THE NEED FOR TECHNOLOGICAL EDUCATION IN BASIC EDUCATION AND THE EDUCATIONAL PERSPECTIVE OF THE INNOVATIVE TEACHER

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Summary

This article addresses the topic of technological education in elementary and secondary education in public schools, theoretically analyzing authors and legislative and executive achievements in the technological-educational scope, and the proportions of the viability of modern and accessible instruments for children and young people, as well as their use in a school environment. The need for an innovative education professional for young people and teaching professionals who need help familiarizing themselves with technological-pedagogical objects is also analyzed. Finally, a brief interview is given with an innovation coordinator teacher – PCI in a public state school, a position provided by the state department of education, in which this professional's perspectives and reflections can be considered, together with the theoretical one.

Key words: PCI. Digital. Inclusion. Integration.

Abstract

This article addresses the topic of technological education in elementary and secondary education in public schools, theoretically analyzing authors and legislative and executive achievements in the technological-educational scope, and the proportions of the viability of modern and accessible instruments for children and young people, as as well as their use in a school environment. The need for an innovative education professional for young people and teaching professionals who need help familiarizing themselves with technological-pedagogical objects is also analyzed. Finally, a brief interview is given with a teacher who coordinates innovation at a public state school, a position provided by the state department of education, in which this professional's perspectives and reflections can be considered, together with the theoretical one.

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1. INTRODUCTION

Technology is the result of a globalized revolution, with the main focus being the exchange of information at all times. Furthermore, its positive points within the modern school environment are obvious, offered through computers, *chromebooks*, *tablets*, *gadgets*, and even digital projectors and whiteboards can be mentioned, as well as more notorious ones such as laser cutting machines, digital plotters and 3D printers. Technological advancement in the school environment is evident with the creation and availability of new active and assistive methodologies.

It is known that updates and modernizations occur all the time, however it can be difficult for the school environment to keep up with the volume, either for financial return, or for the awareness of those working in the educational society, but the challenges can be analyzed in this article. and insightful innovation methods to overcome the traditional and promote the reality of the "digital age", introducing the "new" through the necessary adjustments.

Here, in this article, we seek the theoretical basis on the benefits or harms of implementing technology in the living environment, as well as limitations of executive bodies in order to overcome them.

It is known that social changes, new concepts, new civilizations, new educational and behavioral models, new ways of working, loving and living, new economies, new political conflicts-educational and new modified consciousnesses (TOFFLER, 2003, p. 142). Alvin Toffler (2003) makes clear the importance of modernization in all aspects of society, including the construction of knowledge for the result in human development and quality of life. Therefore, the school must be part of society, and this means its evolution alongside it, since the school is a development and preparatory environment for life, with a lot of information and knowledge.

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This article is produced from bibliographical research, using material already published, constituted from reliable books and materials available on the internet (GIL, 2002). As is the case with field research, with an interview answered by the teacher through a form formalized in his institutional email as an educator. It will be a qualitative analysis based on those approached by the educator, with a structured interview that "is carried out based on a previously planned questionnaire. The main characteristic of a structured interview is that the interviewer must be careful and rigorous in restricting the interview to the questions asked" (COELHO, 2020).

Therefore, the relationship between education x technology x teacher-student and citizenship for living in society today is reflected, along with the curriculum, outlining the knowledge and approach of the programs developed by the state secretariat of education of Espírito Santo at the forefront of the program, the beneficiary, the student, with the help and disposition of the teacher in contemporary times.

Technology becomes a didactic-pedagogical tool that helps the teaching-learning process, enabling interactivity, dynamism, multidisciplinary and interdisciplinarity, as well as facilitating contextualization to the student's reality, something that even the Educational Development Program - PDE provides , such as virtual environments that rely on technological support that are necessary for the development of collaborative activities (BRASIL, 2010, P. 13).

It can be deduced, from this article, that technological modernity has or has not become a pedagogical tool, with or without a contribution to teaching, with appropriate use, in addition to necessary implementations by school managers, teachers and state secretariat employees. of education, with the necessary concern in highlighting contents to innovations and inclusions with technological references in order to interact and expand knowledge.

2. CONCEPTUALIZING AND CONTEXTUALIZING

There are historical records that show the teaching-learning process between teacher and student through orality and transmission of information. A way of inserting the student into society through the opportunity to know how to read and write, as well as other operations. After the industrial revolution, there was a moment of transition in production methods, from what was previously artisanal, manufactured, to machines. So, this was the new historical stage in which mass manufacturing and its increase made the need for production and sales to be the focus in all sectors, which was no different for education. Through the systematic introduction of technology in Brazilian schools, from the 60s onwards, there was a certain resistance from the educational environment, however, the implementation of equipment was thought to be accelerated with national society in a political-economic context of insertion in the world market for production and consumer of goods, associated in capital (CHIOFI & OLIVEIRA, 2014, p. 4).

It is known that education tends to be increasingly technological, with the teacher being the executor, requiring an increasing understanding of technologies and interpretations of the technological resources available and their appropriate use with full pedagogical benefit. The world is increasingly globalized, reflecting this in teaching routines; and all of this comes to improve and assist the teaching-learning process, establishing a dialogue between content and its absorption in the student, after all "in order to develop an analysis of the knowledge retention process, it is necessary to define its scope. Knowledge retention consists of three activities: acquisition, storage and retrieval of knowledge" (WALSH; UNGSON, 1991, our translation)[3].

Technology in education is a differentiator that helps the educator and the student, and this is the result of the preparation of the professional, with the implementation of content and even virtual learning environments (VLE), including different sources of knowledge, methodologies and learning together. to his discipline, making his and the student's practice increasingly creative and diverse, reflecting exactly the which Moran (2009) defines:

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> Each teacher can find their most appropriate way of integrating the various technologies and the many methodological procedures. But it is also important that you learn to master forms of interpersonal/group communication and audiovisual/telematic communication (Moran, 2009, p. 32).

3**Note**: "In order to develop an analysis of the knowledge retention process, it is necessary to define its scope.
Retention of knowledge consists of three activities: acquisition, storage and retrieval of knowledge" (Walsh and Ungson, 1991).

Furthermore, the challenges are daily, and the education professional has the difficult task of maintaining always up to date, that is, they work simultaneously with their teaching practice, the search for knowledge about the subject taught, as well as the search for technological knowledge to continue achieving the basis for teaching methodologies within the classroom.

Moran also says, in his work The Multiple Ways of Learning: "the more technology advances, the more important it becomes to have educators who are intellectually and emotionally mature, people who are curious, enthusiastic, open, who know how to motivate and dialogue" (2005, p.12). And this is exact corroboration of the new ICTs (Information and Communication Technology) and their use within schools.

Let us analyze that a pencil, a pen, a projector, and even a blackboard were considered a technological resource, as they had the innovative and auxiliary purpose of assimilating the knowledge covered in the classroom, which is indispensable today in the pedagogical process. In this way, it can be said that the student's process of action is to be receptive, and technologies facilitate this knowledge, for example the revolutionary use of audios, videos, animations, applications, social networks, digital libraries and learning platforms, which are facilitators of communication, with the teacher being the mediator, and the student being the executor of learning, more active and autonomous in active methodologies, positively modifying classes, being the center of the learning process (SARAIVA, 2021) .

Thinking about the efficient use of technologies within the classroom, the state secretariat of education of Espírito Santo (SEDU), together with the state secretariat of planning and evaluation (SEPLA) and the training center for education professionals (CEFOPE) , created the designation of PCI (Teacher Innovation Coordinator) in state schools with School of the Future certification.

The school of the future is about insertion into a

> set of actions implemented by Sedu to offer a more current, comprehensive and innovative education, aligned with current educational legislation with the guarantee of the full development of the Common National Curriculum Base - BNCC and the Espírito Santo Curriculum in the state public education network (ESPÍRITO SANTO, sd, p. 5)
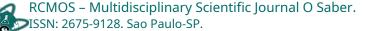
In other words, the state school with certification of the future, is an initiative of the government of the state of Espírito Santo that develops the culture of the digital environment with pedagogical methodologies that innovate in the school context, in addition to considerably improving the infrastructure and technology of the space, with learning significant, with the student being the protagonist in the teaching-learning process, such as examples of flipped classrooms, gamification, robotics, programming and investigative practices. Through these methodologies and strategies, this initiative guarantees the development of students with modern skills vehemently aligned with digital culture hand in hand with BNCC skills (ESPÍRITO SANTO, sd, p. 4).

And the innovation coordinator teacher is an essential part of this project, since the State Department of Education of Espírito Santo (SEDU) aims for the right to comprehensive education with academic success and inclusion, through permanence and learning. This strategic objective of promoting digital culture with innovative educational resources means that the secretariat develops the creation of a professional specialized in this promotion, articulating and advising school teams in schools on a full-time basis, with an average of 40 hours per week divided between shifts. ; in this there is the effective intention of developing this action (ESPÍRITO SANTO, 2023, p. 1).

It can be seen that the action, in this context, stimulates technological innovation within the school environment, building knowledge through student protagonists, encouraging the development of creative, innovative and technological professionals, with training and availability with the pedagogy of the presence of tools , software and varied active methodologies.

With the availability of the PCI at full-time schools with certification of the future, several objectives can be set, such as:

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> Promote the provision of digital education, with the guarantee of connectivity and technological equipment suitable for pedagogical use; promote teaching and learning through the integration of Digital Information and Communication Technologies (TDICs) into curricular components through technological axes; develop digital culture in state public schools; favor the development of fundamental skills for the digital era and skills for the 21st century;;

promote the provision of an emancipatory education through the use of technology, ensuring that the pedagogical team and students seek, together, innovative solutions and propose alternatives to improve results (ESPÍRITO SANTO, sd, p. 4).

The implementation of the system along with the implementation of the new role of innovative teacher in schools with certification of the future, there is a clear need for schools to organize themselves and appropriate the guiding principles of idealization, training, application and monitoring. What was designed by the departments together brings strong evidence that the program is truly beneficial for students and the teaching team, as well as the execution of training, application and monitoring, which will be covered in the next topics of this article.

3. METHODOLOGY

This article will explore an interview carried out with the innovation coordinator professor at the CEE-FMTI Pastor Oliveira Araújo school, from the state network at the Espírito Santo State Department of Education – SE-DU-ES, using a qualitative research approach. His name will be displayed non-anonymously, given the professional's permission.

Qualitative research is an approach in which subjective social and behavioral aspects are studied, based on the analysis of time, place and culture, in addition to addressing themes that cannot be quantified, but analyzed between symbols, beliefs, values   and human relationships of certain social group. It also requires a field of research object, in which the belonging society is inserted (GIL, 2008).

In the next topic, the structured interview will be addressed using a form filled out by the interviewee using the Google Forms digital platform, in which the teacher will answer the questions and be able to develop the topic, if desired.

4. THE MAGISTRY AND THE PERSPECTIVE OF THE INNOVATION COORDINATOR TEACHER

Interviewed for this article was innovation coordinator professor Filipe[4]. He has a degree in physics from the Federal Institute of Education, Science and Technology Fluminense – IFF. He began teaching through the Institutional Teaching Initiation Scholarship Program in 2018 and 2019 at Colégio Moderno Rio das Ostras and today teaches and holds the position of PCI at the Centro Educacional de Ensino Fundamental, Secondary Full-Time Pastor Oliveira de Araújo, where he currently has an effective contract. He agreed to his identification. The professor was asked how he began his scientific and technological career in education, and his answer was:

> Technology has always been one of the constants in my personal life, but it is more accurate to say that my experience with technology and innovation in education begins at PIBID where we carry out electronics projects using Arduino (FILIPE, 2023).

The professor, in interpretation, already informs his career initiation with one of the most difficult technologies to work with and design. The Arduino is a platform that enables electronic projects, that is, electronic prototyping. It consists of hardware and software and has the main component called microcontroller, which is a very small processor and much smaller than conventional processors. This microcontroller executes programs, analyzes the quality of inputs and outputs between the external and the digital world. In other words, it is a board/platform that is basically used for programming with application in various solutions in electronic media (MAKYIAMA, 2022).

Now, having seen the great amount of knowledge that the teacher has, he answered the following question: does the school where you are working as innovation coordinator teacher have equipment, enough materials, technology to perform your role as PCI? If so, what innovative equipment is available?

> Yes, the amount of materials and inputs is sufficient. These include: 3D printer, CNC laser cutting machine, electronic cutting plotter, Arduino kits for robotics, computers, notebooks, chromebooks, tablets, virtual reality glasses, maker laboratory and connection with internet (FILIPE, 2023).

It can be seen that the school is worthy of certification as a school of the future with all the availability

4 Professor Filipe Salvador do Nascimento Nogueira Oliveira. E-mail: filipe.nnsoliveira@educador.edu.es.gov.br .

of equipment, from cheap to expensive, but with everything on offer for students. With this, the professor was also asked if he felt qualified for the assignment/position and if he considers himself capable of performing it with mastery, and he responded vehemently: "although there are some challenging aspects attached to the role, I felt quite satisfied with appointment to the position and I feel capable of carrying it out" (FILIPE, 2023).

As stated in a previous topic, there is a school that has the certification of the future. In addition, there are many responsibilities for this and the professionals within it, in addition to periodically reviewing its mission in the school environment, monitoring the action plan and curriculum, applying assessments according to the specifications of each student and each subject, whether diversified from the curriculum or no, in addition to its integration of the school environment with the non-school environment. With this, the teacher was asked: do you consider that this full-time school with certification of the future really needs an innovation coordinator teacher - PCI, as made official by SEDU, CEFOPE, CEPLA and GEPRO? And his answer was: "absolutely yes, the school of the future certification comes accompanied by a myriad of bureaucratic and organizational demands that demand a professional dedicated exclusively to fulfilling them" (FILIPE, 2023).

It can be easily corroborated with the teacher's words that the digital skills specified in the school's responsibilities with certification of the future are being implemented by professionals from the pedagogical team and teachers in the daily life of the pedagogical area, in digital citizenship in addition to the application in professional development (ESPÍRITO SANTO , sd, p. 25).

Finally, we asked the teacher how he reflects his future educational perspective for the student's insertion with the equipment available at this school? It is a reality? Is it just planning that is difficult/impossible to execute? And his response was:

> I believe that the insertion of students is totally and completely possible and I also believe that it is a matter of time before this insertion is fully realized. The main challenge in the short term is the insertion and familiarization of the teacher, with due training and encouragement we will build a team capable of integrating technology in a meaningful and transformative way in their classes (FILIPE, 2023).

Thus, a good perspective in the educational sphere is noticeable in the teacher's speech, with the implementation of total technology in the student's life, with effective training in classes, which can be well reflected in life beyond the school environment to prepare for life in society.

5. FINAL CONSIDERATIONS

It is notable that the use of technology in the classroom is an innovative methodology that increasingly helps teachers and students. Such tools help with knowledge retention, as well as creativity and encouragement, whether individually or collectively, as well as helping to prepare classes, making them attractive and interactive.

It is known that technological trends can even help in the means of evaluation, interaction and facilitation of teaching learning in the educational reality as a whole, however some schools cannot keep up with modernity, whether for financial reasons, professional preparation, lack of internet in the location, or other reasons.

It is estimated that the teacher of the future, living with technology, increasingly seeks to improve himself, whether intellectually or with equipment, and the state education department helps with the implementation of the best modernities for students, analyzing that is a public school, with private treatment, implementations of the most effective innovations, which are in front of the professional and the student, like a banquet, vehemently knowing that

> Education is a social practice (such as public health, social communication, military service) whose purpose is the development of what in the human person can be learned among the types of knowledge existing in a culture, for the formation of types of subjects of according to the needs and demands of its society, at a moment in the history of its own development (BRANDÃO, 2007, P. 73).

The school has a real role in the teaching-learning process between teacher and student, forming criticalities through knowledge, and the three spheres must be capable of knowledge and innovative technological information. Education should not be behind in the use of technologies as we found in this article; The

Education must constantly modernize to cover all areas of knowledge, following the evolution of society and contributing to a reasonable experience.

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