



ARTIFICIAL INTELLIGENCE IN THE SCHOOL ENVIRONMENT

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SUMMARY

This work aims to address the use of artificial intelligence in the school environment, giving readers an understanding of how AI has been inserted into the school environment, as well as into teaching methodologies. The specific objectives are: to highlight the main characteristics of artificial intelligence; address the introduction of AI at school; evaluate the most important aspects of the use of AI resources by teachers. In the methodological field, a literature review was carried out, highlighting some of the main concepts and analyzes by renowned authors published over the last 10 years. It can be seen throughout the content presented that artificial intelligence is an important ally for teachers, as well as schools in the educational process.

Key words: Artificial intelligence; School; Teaching.

ABSTRACT

This work aims to address the use of artificial intelligence in the school environment, giving readers an understanding of how AI has been inserted into the school environment, as well as into teaching methodologies. The specific objectives are: to highlight the main characteristics of artificial intelligence; address the introduction of AI at school; evaluate the most important aspects of the use of AI resources by teachers. In the methodological field, a literature review was carried out, highlighting some of the main concepts and analyzes by renowned authors published over the last 10 years. It can be seen throughout the content presented that artificial intelligence is an important for teachers, as well as schools in the educational process.

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1. INTRODUCTION

Changes in society related to the development of science, technology, computing power, cloud services, artificial intelligence, increasing general access to huge amounts of open data lead to increased global investment in technology and services. Proper training is required by experts to create a workforce to work with artificial intelligence (FAVA, 2018). On the one hand, new requirements are presented for the training of young people and, on the other, educational content offers opportunities for the use of cloud technologies during the educational process.

The widespread use of AI in various fields and everyday life poses the task of understanding the basic terms related to Artificial Intelligence (AI) such as Machine Learning (ML), Neural Network (NN), Artificial Neural Networks (ANN), *Deep Learning*, Data Science, *big data*, mastering the basic skills of using and understanding the principles of AI, which is possible while studying on the school computer science course. Cloud technologies allow using the power of a remote server (open information systems, digital resources, software, etc.) regardless of the consumer's location and offer ample opportunities for the study of artificial intelligence (SOUSA; MAIA, 2020).

The general objective of the work is to describe how artificial intelligence has been used in the educational field. As for the specific objectives, they are: highlight the main characteristics of artificial intelligence; discuss the introduction of AI at school; evaluate the most important aspects of the use of AI resources by teachers.

Throughout the content presented, we seek to consolidate how the teaching environment has been promoting the use of AI in its routines, something that can be a positive and efficient methodology with regard to the teaching and learning process. Also consolidating the need for effective training for teachers.

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2 THEORETICAL FRAMEWORK

2.1 ARTIFICIAL INTELLIGENCE



Artificial intelligence (AI) is defined as “a field of science and engineering concerned with computational understanding of what is commonly called intelligent behavior and with the creation of artifacts that exhibit such behavior.” Aristotle attempted to formalize “right thinking” (logic) through his syllogisms (a three-part deductive reasoning). Much of the work in the modern era was inspired by this and early studies into the workings of the mind helped establish contemporary logical thinking. Programs that allow computers to work in ways that make people appear intelligent are called artificial intelligent systems.

Artificial intelligence (AI) is an important field of computer science that seeks to create complex machines with characteristics of human intelligence. We can think of this concept as “general AI”, which has machines that can think, reason and even see and hear like humans (BECKER, 2019).

This concept that can be seen in films like Star Wars (think C-3PO, an android programmed for etiquette and protocol) is not something we can achieve at this time. However, what is achievable right now falls under the concept of “Narrow AI”, the existence of technologies to perform specific tasks as well or better than humans can.

Examples of such narrow AI include speech recognition, facial recognition, etc. These technologies display certain facets of human intelligence. This intelligence is derived from AI techniques known as machine learning and deep learning, which have improved performance in areas such as image classification, text analysis, speech and facial recognition with a variety of promising applications such as autonomous vehicles, language processing natural and medicine (PEREIRA, 2018).

Training implies something intellectual and rational, at the same time as it requires a series of tasks that range from fundamental disciplinary preparation to mastering the technicalities of a profession, including mastering the techniques of knowing how to teach. Thus, the first problem to be analyzed in any higher education institution, and particularly in universities, is the training of teachers who will be in their classrooms, workshops and laboratories.

There is a controversy regarding what is called training in “teacher training programs”, which are different from training and qualification, which makes it necessary to analyze whether the pedagogical conception that guides them has a normative and prescriptive vision of the set of knowledge required. for teaching knowledge.

2.2 ARTIFICIAL INTELLIGENCE AT SCHOOL

Artificial Intelligence (AI) is a term used to describe computer systems that can perform tasks or activities that require human intelligence capabilities, such as planning, problem solving, or logical action. AI is not a new field. However, there has been significant interest and growth in the technology over the past decade due to advances in computer processing power, algorithm1 complexity, and data availability and storage. AI applications have also benefited from improvements in computer vision, graphics processing, and speech recognition (FAVA, 2018).

AI currently provides a set of tools to help collect, explore and analyze the vast amounts of data currently available, and is increasingly used to aid human decision-making and automate tasks. Although AI is becoming ubiquitous, there are significant misconceptions about its capabilities (SOUSA; MAIA, 2020). There is also a robust debate about its role in the future of humanity and the planet. From healthcare to agriculture, manufacturing to defense, industry is racing to make the most of AI and work to resolve its serious limitations and ethical challenges.

The field of education is just beginning to respond to the opportunities and challenges of living in an AI world. For educators to realize the potential of AI, they need to develop a solid understanding of its main concepts and characteristics, the situation of AI systems and their complex ethical and legal implications (KENSKI, 2021).

Artificial Intelligence in Education (AIED) has grown as a special interdisciplinary field. A specialized approach that encompasses the application of technology to learning and instruction, particularly in tertiary and higher education contexts. The goal of AIED is to enable more personalized, flexible, inclusive and engaging learning and automate mundane teaching tasks through automated assessment and feedback (LIMA; ARAÚJO, 2021).

In theory, AIED assistants could help parents improve early child development

language of their babies and help teachers select resources, organize lessons and increase engagement and personalize learning for their students (KENSKI, 2021). AIED assistants can be embedded in robots or virtual assistants (VAs) and can be integrated into virtual or augmented reality environments. They can also have sensors collecting visual, auditory and physiological data about students and teachers.

This type of learning data can be used to deepen our understanding of how learning unfolds in real time and help teachers select the most effective teaching approaches (BARUFFALDI, 2020). AIED tools should be able to help combat school dropout or teacher burnout and can contribute to reducing achievement gaps between students due to individual or social differences. However, despite decades of research in this area, current AIED tools do not fully utilize the technology's potential and appear far from delivering on these promises (NOLAN, 2021).

2.3 ARTIFICIAL INTELLIGENCE IN TEACHER TRAINING

Artificial Intelligence in Education (AIED) has grown as a specialized interdisciplinary field that encompasses the application of technology to learning and instruction, particularly in tertiary and higher education contexts. The goal of AIED is to enable more personalized, flexible, inclusive and engaging learning and automate mundane teaching tasks through automated assessment and feedback (LIMA; ARAÚJO, 2021).

Some teachers may fear that their jobs could be threatened by smart machines. In fact, some 'teaching robots' have been created. Most experts agree that although teachers' roles may change, AIED will enhance rather than replace educator expertise (BARUFFALDI, 2020). Others argue that the use of AIED will be relatively slow. Making the most of the benefits of AI must be seen as a transformative process, requiring a fundamental rethinking of the roles that people play in many areas of work (AOUN, 2017). Effective use of AI would free teachers to do what humans do best: deal with ambiguity, exercise judgment and high-level abstract thinking.

To realize these benefits, future teachers will need to be AI literate. This will involve developing a realistic understanding of AI capabilities in order to successfully orchestrate and oversee the use of AIED tools in data interpretation to enhance instructional approaches to learning and student engagement (LIMA; ARAÚJO, 2021).

Teachers will need to prepare their students for a rapidly changing AI world with unknown requirements for future workforce skills. Most likely, this implies more emphasis on 21st century non-routine and non-cognitive skills such as creativity for innovation, critical thinking, problem solving, decision making, and collaboration (NOLAN, 2021). AIED may be able to facilitate lifelong learning for teachers and students by providing on-demand online training options.

Curriculum is inherent to culture. Both traditional educational teaching and critical theory see in the curriculum institutionalized methods of propagating a society's culture. Remembering that, in this circumstance, there is political involvement, because the curriculum, as well as education, as a whole is related to cultural policy. However, they are fields of active elaboration of culture and, for this reason, susceptible to contradiction (SACRISTÁN, 2013).

This theory has the following main characteristics: acquisition of skills, memorization practices, preparing for the acquisition of skills. It can be described as the most basic theory related to the curriculum. According to Silva (2019), traditional curriculum theory seeks neutrality, having as its main scope promote the identification of the objectives of school education, training specialized workers or providing general and academic education.

In the view of Eynng (2015) and Sacristán (2013), the main concepts of the curriculum are related to teaching, learning, assessment, methodology, didactics, planning, among other procedures directly related to the educational part. Therefore, it is considered one of the high points in verifying professional skills and activities.

Critical theories overcome the idea of a homogeneous, merely prescriptive curriculum and argue that it reflects intentions of different orders, including: political, social and economic in the constitution

of knowledge. In agreement with critical theories, post-criticism also recognizes the presence of culture, race, gender and ethnicity as elements to be considered in the selection of knowledge that should compose curricula, sometimes being more influential in the configuration of these than macro factors. constraints (NUNES, 2021).

According to Bracht (2019), it is possible to identify several proposals that contributed to this claim, seeking to break with the paradigm of physical fitness and sportsmanship, among them, the critical overcoming and the critical-emancipatory that derived from Brazilian critical pedagogy.

Post-criticisms are beginning to stand out on the national scene, existing curricula address few issues that represent them. We find these dimensions in the PCNS, transversal themes (ethics, health, sexual orientation, environment, work, consumption and cultural plurality) and in some literary productions in the field of multiculturalism.

According to Valente (2021), the teacher's pedagogical experience through observation of what the student has found on the internet can determine whether the use of technology is producing significant learning or not. For the author, teacher training involves much more than providing them with technical knowledge about computers. It must create conditions for the teacher to build knowledge about computational aspects; understand the educational perspectives underlying the software in use, that is, the notions of teaching, learning and knowledge implicit in the software; and understand why and how to integrate the computer into your teaching practice.

Collaborative action means the sense of “doing it together”, of working together in interaction, with no hierarchical composition of the group. Teachers and students are simultaneously walking a two-way street in the search for the construction of an educational paradigm that satisfactorily and fully fills each of the existing gaps in teaching and learning through the current school (BARROS, 2017).

For Dillenbourg (2019), collaborative learning is a learning situation in which two or more people learn or try to learn something together. It is necessary to build and maintain the premise that collaboration does not aim at standardization, but at heterogeneity that enables new forms of relationships between peers.

3 METHODOLOGY

The type of research to be carried out in this work was a Literature Review, in which books, dissertations and scientific articles were consulted selected through a search in the following databases *Scientific Electronic Library Online*(SciELO), *GoogleAcademic*, Journals Portal CAPES among others available online.

To carry it out, work carried out between 2012-2022 was taken into account, with themes that were limited to the theme, therefore works published in the last 10 years(except for classic books), being the defined languages Portuguese and English. To search for information on the topic, the following terms were used: “Artificial intelligence”, “Artificial intelligence at school”, “Using artificial intelligence in school routine”, associating synonymous terms and a list of sensitive terms for the search.

4 RESULTS ANALYSIS

Some teachers may fear that their jobs could be threatened by smart machines. In fact, some 'teaching robots' have been created. Most experts agree that although teachers' roles may change, AIED will enhance rather than replace educator expertise (BARU-FFALDI, 2020). Others argue that the use of AIED will be relatively slow. Make the most of

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5 CONCLUSION

An experienced classroom educator or school leader should begin their professional learning journey about the potential of AI for education. Even with good basic knowledge, professional learning in this rapidly evolving field will need to be updated annually.

AI could potentially offer benefits to teachers and students in the form of personalized learning and pedagogical agents designed to provide appropriate and sequenced content and feedback to students. However, AI is still at a relatively early stage of development for education and there is much work to be done around the ethical and legal frameworks that can ensure the technology is used for good rather than evil, and that transparent processes are implemented to ensure accountability at the classroom, school community, and school system levels. Teachers, school leaders, and policymakers must begin to engage with AI developments for education and society in order to empower their students in the present and for future change.

It can be concluded that technological skills, such as those related to artificial intelligence, will also be important. In this sense, artificial intelligence, if there is coordination of different sectors, should be the engine responsible for another revolution, in this case, an education revolution. The challenge, therefore, is to manage it in a scenario where everyone wins.

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