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Article

Pedagogical knowledge, from an analogical to a digital educational situation, regarding the COVID-19 pandemic

El saber pedagógico, de una situación educativa analógica a la digital, a propósito de la pandemia por el COVID-19

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Abstract

A brief exposition and reflection on the meaning of the construction of pedagogical knowledge for the analog teacher, in a conventional classroom, converted into a digital one, due to the preventive isolation in the face of the pandemic contingency resulting from COVID-19. This research bets on the linkage of the actors of the educational community (parents, guardians and students) who at times have remained distant from the new pedagogical trends in the global context. Therefore, the methodology used is the collection and analysis of pedagogical experiences mediated by information technologies. Analysis from experiences that involve students and their families in new learning scenarios.

Keywords: education, digital, analog, comprehension, teaching-learning.

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Resumen

Una breve exposición y reflexión de lo que significa la construcción de saber pedagógico para el profesor análogo, en aula convencional, convertido en digital, por el aislamiento preventivo frente a la contingencia de la pandemia producto del COVID-19. Esta investigación apuesta por la vinculación de los actores de la comunidad educativa (padres, acudientes y estudiantes) que por momentos han permanecido alejados de las nuevas tendencias pedagógicas en el contexto global. Por lo tanto, la metodología usada es la recopilación y análisis de experiencias pedagógicas mediadas por tecnologías de la información. Análisis desde experiencias que involucran a los estudiantes y sus familias en nuevos escenarios de aprendizaje.

Palabras clave: educación, digital, analógico, comprensión, enseñanza-aprendizaje.

Introduction

Educational institutions face two main challenges that will be addressed, the first is the integration and adaptation to the digital tools based environment, and the second is the philosophy of distance learning. The first consists of promoting spaces such as hypermedia and interactive networks to generate collective intelligence and autonomous learning. The second, in recognizing the skills that students acquire when they are in permanent contact with the information society. Therefore, we integrate a proposal of pedagogical reflection through the field of educommunication and towards the practice in the creation of favorable environments that meet the educational needs of the region, to inquire about the technological mediation in the processes of interaction and interactive relationship. Several reflections raised throughout the writing of the article are collected; the different challenges for the educational sector are outlined and it highlights the need to create skills and training capabilities around digital tools, which allow to respond in a concrete and accurate way to the current context that the educational field is going through in the country.

In order to problematize the topic of discussion on the transformations that a new reality in the educational process raises with the strengthening of education mediated by the New Communication and Information Technologies, which is deepened as a result of the pandemic caused by Covid - 19, it is necessary to achieve a conceptualization of necessary terms.

The first of them is that of learning environments which have been approached in different ways and therefore their conceptions have varied from the approach that each theorist has managed to consolidate, even so for the development of this article, learning environments are "Environments" (Perez, 2009 p 10) that in its interior possesses "a set of internal, external and psychosocial factors that favor or hinder interaction (...) "subject" that acts on the human being and transforms it (...) where its ultimate goal is to achieve learning" (Romero, Martinez and Vásquez, 2017, p. 76) and therefore also "is a pedagogical and systemic process that allows understanding, from a different logic, the teaching-learning processes of the school" (Romero et al, 2017, p. 76).

To understand it in its deepest sense, it is necessary to define some of these factors that intervene in learning environments such as "the space where action takes place, the interactions between participants, the curriculum, the contexts that problematize learning and the didactic and technological resources" (Romero et al, 2017, p. 77).

The space will refer to the place "where the process of knowledge acquisition occurs (...) there, participants use their abilities to interact with artifacts and create with them knowledge that leads them to be mediators in the construction of their learning" (Pérez et al, 2009, p. 4), therefore it is the place where the teaching-learning process occurs and where interactions between subjects take place, therefore variants such as its architecture, the environment and how it is organized for the learning process is of utmost importance. For a long time the definition of learning environments was placed in spaces where the act of teaching takes place and its vision was limited compared to the broad definition we propose. Even so, it continues to be an important variable when approaching the subject.

The second component refers to the interactions that occur in the process, where two or more actors, through communication, generate an exchange of ideas that enable the construction of knowledge. In addition to "the patterns of behavior that are developed in it, the type of relationships that people maintain with objects, among people, the roles that are established, the criteria that prevail and the activities that are carried out" (Duarte, 2003, p.8).

With regard to these roles, we will mainly highlight the role of the teacher, who among others plays the role of mediator, guide and enabler of the construction of knowledge from the generation of content to share; the role of the family, which should be of

accompaniment and active participation to overcome the difficulties that the student may face, as well as the institutional strengthening, which allows collective work, from the recognition of the other. And finally the student, who will be the center of the teaching process, who must then have an active, constant, dialogic participation that empowers in relation to others.

Both the physical space and the interactions are interrelated. From the configuration of the space, the relationships between the relevant actors in the teaching process are transformed, this will be of great importance for the discussion that we propose, since the virtual exercise radically transforms the situation of the school as we had handled it so far.

As learning environments are also pedagogical processes, the discussion on the curriculum, i.e. on contents, didactics, training times, evaluation methodologies, among other elements, becomes necessary. In view of this, the discussions revolve around curricula that propose a problematization of the environment from daily life, from immediate experience, that is, a contextualized education that converts the acquisition of new knowledge into a meaningful action. As with space, as with interactions, the context of education from ICT's is also transformed, therefore, the modification of the curriculum, facing a situation that prioritizes the virtual must be done, without losing clarity about the purpose, contextualized education, which allows the student to build knowledge from problem solving. This curricular element also entails reflections in terms of the pedagogical approach that problematizes the environment and from there performs its didactic exercise.

For example, for Tenorio (2015) who in turn cites Jonassen, (2000) and Lefoe, (1998) where he mentions that "within an ICT-mediated learning environment, it is important to take into account elements that promote the construction of learning within an educational experience" (p. 24).

These dimensions, from a constructivist approach, allow us to enhance the teaching and learning process, even with the mediation of virtual resources and tools, which will be our next element to develop. Regarding the concept of mediation we will define it "as those symbolic or material tools and strategies that constitute a bridge for the construction of knowledge, learning and pedagogical interactions between subjects" (Romero et al, 2017, p. 88) and following the development of these authors, there are around three

mediations. Pedagogical mediation, symbolic mediation and finally technological mediation, we will focus on the latter.

We start from technology as a phenomenon of everyday life at this time, which has allowed a constant exposure to contents that manage to generate learning and therefore are tools that strengthen cognition. On the other hand, this situation has transformed the realities of the traditional school, since it has removed elements that until now were immovable, such as space, content and how. Now, technology shows us that it has transformed even the learning environments. As Tenorio (2015) mentions:

> ICT-mediated learning environments (...), have incorporated technological elements and tools in their planning, not only for technical purposes (technological material such as computers and Internet connections), but also with the aim of innovating educational practices to improve teaching and learning processes. (p. 26)

Materials and methods

The methodology seeks to respond to the objective of introducing new digital tools that promote the use of information and communication technologies (ICT), with an active and participatory methodology that are feasible and practical to use by teachers from the work in virtuality.

In the current context, reflections and educational work highlight the need to think about appropriate methodologies that can add to the pedagogical training of students, as well as to the training of teachers and educational institutions in general. In this way, digital tools open possibilities and alternatives in virtual training in pandemic contexts and as an alternative in the educational continuity in the country.

In this sense, creativity and the use of practical digital tools make it necessary to acquire knowledge in their use, in the knowledge about them, in knowing how, when and why to use them and to put them to interlocutar according to the formative needs that one has. The methodology used is the collection and analysis of pedagogical experiences mediated by information technologies.

Results

One of the main functionalities to be promoted through this experience is the multiplicity of educational resources that allow

generating learning spaces that favor easy accessibility to low-income populations, that is why it was integrated as a tool that can contribute positively under a series of adaptations of new dynamics for its implementation.

Traditional pedagogical resources have served as support in the classroom; however, new alternatives must be considered for better results, especially when we are carrying out processes from early education that require a well-structured transformation for their effective stimulation in this new reality of alternation, up to basic secondary education.

In view of the expected results, two reflections stand out, the first one referring to the theoretical discussion of the transformation of learning environments with the arrival of new information and communication technologies and the transition to a hyperconnected culture. This transformation of learning environments requires a new way of seeing and understanding the variables involved in the learning process, new ways of being and doing in time, and in a space completely different from the traditional classroom, which therefore changes the ways of learning, requiring teachers, families and students to take on other roles and functions.

Therefore, the pedagogical action is modified, the curriculum, the didactics and even the contents vary according to this new reality. Therefore, the educommunicative approach, where these new learning environments are pedagogically based, enables the strengthening of this new educational action and accepts a didactics where virtual tools, virtual classrooms, content creation, design and other virtual projects applied to the context, have a perspective of problematizing, dialoguing and transforming education.

In a second moment, from the introduction of two virtual tools and platforms, possibilities are presented, from the educommunication of creating these new learning environments e - learning. This introduction brings the reader closer to the possibility of experiences that manage to adapt to the cultural transit of the hyperconnected society, taking advantage of the educommunicative approach, and that it is expected to be used to strengthen the pedagogical action according to their role (Teacher, Student or Student).

Also, it is necessary to specify that a documentary tracking and analysis was carried out from conceptual axes therefore, one of the central categories investigated are learning environments, which have been assumed from different perspectives; Pérez et al (2009)

raise them as environments, in the same way Romero, Martínez and Vásquez (2017) refer to them as human interactions to achieve learning in a different way, in direct relation to the context, the interaction space, the curriculum and the didactic resources. When talking about interactions in learning environments, Duarte (2003) refers to communication and exchange in the relationships that make it possible to build knowledge.

Learning environments are also pedagogical processes, from this perspective the debate arises regarding the curriculum (contents, didactics, training times, evaluation methodologies, etc.) and how these are approached from the contexts as a significant action. In this sense, education from ICT's as another thematic axis, allows a pedagogical approach that problematizes the environment, thus Tenorio (2015) from a constructivist approach and conceptual references Jonassen, (2000) and Lefoe, (1998), raises the importance of the intermediation between learning environment and ICT's that allows the construction of learning and innovation in the experience and educational practices.

The Educommunication approach from the same framework of analysis, is taken from the problematization of communication that according to Barbero (2007) overcomes linearity and recognizes other spaces of interaction, context and relationships in different areas. In this sense, communication is reconfigured and transcends the educational and pedagogical practices, generating educommunication as a transdisciplinary field in constant construction. According to Huergo (2013) points to educommunication as the different practices of contemporary communities in the political sphere, that is, it transcends in the way education and contextual and didactic strategies are assumed.

In this sense, we inquired about some digital tools such as: the radio, which according to Aguila Alanes, M. (2011), as a medium has been popular and this allows a greater audience and results in the educational field and Husman, Benoit and O'Donell (2001) who propose the radio as a resource that recreates ideas and motivates students and enhances skills, imagination and stimulation to students according to the methods of Waldorf and Montessori. Podcasts, as a pedagogical tool, allow interaction through various media and, as expressed by the coordinator of the communication area of the innovation service of the Department of Education and University of the Canary Islands, based on his current experience, the pedagogical

practice through these resources has made the teaching task "reinvent" in the forms of teaching-learning.

Virtual classrooms were referenced from what Evol-Campus (2020) proposes as an exchange space within an online platform, the different platforms in which the following were highlighted: Chamilo, e-Doceo, Canvas, Sakai, FirstClass, Moodle, among others. And their different components raised by the University of Valencia in the publication "Characteristics, types and most used platforms to study at a distance" of 2018.

Discussion

The construction of pedagogical knowledge is the teacher's job, constituted around a practice that must be concretized in writing. In the teacher-student relationship, the teaching profession, as a dual relationship, responds to the demand for the construction of knowledge. This is framed in three key elements for its development: a) the construction of knowledge through daily practice, b) reflection on the meaning of teaching, and c) the tradition of the profession, also known as accumulated knowledge (Tezanos, 2007).

Raymond Duval says that one of the fundamental constraints for teachers at the moment of presenting new knowledge to students are the "prerequisites" that it has, not only around the mere element of the book, for example, or the pedagogical materials to be used, but by extrinsic situations, such as "a certain level of schooling to know from what level (...) the text can be proposed." (Duval, 1999, p. 281). In view of this consideration to be taken by the teacher, a comprehensive development of the text "primordial for didactics" (Duval, 1999, p. 278), and fundamental in the situation of reading, teaching and apprehension of knowledge by the learners, would be propitiated.

There are two parameters that fundamentally play in the situation of knowledge apprehension, which apply to the analogical and digital educational model. The first, intrinsically linked to the writing of the materials used (texts, for example), has to do with the degree and the way in which the cognitive content is made explicit in the writing organization. The second, linked to the learner, has to do with the knowledge base available to him/her in relation to the cognitive content presented. (Duval, 1999, p. 281).

Thus, any pedagogical exercise that independently incorporates elements of analog or digital character, can have variable interpretations according to the way the student understands or perceives it. In literature, in particular, this dichotomy is more visible.

Teaching as a transmission of knowledge is far from an approach where the social role of the school prevails: "Ethics, aesthetics and citizenship must even leave the school and permeate the community, until the community understands that only when the school is better than society... is it capable of transforming that society" (Garnier, 2008). To this end, the educational model in Costa Rica since 2008 was based on citizenship education in the arts, which was not limited per se to modifying certain subjects, but aimed to "alter the entire curriculum", in the words of the then Minister of Education:

Moreover, the teaching of the arts - like the teaching of ethics or citizenship - cannot remain in the subjects and neither can it be limited - or hidden - in this transversality, however rich they may be: they must leave the classroom and fill the entire school, making it a pleasant, beautiful space; a space of coexistence, a space that is enjoyed and feels its own, a space - and a time - in which young people build their identity in relation to themselves and the world in which they find themselves. (Garnier, 2008)

On the part of the State, the Ministry of Education provides guidelines for teachers, which I summarize in the following elements: the didactic sequence "to read with meaning" includes a first moment entitled "The value of what the students know", in which the expectations of the students are explored and information is acquired "to establish a route of what the teacher should focus on didactically"; the second moment, entitled "the scaffolding or support generated by the mediator", is centered on the "dialogue between the reader and the text to construct meaning" and sense, where it is supported by the network of texts mentioned by Barthes (1973); the third moment, delves into the construction of meaning from the value of questions, reading between the lines and the power of the meanings that are not explicit, thus the teacher "drives the variety of interpretations, but also shows that there is a semantic framework on what a text says or does not say" (Sanchez,2014, p. 43); the fourth moment, welcomes the vision of the group and the mediator - teacher allows students to explore all points of view

around the pedagogical material, to strengthen the understanding achieved (Sanchez, 2014).

As part of a didactic strategy that can use both analog and digital media, an approach is presented in the thesis "El miedo corre más que tú: diseño de una secuencia didáctica para el fortalecimiento de la comprensión lectora de cuentos cortos de terror en estudiantes de grado 7º", with seven moments (sessions) as development of a didactic sequence in which from a horror story significant cognitive skills are developed to strengthen the learning process. Session 1 is aimed at diagnosing and establishing the activities of the sequence; session 2 inquires about the students' previous knowledge about the meanings of a horror story and its structures; session 3 establishes the importance of the narrator and the way to identify him/her in the text or material used with the students; session 4, the importance of the narrator and the way to identify him/her in the text or material used with the students is established; in session 4, the conception of the story structure is materialized, and the narrative components of the story are identified; in session 5, the opening is given to the students' own literary creations; in session 6, the narrative indexes of a horror story are explained and detected; and in session 7, what has been learned is verified from the exposition of a story and the detection of the theoretical elements apprehended (Ramos, 2017).

With a realization of didactic components and sequences that tend to the efficient and qualitative development of the student, the ideal teacher should be pentadimensional in relation to his pedagogical spheres: comprehensive in the instructional, affective, motivational, social and ethical spheres (Cadoche, 2005).

In the traditional school, then, classroom learning is contrasted with socially constructed knowledge. The teacher must put in dialogue both the one and the other and thus condense this and build the so-called educational knowledge. For this, Henry Giroux proposes the macro and micro objectives of the intellectual teacher. In the macro-objectives, we summarize: a) to propose theoretical blocks that allow mediating knowledge between school and non-school experience; b) to differentiate directive knowledge (that which questions the relationship between means and ends in education) and productive knowledge (the instrumental, material goods and services); c) to make explicit the hidden curriculum; d) to help create critical and political awareness, thus leading to full civic participation. In the micro-objectives, on the other hand: a) to develop traditional course

objectives; b) to enhance the acquisition of selected knowledge; c) to develop specialized learning skills; and d) specific inquiry skills. In this approach, the macro-objectives explain the reason for the micro-objectives (Giroux, 1990).

However, the teacher is usually treated as a subject without a body, without language, without history, without interiority. Often his methods need to be explained, framed in the status quo in which he develops his activity. Of course, his reflection goes beyond accommodating himself to the established pattern:

If the teacher intends to reflect on what he is doing in the concrete situations of his life, he has to be aware that the "fictions" used to elaborate the meaning of reality (both in school and out of school) are mental constructs, man-made schemes, patterns of meaning that deserve only a "conditional approval". (Greene, 1995, p. 88)

Despite the institutional guidelines that framed the teaching-learning space, "educational environments in contemporary society (...) are not properly school environments" (Duarte, 2003, p. 97). Thus, the classroom, as a meeting place (Duarte, 2003) and now the exclusively digital sphere as that scenario of interaction necessary for learning and the correlation of knowledge.

In this regard, Duval's research on reading comprehension and its necessary intellectual apprehension, carried out in the analog school, which increases terribly in the digital school: "it can be easily observed in 6th and 7th grade students" (Duval, 1999, p. 283). (Duval, 1999, p. 283) that "to answer questions about a text they have just read and still have in front of them, most of them do not go back to the text, even when they do not know how to answer, but prefer to ask the teacher."

The pandemic, product of the COVID-19 virus, has revealed as never before the enormous concerns about education, about access to education, about facing not only the technological but also the intellectual challenges involved in the learning process through the use of Information and Communication Technologies. Evidently, there are many tensions that arise: does the student return to the text, the screen, the icon, the image, when the tutor or teacher asks about the reading comprehension process? Or does he/she prefer to ask the teacher? The change from face-to-face education to "distance" or virtual education affected 861.7 million children and young people in 119 countries, as a result of the pandemic, due to the isolation measures worldwide. Lucia Mendoza, well approached in a recent

work to point out very clearly, indicating that face-to-face education and distance education can never be thought of as similar: "it is a mistake", since "while in a classroom the teacher has the immediacy of communication with their students, in a distance event the interaction depends on connections, data transmission speed, video and audio quality." Quoting Mendiola (2020), he refers to the fact that "being in two dimensions instead of three is a factor of psychological exhaustion and more effort must be spent in expressing oneself and understanding the other." (Castillo: 2020). Answering the questions, thus, in Duval's definition, of students faced with the interpretation of a text that is still before their eyes, changes drastically because of the tool, the psychological load factor, the speed of the connection and so on.

Maxine Green argued that "if the teacher intends to reflect on what he is doing in the concrete situations of his life, he has to be aware that the "fictions" used to make sense of reality (both in and out of school) are mental constructs, man-made schemas, patterns of meaning that deserve only "conditional approval" (1995). He postulated the development of "a structure of interrelated, intentional actions and interactions", which were organized "to achieve some kind of learning", as Rincón (2004) puts it, regarding what is understood by a didactic sequence.

The paradigms of education and training reflect that on the one hand there is the process merely called training, which is the one most closely linked to the construction of the subject from the baby's upbringing, and even beyond the postgraduate levels; and on the other hand, the educational process, which is intrinsically linked to the institution. Both processes define the well-educated subject, which leads to a highly educated society. The traditional approach has suggested that the result sought is that of the permanently educated subject, from the cradle to the grave, and thus education is more of a product than a process (Vasco, Martínez and Vasco, 2008). Cultivating spaces where institutionalism does not reign in the student's imagination will tend to create a better society. Let's say that somehow the pedagogical trajectory of most teachers using the virtual meeting space, and in a very limited way, tried to do this, and their escape route was to take out the traditional four walls of the classroom to a space of qualitative meaning mediated exclusively by technology. In many anachronistic institutions today this could mean

violent change, in Kunt's terms as there are spaces developed by and for confinement.

However, many spheres have also changed in this time: every day the traditional educational instances (family, religion - Church and the school itself) continue to be replaced by the media, or digital platforms, or virtual groups whose individuals share something in common. The latent conflict in the school, then, more than the peace and war of the national context, seems to be the division between students who consume and create the digital, and teachers who do not dabble in new technologies.

Thus, the process for the teacher to go from being analogical to becoming digital has to go through three items: a) understanding the cultural subjects involved in the system; b) assuming the generation gap, in the understanding that technological objects do not cause difficulties; and c) framing a public policy from the base of the system, in such a way that the actor is known in order to adapt the process (Cabrera, 2009).

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