *en orden a qué* es eficaz".

Research in the glass bell: the quality of research problems

Another one of the reductionisms that, for us, this evidence-based perspective raises is what Fernández-Navas (2022) calls *research in the glass bell* and which, in part, has much to do with what we have already discussed about experiments, causality and the need to isolate variables as a reductionism of reality that the evidentialist perspective requires.

But it also has to do with an intention to make education an objective matter, as was done (wrongly in our opinion) with psychology (Bruner, 1990), understanding that there are hierarchies between sciences and methods, where the experimental holds a privileged place and is associated with objectivity, although epistemologically, as we have seen, the field of study has other characteristics.

Under these premises, it is imperative to remove layers and layers of complexity from the problems to be studied so that they can fit into the experimental methodology: problems are simplified in order to measure them, because in this way they are more "objective", more "scientific", but in reality they are falling into experimental reductionism as we have seen. In trying to make educational problems quantifiable and experimental, they become so simplified that they no longer answer the questions initially posed in practice. An ad hoc reality is invented in which to quantify, to "study inside a glass bell", but when leaving this glass bell, the solutions found are no longer useful for practical problems, where the control of variables achieved in the experiment (by simplifying the problem) is no longer possible.

A mixture of these reductionisms that we have detailed so far can be clearly seen in much of the research on homework, research on reading and the use of digital media, or research comparing public and semi-private/private institutions. They tend to leave out any issues that are subject to social and cultural context or to the different interpretations of the subjects of the study. On the other hand, very different theoretical perspectives on the same concept are omitted, thus removing any complexity, richness and possibility of theoretical discussion. Moreover, these

issues are rarely made explicit in these studies, thus failing to comply with the criterion of transparency that all research should have (Tracy, 2021).

Only in this way is it clear that in most of them, the definitive measure for comparing what works and what does not is usually academic performance, despite the fact that the inference of cognitive processes and learning from this is a more than controversial issue in cognitive-behavioural psychology itself (Soderstrom and Bjork, 2015) and more than surpassed in traditions such as interpretative or critical psychology (Bruner, 1990; Pérez-Gómez, 2000; Alcaraz-Salarirche, 2014; Stenhouse, 1997, 2021a, 2021b); also, how social class reductionism occurs in which social class takes a second place to academic performance in homework research, despite the fact that, as mentioned above, it is necessary to understand all the social structures of power and oppression that influence performance and especially homework that is, by definition, done at home.

In the end, in this quest for *evidence-based* objectivity, the only way to make social science, and especially education, problems fit into their *scientific perspective and methods* is to reduce their complexity by removing cultural elements, connections, cues or structures from the problems.

In contrast to this perspective based on reductionism, authors such as Tracy (2021, p. 180) stand out, stating that what is important for good research is what she calls "valuable subject matter", which has to do with it being "relevant, timely, significant, interesting or evocative" and for this, among other things, complexity is sought in the problems to be investigated: contemporary controversies or issues that can provide keys to a deeper understanding of them, through situations of "educational authenticity" in the problems being investigated and whose complexity is considered an opportunity and a richness for research, as opposed to simple problems, which are the result of reductionism or which have had layers and layers of complexity removed. As Tracy (2021) puts it

> Las investigaciones que son contraintuitivas, que cuestionan supuestos dados por sentado o que desafían ideas bien aceptadas suelen ser valiosas. [...] Por eso son intrínsecamente interesantes los estudios sobre fenómenos poco conocidos o contextos evocadores. También por eso la gente se siente atraída por las investigaciones que dan un giro a los supuestos de sentido común. Cuando la investigación se limita a confirmar los supuestos existentes, la gente negará su valor aunque

reconozca su verdad. En resumen, el público pensará "eso es obvio" en lugar del más codiciado "eso es interesante" (p. 180)

Understanding education as a technical matter: the re-emergence of the technocratic paradigm

Professor Gimeno-Sacristán (1982) said that education is not a technical matter, thus, he criticises those perspectives that try, within the paradigm of efficiency we have already mentioned, to reduce educational decision-making to a technical matter detached from any kind of underlying theory and ideology.

This represents a de facto impossibility, as Gimeno-Sacristán (1982, p. 64) puts it: "any technique and any practice cannot be considered apart from a certain knowledge base. Action is always guided by a thought, even if it is implicit for the one who executes", is produced with the intention of hiding the underlying theories for reasons that we will see later on and that Inglis (1985, p.40) already anticipates when he states that people who believe they lack theory "están atrapados por las teorías que los atan y los inmovilizan, porque no tienen posibilidad de pensar sobre ellas y por tanta de eliminarlas. No carecen de teoría; son teóricos estúpidos"

In this sense, the radical change we have witnessed in the type of professional that teachers should be is striking. Until around the 1990s, there was a whole current calling for the need for reflective professionals (Schön, 1987) and for teachers as researchers of their own practice (Elliott, 1993, 2022) whose argumentation linked the constitutive interests of Habermas' knowledge (1984) to differentiate what came to be called technical, practical and critical professionals established by Zeichner and Liston (1987) and which in our country was rescued by Professor Trillo-Alonso (1994). All these discourses arise as a response to the commercialisation of education and the bureaucratisation of the teaching profession through technical paradigms based on efficiency (Gimeno-Sacristán, 1982). These were the high points of what came to be called "pedagogy by objectives". The flourishing of the endless programmed teachings that Gertrúdix (1999, p. 22) qualifies as "an absolutely diabolical instrument".

The criticism of this paradigm is addressed by Contreras-Domingo (1990) through what he calls "proletarianisation of teachers", referring to the subversive mechanisms by which, with this pro- efficiency vision of education, teachers lose their autonomy and become technical professionals, applying methods designed by others. Trillo-Alonso (1994) defines this as:

> Al técnico le preocupa el cómo: cómo hacer lo que le dicen que haga. El qué hacer no es cosa suya, le viene dado […] El técnico es, por lo tanto, muy jerárquico, y asume sin cuestionar su condición: la más baja, según él (o ella) en el organigrama de cuantos tienen que ver con el currículum. Reproduce así, sin saberlo, la clásica división entre lo intelectual y lo manual (que supondría aquí la puesta en práctica). En el reconocimiento de que «es un mandado», hay cierta resignación, pero también cierto alivio; la responsabilidad no es suya: «Que hagan bien las cosas» los otros… (pp. 70-71)

In this sense, a number of issues stands out: the abandonment, as we said about these discourses, of the type of professional that teachers should be, along the lines of a critical, reflective professional who is conceived as a researcher of his or her own practice; the resurgence of Bloom's famous (and old) taxonomy as the star element of current curriculum design, which indicates that the latest educational policies and laws have turned towards this efficiency paradigm that Gimeno-Sacristán already criticised in 1982; the bureaucratisation of teaching and the proletarianisation of the teaching staff that we were talking about; and the claim of evidence-based education that, in the words of Ferrero (2018) "No es convertir al maestro en investigador. El maestro es maestro. El maestro tiene que enseñar. La investigación se deja para los investigadores".

Everything seems to reflect that the new competences and the policies derived from them have brought back old paradigms. This is far from being a step towards the development of reflective and critical teachers, who are masters of their professional knowledge and who see themselves as researchers of their own practice, what Biesta (2017) calls wisdom understood as "virtuosity in making educational judgements".

This issue was already anticipated by Gimeno-Sacristán in 2008 when he asked "Educating by competences, what's new?" and explained that it is common for languages and metaphors to appear that rename what is

known in an apparently new way. This situation may generate perplexity and enthusiasm, but these new languages may be necessary to address new realities or they may be created to serve specific interests of powers and bureaucracies, or to express the conceptions and proposals of experts with greater precision and to maintain their privileges.

In this situation, teachers find themselves trapped in this avalanche of bureaucracy and new languages that very effectively produce their "de-professionalisation". Evidence-based research is a "raft of oil" that offers reassurance and less accountability under the false paradigm of simplicity. At the same time it blocks criticism against the evidentialist perspective itself. In the words of Wescott (2022):

> In a post-truth paradigm, dismissal of research claims is akin to scientific scepticism, a betrayal of intellectual ethics of teacher practice, placing teachers in an impossible bind where the evidence, despite questions about its efficacy, is protected by a discursive paradigm that makes it impossible to question (p. 15)

It whispers in teachers' ears that they should not think, but only execute what others design, but this, as Han (2020) has already pointed out, is only a modern form of self-exploitation that also represents a serious problem for the purposes of education. The feedback from teachers' reception of and demand for these kinds of findings is discussed in the introduction to this paper, and its link to education policy is discussed in the next section.

Conclusions: Making 'evidence-based' policy decisions and house of cards. From honest concern for educational improvement to the construction of narratives

Throughout this work we have seen how one of the dangers of the new democracies in societies as complex as today's is, according to Innerarity (2020), their simplification. In this sense, what the same author calls dataism appears, which produces an idea of credibility, objectivity and, therefore, demand for data as unquestionable scientific truth. It is in this context that evidence-based education and research have become relevant.

Following on from this idea, we have tried to raise issues related to epistemology to then delve into what Wrigley (2019) calls the reductionisms that this evidentialist perspective must assume in order to be able to deploy its theories and research.

Finally, we have connected how this perspective implies the resurgence of an old vision of education as a technical matter, on which we have delved into its inconsistencies and difficulties.

One might ask, then, at this point: where does the policy interest in evidence-based research in education come from? Or in short, *evidence-based education*.

Wrigley (2019) says that we may also find ourselves in a predisposed political situation, with a certain rush to find quick answers and simple solutions to complex problems. This, together with the dissolution of public discussion on philosophical and substantive issues in today's democracy itself (Innerarity, 2020), produces:

> In their eagerness for a bargain, in their zeal to explain too much too fast, scientists and philosophers...underestimate the complexities, trying to skip whole layers or levels of theory in their rush to fasten everything securely and neatly to the foundation. (Dennett, 1995, p. 82 citado por Wrigley, 2019)

Our view is that this policy interest in the evidentialist perspective has to do, rather than with an honest concern for improving education, with a political function of reforms (Sola, 2004) in the sense that Lakoff (2017) understands the creation of new languages and mental frameworks.

Thus, the culture of *dataism* coupled with the political legitimation framework provided by language is much better induced when advocating that policy decisions are made *on the basis of evidence*. These languages activate a mental framework in society and education professionals that has to do with "certainty", "objectivity" and "science", issues that are highly desirable to be associated with certain policy positions.

We have had an example of this approach with the COVID, where in every governmental appearance this language of evidence-based decision making, or the continuous references to the expert committee, specifically surfaced.

The evidentialist perspective simplifies life for the political narrative, as it provides data and languages that allow the framework of political legitimisation to be projected from the objectivity and responsible,

professional and scientific decision-making of the party in power, producing perverse effects on the research that is promoted (Fernández-Navas, Alcaraz-Salarirche and Pérez- Granados, 2021; Fernández-Navas et al, 2020) and which, in the words of Wescott (2022, p. 5), "Policymaking reliance on evidence-based rhetoric also precludes the possibility of problematizing evidence, and rejects research that does not comply with its methodological prescription".

All this explains the concern expressed by Gimeno-Sacristán (2005) about the discourses of educational reforms.

> En las discusiones sobre las reformas educativas se favorecen muy poco los debates que traten temas trascendentales, como por ejemplo: para qué queremos el sistema educativo y de qué conviene ocuparse dentro de él. En cambio, se invierten sumas ingentes de esfuerzos y de recursos en debatir problemas menores, impuestos por los lenguajes esotéricos de algunos expertos al servicio de políticos, que en ocasiones también prefieren el lenguaje opaco de los tecnicismos, en vez de desarrollar el que debería serles más propio. El discurso pretendidamente técnico es una coartada para evitar la discusión pública sobre dilemas más sustanciales. (p. 69)

This is not acceptable if we want to improve education. This evidence-based perspective of education falls far short of offering quality answers to the problems of education. Because, besides, we have already been there. The main problem that started the paradigm war as we have seen at the beginning of this paper was Barrow's (1984, p. 213) critique of the positivist paradigm in education, which had been shown to be "inadequate to tell us anything secure and important about how teachers should proceed in the classroom".

The return to this starting point is as Gimeno-Sacristán (2008) announced when talking about the reasons for the emergence of new languages in education: "creaciones de expertos en búsqueda de fórmulas para expresar sus concepciones y propuestas con más precisión, pero también con la finalidad de mantener sus privilegios."

What is needed is what Wescott (2022) calls for:

> In order to achieve a greater harmony between policy initiative implementation and the valuing of teacher knowledge, the impenetrable reverence for evidence-based policy and clinical rationalities needs to be dismantled. Critique of these paradigms should not be aligned with a post- truth condition that has witnessed the rise of research denialism

and scientific scepticism, but might instead be seen as the practice of informed critique in the spirit of intellectual rigour and democratic engagement (p. 16)

This leaves open the question that most educational research continues to be carried out in the academic environment, where the meritocratic system and the prevalence of publications in indexed journals perpetuates the hegemony of the positivist paradigm. This produces the idea of what Herzog et al. (2015) call "de-subjectivisation", which can be summed up in the question of whether art is art because it is in a museum, or whether it is in a museum because at a previous moment it was already art. This concept could be extended to the question of whether the quality system of journals favours experimental articles, as recent research in our country shows (Fernández-Navas, Alcaraz-Salarirche and Pérez-Granados, 2021; Fernández-Navas et al, 2020).

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Information address: Manuel Fernández Navas. Universidad de Málaga, Facultad de Ciencias de la Educación Departamento de Didáctica y Organización Escolar**.** Bulevar Louis Pasteur, 25, 29010, Málaga, e-mail: mfernandez1@uma.es