Didactic Sequence for preparing a Techno-pedagogical Projects

ARTICLE

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Abstract

This article presents and discusses the process of developing a didactic sequence (DS) to propose a techno-pedagogical project. It also addresses the results of the application of this project. The aim is to detail the development phases and the contexts in which this project has options to be applied. To this end, a DS was carried out addressing the main pedagogical aspects in dialogue with Digital Information and Communication Technology (DICT) resources existing in the school environment of different levels and educational realities. It was possible to conclude that the proposed DS was able to develop in postgraduate students of the Specialization Course in Information Technology in Education the knowledge necessary to carry out better pedagogical practices in the context of techno-pedagogy. The DS proposal presented is characterized as flexible, making it possible to adapt to different objects, levels and teaching modalities in line with Education 4.0 and 5.0.

Keywords: Didactic Sequence. techno-pedagogical Project. Collaboration. DICT.

Sequência Didática para Elaboração de Projetos Tecnopedagógicos

Resumo

O presente artigo apresenta e discute o processo de elaboração de uma sequência didática (SD) para a proposição de um projeto tecnopedagógico. Aborda, ainda, os resultados da aplicação desse projeto. Objetiva-se detalhar as fases de elaboração e os contextos em que esse projeto tem viabilidade de ser aplicado. Para tanto, foi realizada uma SD abordando os principais aspectos pedagógicos em diálogo com recursos de Tecnologia Digitais de Informação e Comunicação (TDIC) existentes no ambiente escolar de diferentes níveis e realidades educacionais. Foi possível concluir que a SD proposta foi capaz de desenvolver nos estudantes de Pós-Graduação do Curso de Especialização em Informática na Educação conhecimentos necessários para realizar melhores práxis pedagógicas no contexto da tecnopedagogia. A proposta de SD apresentada caracteriza-se como flexível, e possibilitou a elaboração de projetos tecnopedagógico para diferentes objetivos, níveis e modalidades de ensino em consonância com a Educação 4.0 e 5.0.

Palavras-chave: Sequência Didática. Projeto Tecnopedagógico. Colaboração. TDIC.

1 Introduction

Planning the use of Digital Information and Communication Technologies (DICT) in the educational environment is a fundamental element for the appropriate development of students in line with the social demands in which they are inserted. Digital technological changes are constantly taking place and the nexus of forces (Zednick *et al.*, 2014) - which promote a union of media, with effects for education in general and with direct impacts on teaching work and student learning, in times of Education 4.0 and 5.0 (Felcher; Blanco; Folmer, 2022; Führ, 2019) - is noticeable.

Education 4.0 is associated with Industrial Revolution 4.0, which highlights the role of technology in transforming society. In education, this implies the intentional use of emerging technologies such as artificial intelligence, virtual reality, the Internet of Things (IoT) and big data in educational practices. Thus, Education 4.0 seeks to provide a more personalized and adaptive experience for students, taking advantage of technology to meet individual learning needs. In addition, online collaboration is prioritized, encouraged through online platforms, allowing students to interact, share knowledge and participate in collaborative projects, regardless of their physical location (Führ, 2019).

Collaborative work in the teaching and learning process, according to Führ (2019), refers to the practice of students and teachers working together, sharing knowledge, experiences and resources to achieve common educational goals. This type of approach promotes interaction, the exchange of ideas and the collective construction of knowledge. It also enables shared responsibility, the development of social skills and a diversity of perspectives. In short, collaborative work can promote a more dynamic and engaging educational environment, preparing students to participate actively in society.

With regard to Education 5.0, the emphasis of the educational process goes beyond technology and highlights the importance of humanization in the educational context. This education recognizes the need to develop socio-emotional, ethical and cultural skills in students, as well as integration with the community and the environment. Students are encouraged to understand and address social, economic and environmental

challenges in collaboration with the community. Education 5.0 advocates that learning should not be restricted to the traditional school environment, but should be a continuous process throughout life. This involves promoting learning in different contexts, including work, community and other environments (Felcher; Blanco; Folmer, 2022).

Both Education 4.0 and Education 5.0 reflect a response to social changes and technological developments, highlighting the importance of adapting educational practices to prepare students for the challenges of the contemporary world. This ubiquity of technology can be metaphorically translated as a moving train. Therefore, there is a need for conscious and effective planning of the use of technologies, taking into account the specificities of the social and material context of each school institution. It is thus a question of an educational approach that distances itself from pedagogical fads.

It is of the utmost importance to integrate the proposition and execution of techno-pedagogical projects into teaching practice. Teaching praxis refers to the professional practice or activity of teachers in the educational context, which involves reflective and transformative action (Freire, 1996). Thus, teaching praxis is not just limited to the application of teaching techniques, but also includes critical reflection on practice, adaptation to the needs of students, consideration of educational theories and the constant search for improvements in the teaching and learning process.

Teaching praxis involves the dynamic interaction between theory and practice, in which teachers not only apply teaching methods, but also reflect on the educational experience, adjust their methodological approaches based on students' needs and contribute to the construction of knowledge in a meaningful way. This understanding of praxis is coherently related to the development of techno-pedagogical projects in the school environment.

For Coll (2007) and Underwood (2009), building techno-pedagogical projects consists of linking teaching and learning content, objectives and activities to an "existing technological contribution and, on the other hand, the context arising from the very reality in which the students are inserted" (Torres; Amaral, 2011, p. 60). In this way, the educational (techno-pedagogical) project must be dynamic, frequently and collectively

evaluated by the educational team - management, coordination and educators. Studies confirm that:

> The constant presence in the educational context of traditional and digital platforms and technologies leads to the need to rethink how this technology has been introduced and how school management and teaching staff can make use of these resources to enhance pedagogical work, leading to the idea that evolving in relation to techno-pedagogical Management is an indispensable attitude (Zednick *et al.*, 2014, p. 511).

techno-pedagogy, in this article's discussion, considers the process of pedagogical maturity in confluence with technological changes; planning as an instrument to enable reflection between the object of learning and appropriate technological resources, as opposed to use for use's sake. techno-pedagogy includes a conception of education as a continuous and systematic process of (de)constructing knowledge. In this sense, we strive for teacher maturity in terms of understanding and using DICTs in the classroom and in institutional techno-pedagogical management. We therefore wanted to answer the following question: How can the planning, execution and evaluation of a techno-pedagogical project contribute to better use and management of DICTs in the classroom and in educational processes?

In order to answer the above question, a Didactic Sequence (DS) was proposed from Zabala's (2015) perspective, aimed at developing, implementing and evaluating a techno-pedagogical project based on a theoretical foundation (Torres; Amaral, 2011; Moraes; Souza; Silva Júnior, 2019; Rodríguez de los Ríos *et al.*, 2022) considering teaching praxis.

In short, this report deals with a DS (Zabala, 2015) that was developed during a course in the Lato Sensu Postgraduate Course in Informatics in Education, offered at the Federal Institute of Education, Science and Technology of Goiás - IFG, Jataí Campus. The subject, entitled "techno-pedagogical Projects", aimed to prepare students to plan, execute and evaluate a techno-pedagogical project in a real teaching and learning situation. The course development methodology is presented below.

2 Methodology

According to Zabala (2015), the DS corresponds to a set of ordered, structured and articulated activities aimed at achieving certain educational objectives, with a beginning and end known to both students and teachers. In this sense, the proposed DS included the three phases proposed by this author: planning, implementation and evaluation.

With regard to planning, the objectives proposed by the subject were taken into account in order to develop students' theoretical and practical knowledge to design, apply and evaluate the results of a techno-pedagogical project, from the perspective of Torres and Amaral (2011), Moraes, Souza and Silva Júnior (2019) and Rodríguez de los Ríos *et al.* (2022). The aim was also to incorporate DICTs into this project. To this end, 11 interventions were planned with the students, referred to in this article as "DS Modules".

As for the application of the DS, each module had a well-defined objective, so as to provide a coherent debate in relation to the logical sequence of knowledge and skills necessary for the development, analysis and reflection on the technological-pedagogical project drawn up by the students. It should be noted that 11 students took part in this study, mostly teachers from the public education system.

The application of the DS involved 11 modules (see Table 1), carried out during the first semester of 2023, in person, involving theoretical and practical classes. The aim was to develop students' prior knowledge through discussions and theoretical reflections on the concept, purpose and models of techno-pedagogical projects (Torres; Amaral, 2011; Loeper; Camargo, 2018; Moraes, Souza, Silva Junior 2019; Rodríguez de los Ríos *et al.*, 2022), as well as planning and using DICTs in the educational context (Loeper; Camargo, 2018). In addition, during the DS, there were moments for students and teachers to reflect on the concepts under discussion, especially their relationship with teaching practice, as well as the presentation and analysis of partial results of the groups' productions - in other words, the technological-pedagogical projects they had developed.

The system of dialogue, reflection and the relationship between theory and practice established in the planning process is in line with Maroquio's (2021) perspective for a DS,

which aims to offer conditions for constructing content from a perspective of mediation and reflection, as well as in a shared, collective and collaborative way. It should be noted that the students were divided into four groups, each of which had the challenge of developing a techno-pedagogical project to be applied in a real learning situation involving public schools in the city of Jataí-GO, from the perspective of techno-pedagogy (Zednik *et al.*, 2014) and collaborative learning.

The evaluation stage of this DS was carried out partially, involving all the participants, who collaboratively built, discussed, analyzed and evaluated each group's techno-pedagogical project proposals. Modules 04, 07 and 11 (see Table 1) were the ones we focused on most for the analysis/reflection process on what was being proposed by the working groups. It should also be noted that the technique used to analyze the projects presented in tables 02, 03, 04 and 05 was based on content analysis, from the perspective of Bardin (2016), as we believe that this technique enables us to categorize the information and better understand the content of the projects. For a better understanding, below is information on the 11 modules that made up the DS reported in this article.

Table 1 - Themes and contents of each module of the DS applied.

Module	Theme	Activity(ies)	Theoretical Reference
01	Educational Technologies; Techno-pedagogy.	Presentation and debate on the concept of Educational Technology and the possibilities for its use in the context of techno-pedagogy.	(Guárdia; Maina, 2012); (Rodríguez de los Ríos *et al.*, 2022). (Zednik *et.al.*, 2014).
02	Techno-pedagogy and techno-pedagogical projects	Presentation and debate on the concept of techno-pedagogy and the possibilities of applying it from a collaborative perspective with the use of digital educational technologies.	(Torres; Amaral, 2011); (Rodríguez de los Ríos *et al.*, 2022).
03	Techno-pedagogy in the context of collaborative learning		
04	Structural model of a techno-pedagogical project	Presentation of the techno-pedagogical project model proposal, containing 4 dimensions: (1) diagnosis of the educational institution; (2) school	(Zednik *et al.*, 2014).

			infrastructure and organization; (3) identification of existing technological resources in the school environment and (4) description of the activities and technologies involved in the techno-pedagogical project.	
05	Techno-pedagogy in the wake of Education 4.0 and 5.0	Debate on the impact of technologies for Education 4.0 and 5.0 from the perspective of techno-pedagogical projects.	(Felcher; Folmer, 2021) (Führ, 2018)
06	Context analysis	Out-of-class activities: visit and analysis of the school context in which each group's technological-pedagogical project proposals are applied.	—--------
07	Presentation of the first stage of the techno-pedagogical projects	Presentation, debate and reflection on the first stage of the techno-pedagogical project: Diagnosis of the educational institution (teaching model, target audience, Pedagogical Political Project, technological context).	
08	Decision matrix for digital technologies in education	Presentation and discussion of taxonomies for incorporating DICTs into technological-pedagogical projects.	(Rodrigues *et al.*, 2014)
09	Integration of DICTs in techno-pedagogical projects	Debate on the incorporation of DICTs in the projects proposed by the students; Analysis of the context and possibilities offered by the participating institutions in terms of access to and use of DICTs.	(Loeper; Camargo, 2018)
10	Collective planning of the techno-pedagogical project	Elaboration of the methodology of the techno-pedagogical project to be applied: content(s), subject(s) and definition of the role of educational technologies in the context of the proposed projects.	(Souza; Moraes, Silva Junior 2019); (Rodríguez De Los Ríos *et al.*, 2022)
11	Getting to know the projects developed	Presentation of the techno-pedagogical projects developed during the DS	—--------

Source: author (2024).

It should be emphasized that in Module 4 - Structural model of a techno-pedagogical project - the roadmap constituted a conceptual model. It "synthesizes an abstract and simplified representation of a structure of elements that make up a given

reality or a specific theme." (Torres; Amaral, 2011, p. 66). As such, it helps the teacher or manager to carry out a diagnosis of the DICT resources available and then makes it possible to articulate the objectives, content and activities.

The roadmap for drawing up the techno-pedagogical project is made up of four dimensions. The first presents items that cover the contextualization of the place where the project will be developed, with the aim of carrying out a general diagnosis including physical structure, material and human resources. The second dimension deals with the involvement of educational management in planning the use of DICTs in the school. The third highlights the categories of DICTs (Zednick *et al.*, 2014; Guàrdia, 2012) available in the school environment. And the fourth dimension refers to the description of the project, including the target audience, theme, objectives, activities, DICT resources and evaluation. This roadmap is a proposal for a conceptual model for organizing interactive content through the use of DICTs and enables collaborative work.

The next section will present the results achieved through the DS described in this section: the teaching and learning projects from the perspective of techno-pedagogy, which we refer to in this article as techno-pedagogical projects, henceforth PTecno, developed by the students during the DS presented in Chart 1.

3 Results and Discussion

The results achieved through the DS are presented and discussed in this section. It is worth noting that the DS in question was applied in the first class of the Specialization course in Informatics in Education (EIE), offered by the IFG, located in the city of Jataí, state of Goiás, the planning and execution of which were detailed earlier. In this way, we take the Ptecno prepared by the students during the DS as the results of the DS.

The path planned and executed in the DS was necessary so that the students could understand the main concepts that permeate techno-pedagogy, as well as aspects involving the planning and application of techno-pedagogical teaching and learning projects.

The DS enabled pedagogical praxis involving Digital Technologies (DT) in a real-world context and, in particular, made it possible for EIE students to engage in collaborative pedagogical planning.

We therefore analyzed the techno-pedagogical projects developed by the student groups. It is important to note that this article does not aim to analyze the results of the application of the Ptecno developed by the students, but rather the results of the DS - a look at the techno-pedagogical proposals developed by the students during the DS.

The presentation of the Ptecno developed by the four groups of students is organized in tables, accompanied by a discussion of each project. The first of these, developed by Group 1, is presented in Table 02 below.

Table 2 - Aspects of the Ptecno developed by the students in Group 01.

Group	Context of application	Ptecno theme	Ptecno methodology and assessment	Spaces and technologies adopted at Ptecno	Number of lessons	Results observed in the application of Ptecno
01	**Type of School:** Urban Public. **School:** Centro de Ensino em Período Integral (CEPI) José Feliciano Ferreira. **Target audience:** 2nd year high school students. **Type of application:** In person.	Thermal Energy: Understanding Thermal Machines.	**Methodology:** Lectures, simulations and practice; *Maker* culture. **Assessment:** Making a homemade air conditioner; student experience report.	**Areas:** Physics Laboratory; Classroom. **Technologies:** Textbook; Online simulator on thermal machines; YouTube videos.	10 lessons of 50 min.	The students understood the concepts of thermal machines; The content and methodology adopted in Ptecno provided the students with the necessary conditions to apply their knowledge in a practical way, creating a low-cost home air conditioner. It was also observed that the students considered the activities and the

|					DICT that were present in the classes to be positive.

Source: author (2024).

With regard to the Ptecno prepared by group 01 (Table 2), it is possible to see the use of different spaces and technologies to develop this techno-pedagogical project proposal. In terms of the technologies adopted, we can see the use of the YouTube video platform as technological support for the teaching and learning process involved. The use of Youtube in the context of this Ptecno was intended to complement the content being worked on in the classroom - since, at first, the project envisages moments in the classroom, using traditional methodologies and technologies, such as lectures and dialogues, the use of textbooks and the blackboard, and then using the video platform as an instrument for reviewing the content. This proposal is in line with the work of Nagumo, Teles and Silva (2020), who identified four categories of use of YouTube in an educational context, one of which is use to complement/review content.

Also noteworthy in Group 01's proposal is the existence of elements reminiscent of Maker Culture - which is influenced by hacker culture and the DIY (Do It Yourself) movement (Serafim; Gondim; Vasconcelos, 2023). The Ptecno developed by this group involves the collaborative construction of a homemade air conditioning unit using low-cost materials. It is worth noting that the choice of this approach for the target audience of the Ptecno in question is the opposite of what was pointed out by Paula, Martins and Oliveira (2021), who identified the adoption of the Maker culture as being more present in situations involving higher education.

However, in the case of this Ptecno, the proponents are seeking to incorporate this culture into basic education - at secondary level. In addition, we can highlight the use of technologies, locations and class methodologies that are supported by the school that the group chose to apply the project developed in the DS, which is close to the purposes of a techno-pedagogical project. It is important to analyze the context, i.e. what the school has
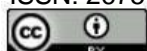
to offer in order to plan the pedagogical intervention, as discussed by Torres and Amaral (2011), Moraes, Souza, Silva Júnior (2019) and Rodríguez de los Ríos *et al.* (2022).

With regard to the Ptecno drawn up by group 02 - as shown in Table 3 below - it is possible to see the planning of a path to be traced for health education - from the perspective of health promotion, with a focus on awareness-raising classes about hypertension and its effects on people's health.

Table 3 - Aspects of the Ptecno developed by the students in Group 02.

Group	Context of application	Ptecno theme	Ptecno methodology and assessment	Spaces and technologies adopted at Ptecno	Number of lessons	Results observed in the application of Ptecno
02	**Type of school:** Public Urban. **School:** Instituto Federal de Educação, Ciência e Tecnologia de Goiás - Campus Jataí. **Target audience:** Students of the Specialization Course in Informatics in Education. **Type of application:** In person.	Health education: hypertension.	**Methodology:** Lectures and dialogues; **Assessment:** Online form to collect data on students' perception of classes.	**Areas:** Computer Lab. **Technologies:** Online forms; Pressure gauges; Google Docs; Slide shows; Mentimeter - interactive presentations.	03 lessons of 45 min each.	The students developed a critical awareness of health - especially in terms of their habits. It was also observed that the DICTs were fundamental for applying the content from a collaborative perspective, promoting student participation in the proposed activities and debates. This Ptecno also validated more collaborative teaching strategies in health education using DICTs.

Source: author (2024).

This Ptecno foresees the use of a computer lab and the adoption of forms and texts shared via the Google platform, contributing to collaborative student participation, especially in relation to the socialization of prior knowledge about the topic. In the Ptecno prepared by group 02, the intention is to use forms and interactive presentation software - Google Forms and Mentimeter - as instruments for collecting data in real time about the lesson, as well as to confirm learning after the project has been applied. When looking at the literature, we found similarities in the work of Ramos *et al.* (2021), who also use similar instruments for their teaching proposal in the health area. It can also be seen that this proposal seeks to make students aware of a particular health problem by socializing information and building knowledge aimed at raising awareness about healthy practices and lifestyles.

Group 03, as shown in Table 4, differed from the other groups in that it proposed a Ptecno to be applied to a group of students on a specialization course in distance learning, while the other groups designed Ptecno for face-to-face learning situations.

Table 4 - Aspects of the Ptecno developed by Group 03 students.

Group	Context of application	Ptecno theme	Ptecno methodology and assessment	Spaces and technologies adopted at Ptecno	Number of lessons	Results observed in the application of Ptecno
03	**Type of school:** Public Urban **School:** Instituto Federal de Educação, Ciência e Tecnologia de Goiás - involving several campuses. **Target audience:**	Distance Education: VLE - Moodle.	**Methodology:** Lectures and dialog; Practical activities - development of a virtual classroom; Development of collaborative practice; DIY. **Assessment:** Analysis of student production	**Areas:** Virtual Learning Environment; **Technologies:** Meet; Moodle; WhatsApp; Youtube videos; VLE Moodle.	02 lessons of 45 min each.	The methodology adopted enabled the students to apply their knowledge of VLEs to create a virtual learning room. It was observed that cooperation and collaboration were present in the process of building this environment. Even remotely, the students

	Students on the Specialization Course in Educational Technologies - EAD. **Mode of application:** Distance Education - ODL		(virtual classroom).			planned the strategies and applied their knowledge together to develop the virtual classroom, meeting the objectives of the project in question.

Source: author (2024).

Group 3's Ptecno highlights the intention to use platforms which, by their nature, are intended to provide remote support for students, such as social networks (WhatsApp and Youtube) and the Moodle Virtual Learning Environment, as well as Google Meet - which was widely used during the COVID-19 pandemic (Sousa *et al.*, 2022).

Similar to what can be seen in the project developed by group 01, the Ptecno described in Table 4 (group 03) also intends to use the Youtube platform as a tool to complement learning, since, at first, a remote meeting via Google Meet is planned with the students for initial instructions on building a virtual classroom on Moodle, followed by the provision of complementary material available on Youtube.

It can also be seen that technologies that have gained prominence during COVID-19 (Sousa *et al.*, 2022; Vieira; Silva, 2020) are being proposed by the students, which can be explained by the nature of the proposal to apply the project in question, remotely, with distance learning students.

This proposal also brings with it elements of DIY - Do It Yourself (Serafim; Gondim; Vasconcelos, 2023), since it proposes that the target students of the proposed project build a virtual learning environment as a way of "learning by doing".

With regard to the Ptecno prepared by group 04, we can highlight an element that was not so evident in the other projects: interdisciplinarity.

This Ptecno aims to develop knowledge of Portuguese language and chemistry, using the periodic table as an object of analysis to find homonymous words involving these two areas of knowledge, according to the summary shown in Table 5:

Table 5 - Aspects of the Ptecno developed by the students in Group 04.

Group	Context of application	Ptecno theme	Ptecno methodology and assessment	Spaces and technologies adopted at Ptecno	Number of lessons	Results observed in the application of Ptecno
04	**Type of school:** Public Urban. **School:** Escola Estadual José Manoel Vilela. **Target audience:** Students in the 9th grade of elementary school. **Method of application:** In person.	Portuguese and Chemistry: The interdisciplinary nature of chemistry teaching and the Portuguese language - exploring the literalness of homonymous words in the sciences.	**Methodology:** Lectures and dialogues; Research on internet sites. **Assessment:** Reflection and discussion on the content; **Assessment of student production:** preparation of a quiz on the content covered.	**Espaços:** Laboratório de Informática; Sala de aula **Tecnologias:** *Mentimeter* para apresentações interativas; Jogos de perguntas e respostas utilizando a tecnologia *Kahoot*	03 lessons of 50 min. each.	The creation of a Quiz by the students themselves, about the contents present, and in a collaborative way, is an effective strategy for learning the proposed concepts. The results also show a satisfactory performance by the students in the Quiz. The evaluation of the strategies adopted in this project indicated that the students considered the Kahoot software and the concepts presented to be the most important elements of Ptecno.

Source: author (2024).

The group has developed a project that seeks active student participation, both in the process of developing the lessons through interactions permeated by the Mentimeter software, and in later moments, when they plan to have the target students use the Kahoot

software to build games (Quiz) based on the content covered in the lessons. The literature states that this technology (Kahoot) arouses students' curiosity and engagement, increases their interest in the subject and can be used as a real-time assessment tool (Da Silva Monteiro; Rodrigues; Pinheiro, 2019). In this Ptecno, there is evidence of intention in this direction.

4 Conclusions

In light of the above, it is possible to infer that the four groups that took part in the activities that make up the DS reported here were able to develop Ptecno that include knowledge acquired during the discussion of theoretical readings and the relationship with teaching practice. What stands out in the projects is the existence of elements that direct the planned teaching practice towards collaborative experiences with the active participation of students during the content development process (Groups 01, 02, 03 and 04). In addition, the use of technologies in the context of Education 4.0 and 5.0 is observed, seeking to develop not only content-based learning, but also the practice of "knowing how to do" (Groups 01, 03 and 04).

It should also be emphasized that the technologies designed to be used in the Ptecno are intended to support the teaching and learning process and not to replace education professionals or methodologies that use a more traditional model, but rather from a perspective of complementarity - of collaboration between the various ways of teaching, i.e. putting into practice an interface that includes traditional methodologies and technologies with those that are more innovative and technological - with the aim of promoting learning.

In addition, it can be seen that all of the Ptecno projects planned to incorporate DICTs, in line with the objectives of the proposal and also in accordance with the methodology planned to be adopted. It should also be noted that all the projects used technologies that were in line with what the institution could offer, which brings them closer to what Coll (2007) and Underwood (2009) postulate about Ptecno, which should be

proposed taking into account the context in which they are to be applied. It is worth noting here that all the projects provide for a diagnosis of the target institution, including not only the physical and technological conditions offered by the institution, but also an analysis of how technologies are being dealt with in the educational institutions' political-pedagogical projects.

Given the evidence presented and discussed in the discussion section of this article, it is possible to conclude that the proposed DS was able to develop in the postgraduate students of the Specialization Course in Informatics in Education the knowledge necessary for them to be able to carry out pedagogical praxis in the context of techno-pedagogy. In addition, it can be seen that the DS provided the students with the conditions to plan pedagogical proposals from the perspective of Ptecno in a broad way, involving various levels and teaching modalities, as well as the use of various technologies to support the project developed. Finally, the DS proposal presented is characterized as flexible, allowing Ptecno to be developed for different objectives, levels and teaching methods.

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