*Teaching and Learning Process and Tics From the Remote Perspective*

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**Abstract**
This article discusses the experience of educational consultants in response to the urgent need to maintain the pedagogical process during the Covid-19 pandemic. It explores the transition to distance education, which has led to the enhancement of technology-mediated teaching and learning strategies. The article also details the development of a bank of teaching-learning strategies linked to digital resources, categorized based on their pedagogical potential. This includes an exploration of the intersection of these strategies with Bloom's Taxonomy and their alignment with competency-based approaches. Furthermore, it examines the relationship between connectivity, digital networks, and the evolving landscape of educational communication, which has resulted in new trends in teaching and learning. The Covid-19 pandemic has underscored the importance of digital technologies in education, emphasizing the need for a structured and deliberate approach to technological integration. Effective pedagogical mediation remains fundamental, with teachers playing a crucial role in adapting to the new conditions presented by technology. Teachers not only play a central role in pedagogical mediation but also in ensuring that technology is used effectively to promote student learning. The pandemic served as a reminder of the importance of preparing educators to address technological challenges. Teachers' adoption of digital tools was essential to ensure the success of the teaching and learning process. Additionally, ongoing teacher training is essential to enable them to make the most of technologies in the classroom. Collaboration between educators and technology experts plays a key role in creating effective learning environments. This approach to technology integration in education proves essential in addressing contemporary educational challenges, preparing students and teachers for the constantly evolving digital environment.

Keywords: Technologies, Education, Teaching-Learning Strategies, Bloom's Taxonomy

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**Introduction**

During the COVID-19 pandemic, a group of educators faced the challenge of adapting teaching to a remote format. As a result of this experience, a bank of strategies was developed based on Bloom's Taxonomy, linking learning objectives to the use of digital resources. This effective approach facilitated teachers' pedagogical planning, allowing the choice of teaching-learning strategies based on the different cognitive levels of Bloom's Taxonomy. These strategies proved to be fundamental to guarantee the continuity of the teaching and learning process in a challenging scenario (Arruda, 2020).

This article explores the integration of technology in education, covering public and private institutions, emphasizing the importance of careful analysis of factors such as privacy, costs, transparency, government coordination, professional training, accessibility, and environmental impact in the use of educational technology. Furthermore, it highlights the need to align digital culture in the educational context with the needs of students and the constant changes in the economic, political, and social scenario.

Integrating technology into education requires a holistic approach that takes into account not only digital tools but also ethical, economic, and environmental aspects. This approach is fundamental to ensuring that technology is an effective ally in the teaching-learning process.

The curriculum must be designed to meet the demands of students immersed in digital culture, providing an active and meaningful learning experience. This goes beyond the simple use of technological tools in pedagogical mediation, involving the promotion of the development of the skills that make up the curriculum. Adapting the curriculum for the digital era involves rethinking how skills are developed, considering new ways of learning and the need to prepare students for a constantly evolving world.

**Technology in Education**

Technology in education is already a reality at all levels and modalities of education, both in the state and municipal public network and in the private network, despite marked socioeconomic differences (Couto, Ferraz, & Pinto, 2017). When we talk about educational technology, we need to consider that there are several types, and each one has its functionalities and purposes in the process of teaching and learning, such as infrastructure, teaching, and creation/experimentation technologies (Blikstein et al., 2021).

The choice of technologies that will be used in the educational process requires managers and educators to consider concerns such as "issues of privacy, costs, transparency, coordination between government entities, professional training, accessibility, and environmental impact of educational technology, among others" (Blikstein et al., 2021). Furthermore, considering that digital culture in the school context needs to analyze the real needs of students and the transformations that always occur in the economic, political, and social scenario (Couto, Ferraz, & Pinto, 2017).

Educational institutions need to include in their projects and pedagogical proposals the components of culture and the use of digital technologies that, through collaborative practice, creation, and everyday experience, can contribute to the teaching and learning process (Couto, Ferraz, & Pinto, 2017). Digital technologies must be considered in the institution's design and

pedagogical proposal, as they contribute to the transformation of educational practices (Almeida & Silva, 2011).

## Curriculum Design and Technology in Education

The curriculum needs to be designed to meet the demands of students already inserted in digital culture, providing an active and meaningful learning process. It is not just about using technological tools in the pedagogical mediation process but rather about taking advantage of the possibilities that these tools bring to work on the skills that make up the curriculum (Almeida & Valente, 2011).

The curriculum, in addition to the use of technology, must be designed considering that the teaching and learning process is not watertight. It is a dynamic and complex process in which teaching methodologies and strategies will be fundamental for its application (Stein, 2020). Inserting technologies into the curriculum is a necessity that needs to be considered, as they help in the use of active methodologies that support learning through diverse experiences, challenges, practice in different contexts, and innovation (Camargo, 2018).

The pedagogical project of the institution to which the group of consultants belongs is based on curricula determined in course plans for different teaching modalities, including technical professional education and higher education. The pedagogical model is based on the development of skills, which are the result of the articulation of three dimensions of knowledge: knowledge, skills, and values/attitudes, which are permeated by principles, values, and the fulfillment of the institutional mission and integrated by methodologies and strategies of active learning activities, contributing to the comprehensive training of course graduates.

## Pedagogical Mediation and Technology

Pedagogical mediation occurs through an intentional action by the teacher in order to collaborate with the development of skills, through the elements that compose it (Santana & Barros de Almeida, 2020). These elements include the choice of learning objectives, curricular content, and teaching resources. Furthermore, it encompasses all planning, teaching methodologies, strategies, and the evaluation process.

In the technological universe, if in one aspect educational technologies have elements that promote abundant interaction, on the other hand, this characteristic is not necessarily directed to the intended educational objectives, in their entirety, making the selection process more complex and intensifying the need for teachers to act as facilitators of the teaching-learning process and revisit their mediation criteria (Sousa, Despresbiteris, & Machado, 2019).

For this mediation to become more effective in creating meanings or bringing the student closer to achieving objectives, teachers need to make a more detailed record of the intended objectives, so that the change in strategies and/or tools used throughout the process of mediation does not compromise the development of professional profile skills.

In this context, reflection on the new challenges of mediation becomes imminent, and the intense use of technological resources requires teachers to master different tools and more agility in the appropriate use of the countless stimuli offered by the resources chosen in planning, overcoming the barrier of purely instrumental use of technological resources.

**Bank of Strategies: The Experience of a Group of Pedagogical Consultants**

During the Covid-19 pandemic and the need for remote teaching, the use of Digital Information and Communication Technologies (TDIC) became essential, through various technological resources and digital teaching resources, for the continuity of the teaching process and learning process (Arruda, 2020). Despite the existing knowledge that skills-based work in conjunction with hybrid teaching meets the needs of contemporary students, enabling personalization and innovation in the teaching and learning process (Camargo, 2018), teachers needed support to adapt to the new reality of remote teaching, permeated by various technological tools and digital teaching resources.

The experience of the group of pedagogical consultants, responsible for the curricular development of professional education courses, in the search for the possibility of allowing the curricular contents developed in person to continue to be offered to students, was the starting point for the development of a bank of strategies, which served as a subsidy for the practice and pedagogical mediation of teachers at different levels and teaching modalities.

Among the countless possibilities used to support didactic-pedagogical planning, structuring, organization, and definition of objectives and the choice of teaching-learning strategies, Bloom's Taxonomy was chosen, which aims to help in the identification and declaration of objectives linked to the cognitive development, which brings together the construction of knowledge, skills, and attitudes, pointing out theoretical assumptions of the cognitive domain as support so that educators can define, in their educational planning, objectives, strategies, and evaluation systems (Bloom & Krathwohl, 1956).

The objective of creating the bank of teaching-learning strategies linked to digital resources was to offer subsidies for teachers' pedagogical planning with regard to the selection of teaching-learning strategies, as a means of developing skills, in accordance with the educational principles of the institution and according to the specific needs of each phase of the knowledge construction process. In this context, there was an imminent need to support planning that considered the possibility of remote classes using digital resources.

It is known that the simple execution of an activity does not guarantee that the student will establish the necessary relationships that will lead him to achieve the proposed objectives and that, in a set of actions, will lead him to the desired professional competence. It is understood that for this, it is necessary to trace a logical and meaningful trajectory within a context, creating a didactic sequence. To do this, it is necessary to know the potential of the different learning strategies and relevant articulations, enabling cognitive development by overcoming cognitive phases. In this sense, the subsidies offered by the bank of digital strategies and resources for the act of planning corroborate teaching praxis.

Thus, the bank of digital strategies and resources, which was based on Bloom's Taxonomy (Bloom & Krathwohl, 1956), considers that its use focuses precisely on clearly specifying the objectives, to facilitate the selection of teaching strategies -learning, determination of content, and assessment techniques. The relationships established between the development of skills, Bloom's taxonomy, and active strategies converge towards spiral learning (Bacich & Moran, 2018), starting from simpler to more complex levels of knowledge, skills, and attitudes.

In preparing the bank of strategies, teaching-learning strategies were mapped and conceptualized, their possibilities explored and, in a transposition from the physical mode to

the virtual mode of class, such strategies were associated with such that they could achieve the objectives initially outlined in the planning of the courses. Therefore, the objective is to use digital tools and resources in the teaching and learning process at various levels of Bloom's taxonomy.

Digital resources were categorized by pedagogical potential, that is, by skills they could offer students, be they elaboration, editing, collaboration, creation, sharing, among others and not just the use of digital tools. The focus is on how these digital resources and tools support the evolution of student thinking at different levels of cognition. Thus, to achieve the objective designed during class planning, different strategies can be indicated, depending on the level of cognitive development and stage of the course, as well as, in the case of remote or hybrid teaching, the digital resources that best meet the needs are articulated. those initially proposed objectives. In this way, value was attributed to the objectives and pedagogical intentionality of each category of digital resources.

It is worth mentioning that we find, in the literature, the articulation between the various digital resources widely available on the internet and Bloom's Taxonomy, in a direct way. The option to carry out a triangulation between learning strategies, Bloom's Taxonomy, and digital resources, assumed that the resource, by itself, without being linked mainly to a pedagogical intention, can become empty, considering the importance of pedagogical mediation in this process.

## Conclusion

Technological resources assist the teaching and learning process, through methodologies and strategies that, combined with pedagogical mediation, become important instruments and provide support for learning (Camargo, 2018). When developing curricula that consider technology and digital teaching resources, it is possible to think about meaningful learning experiences. Integrated and structured work becomes possible, facilitating the teaching and learning process.

For the group of pedagogical consultants, the taxonomy proposed by Bloom served as a basis to assist in planning, organizing, and controlling learning objectives. The processes categorized by the Taxonomy represent the expected learning results and are cumulative, as they have a dependency relationship between levels and are organized in terms of the complexity of mental processes. For learning to be meaningful, strategies must be linked not only to the pedagogical project, proposed objectives, and themes but also to the student's learning context. The clear and structured definition of learning objectives, considering the development of skills relevant to the professional profile to be trained, guides the teaching and learning process towards the appropriate choice of methodologies and strategies and assessment instruments, which enables effective learning and lasting (Arruda, 2020).

In this way, the development of a bank of strategies composed of the association of educational objectives, starting from a selection of learning strategies already widely used by teachers and the selection of digital tools and resources, considering their forms of presentation, functionalities, and purposes, became assertive pedagogical mediation providing continuity in the teaching and learning process.

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