

*Teaching and Learning Process and Information and Communication Technologies  
From the Remote Perspective*

Rosiris Maturo Domingues, Senac São Paulo, Brazil  
Patricia Luissa Masmo, Senac São Paulo, Brazil  
Cibele Cavalheiro Neves, Senac São Paulo, Brazil  
Juliana Dalla Martha Rodriguez, Senac São Paulo, Brazil

The European Conference on Education 2023  
Official Conference Proceedings

**Abstract**

This article reports the experience of the pedagogical consultants responsible for the curriculum development of Senac São Paulo courses when facing the emergency need to maintain the pedagogical process in their schools in the face of the Covid 19 pandemic. The urgent adjustment to distance education resulted in the improvement of the process and the adoption of new teaching and learning strategies mediated by technologies. The processes for preparing and providing guidelines for professional education courses were also readjusted. Thus, a bank of teaching-learning strategies linked to digital resources was developed, categorized, and identified by their didactic-pedagogical potential, having as intersection a didactic planning based on learning objectives based on Bloom's taxonomy (revised), given its convergence with the competency approach adopted by Senac. Methodologically, a relationship was established between connectivity and digital networks and digital evolution in school environments, culminating in new paradigms and processes of educational communication and new trends in teaching and learning. As a result, teachers adhered to the use of digital tools in their practices, transposing face-to-face classroom methodologies and practices to online media, whose criticism was the use of ICTs in an instrumental way, reducing methodologies and practices to teaching only transmissive. There was recognition of the insertion of technology as a facilitator of the educational process in a non-palliative way and the development of a web curriculum, now and fully, carried out in contexts of ubiquity.

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

**iafor**

The International Academic Forum  
[www.iafor.org](http://www.iafor.org)

## Introduction

This article reports the experience of pedagogical consultants when faced with the emergency need to maintain the pedagogical process in their schools in the face of the Covid 19 pandemic. Thus, a bank of teaching-learning strategies linked to digital resources was developed, categorized, and identified by their didactic-pedagogical potential, having as intersection a didactic planning based on learning objectives based on Bloom's taxonomy (revised), given its convergence with the attitudinal approach adopted by the institution. Methodologically, a relationship was established between connectivity and digital networks and digital evolution in school environments, culminating in new paradigms and processes of educational communication and new trends in teaching and learning.

## The Bank of Teaching-Learning Strategies

Proposing a series of digital resources that would facilitate a clear and dynamic choice according to the learning objectives, in a structured way (1), was a great challenge.

Thus, the bank of strategies offers digital tools and resources for the teaching and learning process at different levels of Bloom's taxonomy. For us, linking Bloom's Taxonomy to digital resources without linking the didactic resource to a pedagogical intention can make the pedagogical mediation lose meaning throughout this process.

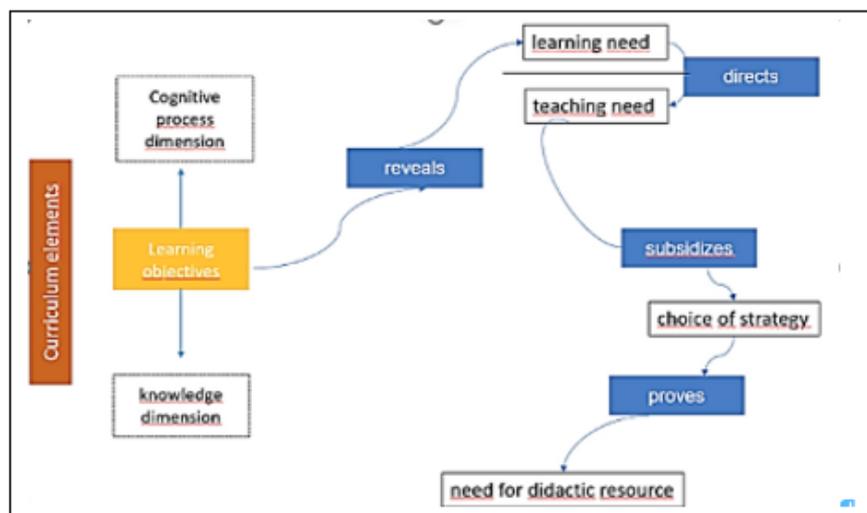


Figure 1. Logic used for the construction of the strategy's bank

The Strategies Bank is made up of two menus, namely: search by strategy and search by objective. Both contemplate a teaching and learning strategy, with a brief explanation of its concept, the presentation of the learning objectives related to it, the resources and its pedagogical didactic potential, the name of the tool, web address, description of this tool, purpose, deliverables or final products that the tool delivers and the type of access. There are two ways to use it, the first being the choice of strategy. The starting point of the research is the teaching and learning strategy (Figure 2). The teacher selects the strategy he intends to use and for it the learning objectives, the digital didactic resources, the potential of this resource and the technological tools are listed.



Figure 2. Use of the strategy bank for choosing the mediation strategy

PESQUISA POR ESTRATÉGIA			
Abordagem Múltiplo	Diário de Bordo	Exposição Dialogada	Simulação
Apresentação Discussão Vídeo	Dinâmica de Grupo	Experimentação	Sociodrama
Atividade em Grupos	Dramatização	Gamificação	Storytelling
Atividade Individual	Estudo de Caso	Leitura	Trabalho com Projetos
Aula Invertida	Elaboração Mapa Conceitual	Palestra	Visita Técnica
Brainstorming	Elaboração de Mapa Mental	Peer to Peer	Webquest
Contrato de Aprendizagem	Elaboração de Mood Board	Pesquisa	Worldcafé
Debate	Elaboração de Painel	Pensamento Computacional	
Demonstração	Elaboração de Portfólio	Roda de Conversa	
Design Thinking	Entrevista	Rotação por Estações	

Figure 3. Search for strategy

The other possibility is to search by learning objective (Figure 3). For this choice, the teacher selects the objective and for this the teaching and learning strategies, the digital didactic resources, their potentialities and the technological tools are mapped.



Figure 4. Use of the bank of strategies for choosing the learning objectives

The Bank has a wide variety of teaching and learning strategies mapped after mapping the pedagogical consultants throughout the mediation processes carried out in the design of courses and the strategies described in the literature. Still, about technological tools, it encompasses countless possibilities, free and paid, which allow, within the purpose for which they are proposed, the final delivery of a product.

The case study (as a strategy) promotes the analysis of a real situation, with the purpose of preparing diagnoses, identifying problems and their possible causes and/or proposing solutions. Regarding the dynamics of the activity, the teacher must present the case to be discussed. Next, the students, gathered in groups, analyze the situation, expressing their points of view and identifying the aspects under which the problem can be focused. Next, each working group presents its view on the case discussed. Finally, the main points are resumed and the elaborated by the different groups are students together, with the mediation of the teacher. Due to its characteristics, this strategy is often used in conjunction with reading texts.

Learning objectives	Resources	Didactica potentiality	Tool name	Web Address
To analyze To evaluate	Mapa	Foco de utilizar para aprender e compreender dados e informações referentes a determinados lugares, demonstrar rotas e trilhas, mapear áreas de atuação e de conteúdos, demonstrar abrangência de área para tempo, região e tecnologia de ensino, tanto em 2D quanto em 3D em mapas 3D interativos.	Mira	<a href="https://mira.com/">https://mira.com/</a>
	Área de trabalho virtual de aprendizagem (AVA)	Foco de utilizar em ambientes virtuais de aprendizagem para o gerenciamento de conteúdos, elaboração e avaliação de atividades e avaliações, bem como para o acompanhamento contínuo do progresso do aprendiz.	Canvas LMS	<a href="https://lms.canvaslms.com/">https://lms.canvaslms.com/</a>
			Articulate	<a href="https://articulate.com/">https://articulate.com/</a>
			Blackboard	<a href="https://www.blackboard.com/">https://www.blackboard.com/</a>
			Future Classroom	<a href="https://www.futureclassroom.com/">https://www.futureclassroom.com/</a>

Figure 5. Vision of the choice of a strategy, the possible objectives to be achieved and the suggestion of corresponding digital resources

## Conclusion

As a result, teachers adhered to the use of digital tools in their practices, transposing face-to-face classroom methodologies and practices to online media, whose criticism was the use of ICTs in an instrumental way, methodologies and practices to purely transmissive teaching. There was recognition of the insertion of technology as a facilitator of the educational process in a non-palliative way and the development of a web curriculum, now and fully, carried out in contexts of ubiquity.

It is important to point out that we find, in the literature, the articulation between the various digital resources widely disseminated 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, came from the budget that the resource, by itself, without being mainly linked to a pedagogical intention, can be emptied, still considering of paramount importance the mediation in this pedagogical process.

## References

- Almeida MEB. (2019). Curriculum Integration and Information and Communication Technologies: *Web Curriculum and Teacher Training*. São Paulo.
- Azevedo MA de, Silva CD da, Medeiros DLM. (2015; 4). Professional education and integrated curriculum for high school: *necessary elements for youth protagonism*. HOLOS.
- Bloom BS, Krathwohl DR. (1956). Taxonomy of educational objectives: The classification of educational goals, by a committee of college and university examiners. Handbook 1: Cognitive domain.
- Bojer MM, Roehl K, Knuth M, Magner C. (2010). Mapping dialogues: *essential tools for social change*. Rio de Janeiro: Instituto Noos.
- Burbules NC. 2014;22. Los significados de “aprendizaje ubicuo” 1. Education Policy Analysis Archives.
- Casali A. (2018; 27) (65/2) Human rights and cultural diversity: *curriculum implications*. Revista de Educação Pública.).
- Ferraz AP do CM, Belhot RV. (2010). 17(2). Bloom's Taxonomy: *theoretical review and presentation of instrument adaptations for defining instructional objectives*. Gestão & Produção.
- Lopes J, Silva H. (2010). The teacher makes the difference. *In student learning. In the school achievement of students. On student success*. Lisboa: Lidel.
- Marzano RJ. (2009). The art and science of teaching: *A comprehensive framework for effective instruction*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Mello C de M, Almeida Neto JRM de, Petrillo RP. (2020). Education 5.0: *Education for the Future*. 1st ed. Rio de Janeiro: Freitas Bastos.
- Pedon NR, Corrêa RA. (2019). School and curriculum: *an essay on disputed territories*. REVISTA NERA. (48).
- Rezende V, Vieira Silva M, Lelis Ú. (2014;12(1). Curriculum, knowledge and power: Curriculum, knowledge and power: contemporary challenges for curriculum reforms and teaching work. Revista e-Curriculum.
- Rubie-Davies C. (2015). *Becoming a high expectation teacher: Raising the bar*. New York, NY: Routledge.
- Silva HS, Lopes J. (2015). I, teacher, ask. *20 responses on teaching-learning planning, teaching strategies and assessment*. Lisboa: PACTOR.

Valente WR. (2008; 28(74). Who are we math teachers? Cadernos CEDES.

**Contact email:** [rosiris.mdomingues@sp.senac.br](mailto:rosiris.mdomingues@sp.senac.br)