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The educational and pedagogical intervention in scientific research

La intervención educativa y pedagógica en la investigación científica

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ABSTRACT

Educational intervention requires professionals to act responsibly by employing methods and procedures that ensure appropriate outcomes. In addition, they must submit their interventions to an analysis based on scientific research for accurate evaluation. It is important to note that educational intervention and pedagogical intervention are not identical concepts, and it is necessary to establish the differences between the two. Educational intervention implies respecting the agency of the learner, which means that the educator's actions should result in a response on the part of the learner that does not necessarily have to be intentionally educational in nature, but may be a genuine outcome. On the other hand, pedagogical intervention refers to intentional actions that are carried out in the context of the educational task, with the purpose of achieving objectives and using resources supported by sound knowledge about education and the functioning of the educational system. This paper addresses the uniqueness of educational intervention and highlights its strength and validity when based on scientific research.

Keywords: Educational Intervention; Pedagogical Intervention; Scientific Research.

RESUMEN

La intervención educativa requiere que los profesionales actúen de manera responsable al emplear métodos y procedimientos que aseguren resultados adecuados. Además, deben someter sus intervenciones a un análisis basado en la investigación científica para una evaluación precisa. Es importante destacar que la intervención educativa y la intervención pedagógica no son conceptos idénticos, y es necesario establecer las diferencias entre ambos. La intervención educativa implica respetar la agencia del educando, lo que significa que las acciones del educador deben dar lugar a una respuesta por parte del educando que no necesariamente tiene que ser de naturaleza intencionalmente educativa, sino que puede ser un resultado genuino. Por otro lado, la intervención pedagógica se refiere a acciones intencionadas que se llevan a cabo en el contexto de la tarea educativa, con el propósito de alcanzar los objetivos y utilizar los recursos respaldados por un conocimiento sólido sobre la educación y el funcionamiento del sistema educativo. En este artículo, se aborda la singularidad de la intervención educativa y se destaca su fortaleza y validez cuando se basa en la investigación científica.

Palabras clave: Intervención Educativa; Intervención Pedagógica; Investigación Científica.

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INTRODUCTION

Educational interventions are a concern for researchers worldwide, spanning various branches of knowledge. The goal is to move beyond the era where decisions were based on intuitions or personal criteria.[1]

The rapid pace of scientific and technical development imposes on professionals the necessity to cultivate investigative competencies. This is crucial for the effective utilization of educational intervention as a feasible technique to identify and address specific problems. Furthermore, it is considered as a program or a series of specific steps contingent on a defined purpose and the targeted audience.[2,3]

This technique has been increasingly developed and accepted due to the positive results obtained. Today, it is an integral part of the regular practice of many professionals aiming to implement actions that lead to improving opportunities in the lives of individuals of any age, sex, race, or social status. [4,5,6]

The guiding framework of educational intervention focuses on four lines of support:

- Psychopedagogical and psychoactive support.
- Support for the prevention of psychosocial risks.
- Support for student participation.
- Support for training and guidance for families.

DEVELOPMENT

It is known among professionals that educational intervention can hardly be comparable to the administration of a specific treatment, such as a medical treatment with tablets, indicating the necessary procedure and dosage to achieve the expected effects. [7,8] Contrary to a medical treatment, the evaluation of expected outcomes from an educational intervention is pivotal. It is imperative to be able to ascertain whether there is an improvement in teaching and learning practices. In the educational context, this involves adhering to general principles that are particularly relevant for all education professionals aiming to engage in educational interventions as a response to the need for substantiating and evaluating effectively their educational practices through the utilization of scientific research.[9]

According to the researchers from the Universitat Oberta de Catalunya, Meneses, J, Jordi Bernabeu, J, Bonillo, A., Eiroa, F.J, Rodríguez, S., Valero, S., Valle, J., (2018), among the principles that can be useful in guiding the different phases of the research and, consequently, the evidence that the educational intervention service allows obtaining, the following are highlighted:[10]

- Principle of opportunity. It is the need to start with a good definition and justification of a research question that will guide the entire process and serve to respond to a necessity. It is essential to formulate a relevant problem for educational practice, usually derived from direct experience with phenomena of interest. This must allow an initial assessment of the situation and, subsequently, the foundation of a specific intervention in relation to the knowledge established in any theory previously developed within the framework of scientific research.
- Principle of coherence. It refers to the choice of the most appropriate methodology to respond to it. As a consequence of this reasoned choice, the chosen research method will serve as a framework to guide all decisions involved in determining the type of information needed -whether quantitative, qualitative, or a combination of both-, the selection of the most suitable techniques to systematically collect it, the identification and selection of the participants necessary to do so, and finally, the organization of all the logistics involved in the development of the fieldwork that ensues.
- Principle of rigor. This principle has to do with the scrupulous fulfillment of the plan that has been previously outlined with the aim of systematically collecting and analyzing the information obtained in the systematization of the literature. It is not only important to initiate new investigations, but also demands to do so based on the results obtained by other researchers previously.
- Principle of transparency. This principle encompasses the unavoidable commitment to be accountable for each and every decision that leads to answering the initial question. In this sense, it is not only necessary to adequately present the conclusions from which new knowledge is established, but, more importantly, to provide evidence justifying them and a detailed description of all procedures conducted to obtain them. This allows the research process to undergo independent external scrutiny.

Adhering to fundamental principles such as opportunity, coherence, rigor, and transparency, which guide the practices and procedures involved in research, should not lead us to overlook the fact that not all methods are equally appropriate for addressing a specific question. It is not the same to aim to determine what works by comparing the results of different types of educational intervention, than trying to delve into the reasons why it works in education.[11]

On the other hand, researcher Touriñán, J.M. (2011) from the University of Santiago de Compostela, considers that, taking into account the perspective of education knowledge, educational intervention is always techno-axiological, because:[12]

- Educations is always an education in values, shaping the character and significance of education.
- Education is always implemented through agents in a specific area of intervention.
- Education always involves technical intervention of varying degrees (technical decisions are made in specific processes) within a particular education domain.

To fully comprehend the significance of educational intervention in scientific research, particularly in terms of the evidence it provides, it is essential to briefly delve into a crucial concept, such as that of research validity.[13,14]

If we consider its etymological origin, the term *validity* is derived from the Latin adjective validus, which reflects the property of strength, power, or capacity of the things, people, or ideas it qualifies.[15]

In this sense, concerning the scientific research process at hand, validity refers to the extent to which the evidence we can obtain, and upon which it is based, accurately corresponds to what really happens with the phenomena we want to understand.

It is possible to identify different types of validity, and in this article, we will focus on the two most important types:

- Internal validity would be related to the assurances that a particular study can provide regarding the extent to which the observed relationships are indeed sufficient evidence to infer the existence of causal relationships.
- External validity concerns the assurances we possess that the research outcomes genuinely constitutes sufficient evidence regarding the extent to which it is possible to generalize the observed relationships to other individuals, contexts, or different moments.

While different approaches to the concept of validity can be found, even when applied to measurement through tests in the field of psychometrics, the fundamental distinction between internal and external validity was originally proposed by Campbell and Stanley (1966),[16] later expanded by Cook and Campbell (1979),[17] to identify the numerous threats that can jeopardize, or indeed invalidate, the conclusions drawn from a particular research, whether for an educational or pedagogical intervention.

The terms "educational intervention" and "pedagogical intervention" do not necessarily align, although every educational intervention incorporates a pedagogical intervention component. This is because: not every educational action requires a higher level of technical competence (pedagogical) than what is needed to achieve the goal of the action; there are actions that are effective with a low level of technical competence and; there are actions whose level of technical competence has been disseminated and is part of the cultural knowledge of a community; it is also possible to acquire technical competence through one's own practice.[18]

In all these processes, educational outcomes are achieved, but it is very probable that technical competence does not have the necessary level in these cases to control the process or decide on better forms of intervention, which is inherent in pedagogical intervention. Ultimately, in pedagogical intervention, the aim is to generate pedagogical facts and decisions. The condition of expertise is derived from possessing competences developed with theoretical, technological and practical knowledge of education, the mastery of the structural complexity of pedagogical decision-making, and training in intervention as an education specialist.[19]

From the standpoint of an expert, it is possible to refer to education professionals and pedagogical professions. However, this should not contradict the fact that not every person engaged in education is a professional in education, as education professionals occupy a defined workspace that is compatible with the actions of other professionals in the educational system and with the activities of other education agents.[20] Nevertheless, it is precisely the specialized education knowledge that endows the professional in pedagogical functions with expert competence.[21]

The education knowledge finds its most genuine expression in pedagogical knowledge, which shapes the professional action in each pedagogical function.[22,23] The fundamental postulate is that the understanding of an effective and efficient response in the pedagogical function depends on the extent of one's education knowledge, as:

- Pedagogical concern has always existed, even if it was not scientific, and pedagogical occupation has also always existed, even if it was not professionalized. However, what has not always existed is the same consideration for the pedagogical function, as the education knowledge has not always had the same significance. This is understood as the ability of that knowledge to solve problems in education.
- Every function is exercised within a specific domain and requires knowledge of that domain. However, while the domain and knowledge of the domain are different, it can be said that the social estimation of the domain where pedagogy benefits education does not necessarily imply an equivalent estimation for pedagogical knowledge. This is because its problem-solving capacity does not evoke the same credibility and trust as education.

From the standpoint of education knowledge (considering education as the object of knowledge), it is useful to distinguish between two types of purposes:

- Intrinsic purposes, as they are determined within the system and their content is education knowledge.
- Extrinsic purposes, because even though they are determined within the system, their content comprises socio-cultural elements, legitimized by valuable education knowledge.

In education, each intervention case requires an appeal to the nature or character of education, which is currently defined as comprehensive, personal, axiological, and heritage-based.[24]

In the educational relationship, we always act with a specific perspective of orientation or qualifying purpose in a particular socio-historical moment. Appropriately, we appeal to the meaning of education, which in our time is intercultural, permanent, global, general, and professional-vocational. This sense is grounded in pedagogical roots and is applied from layers of thought, from various fields and diverse conditions, ranging from humanism to communitarianism, from nationalism to individualism, from ethics to aesthetics, from morality to religion, from philosophy to science, and so forth. Although it does not necessarily merge or identify with, the sense of education is specific, distinct, and unique to that realm of reality.[25,26,27]

FINAL CONSIDERATIONS

From our perspective, the various ways of addressing education from the standpoint of pedagogical knowledge allow us to always consider it as a value chosen as an educational purpose. Education is determined by extrinsic purposes or educational goals,

as a socio-historically conditioned cultural area concerning what education means in that context at each historical moment, and by intrinsic purposes of pedagogical goals. In this sense, education is susceptible to pedagogical intervention and contributes by providing skills, habits, attitudes, and knowledge of recognized educational value for self-construction, or in other words, for self-education.

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The authors declare that there is no conflict of interest.

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