



Implications of Artificial Intelligence in Education. The Educator as Ethical Leader

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ABSTRACT

Technological media are evolving at great speed, and this development inevitably affects the pedagogical approach that institutions and educators implement in the classroom. The great irruption of Artificial Intelligence tools makes it necessary to reflect on the use of these applications in educational centres at all levels, from Early Childhood Education to Higher Education. These tools have enormous possibilities and applications for the improvement of learning in many aspects, but it is also necessary to analyse the ethical implications that their use may entail, and the role of the educator in this whole process. In this sense, it is proposed that the teacher should become an ethical leader, providing adequate spaces for all students to have the opportunity to achieve learning, becoming a person who inspires those around him/her, and leading the ethical debate involved in the use of these technologies, fostering a critical spirit and knowledge. The presence of the human being in the educational process cannot be doubted, due to the presence of dimensions of the human being such as the emotional or spiritual dimension, which are part of the integral development of the individual and must be nurtured. A theoretical reflection on AI in education shows that it shifts educators' roles from traditional instructors to facilitators and ethical leaders, crucial for guiding personalized learning and addressing ethical considerations in AI use.

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1. Introduction

Technologies have been part of the development of mankind since its beginnings, and as professor and writer Asimov explains, over the past two centuries there has been a great growth as a 'machine-made' society (Ingersoll et al., 1987). Human beings are always looking forward to develop new improvements to live more comfortable, to search for meaning and purpose or looking for fame, glory or economical rewards. In the past decades, there has been an incredible amount of technological changes, and society is clearly based on pillars such as science, innovation and technologies (Fukuda, 2020). Moreover, the extreme situation experienced in recent years due to the pandemic caused by the COVID-19 virus has caused profound changes in our relationship with technologies as George et al. (2020) point out. The closure of schools, colleges and universities forced educators to design strategies based on educational technology, online resources and broadcast teaching, even in developing countries where these circumstances were especially difficult (Tadesse & Muluye, 2020). This fact produced,

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among other things, a deepening of inequalities in most countries where schools are divided along socio-economic lines (Canihuante et al., 2023) which was mainly caused by access to the Internet and technological devices.

As noted above, it seems that human beings are becoming increasingly dependent on technology and it is appropriate to analyse the impact that one of the possible major revolutions in this field may have on education: Artificial Intelligence (AI). This part of the technological development has grown exponentially in recent years, with the clear aim of catching up with and even challenging the capabilities of the human brain. According to Sadin (2019), the human brain, composed of neurons, synapses, electrical conductors and transmission networks, has become the model to build artificial cognitive systems, in order to create a similarity, with synaptic chips, neuromodules and neuromorphic chips based on the digital. And it has even been pointed out that because of the significantly varied structure of the computer, it could favour techniques that maximize the utilization of its nearly infinite memory capacity and thorough searching abilities (Brooks et al., 2012).

The combination of computer science and other fields of study such as behavioural sciences, neuroscience and psychology, linked with deep learning, have made possible the major advances in the development of artificial intelligence, so they can not only process, store or retrieve data, but also developing the ability to learn and decide. They even have developed teaching AIs, with the abilities such as having personalized and adaptive conversations with students

The emergence of these tools and its possible potential at educational and social levels makes us wonder: Is it beneficial for students if teachers use AI as a pedagogical tool? What are the main challenges that appear on AI as a pedagogical approach in the classroom? What are the main ethical concerns in education concerning the use of AI? There are already educational publishers that have integrated AI tools such as ChatGPT into their educational platforms and resources for the 2023/2024 school year for use in schools at all levels (Edelvives, 2023), so there is a need for further reflection on the possible impact that this type of digital tools can have on the teaching-learning processes, the consequences that its use can have and the real need to embrace this new instrument as an actual added value to the education of young people.

For all of these reasons, the role of the educator must be reimagined, and the following hypothesis is formulated: AI-driven personalized learning systems require educators to adopt ethical leadership approaches to ensure that all students receive fair and unbiased educational opportunities. The method chosen for this study was a literature review, with special emphasis on the studies of the last few years in the main and most important journals. Following the review, the theoretical elaboration of this important topic has been carried out.

2. Technologies as a Mediating Role to the Learning Process

Digital transformation is a process that school, universities and colleges must undertake and requires substantial and strategic changes in almost all their processes (Romero Carbonell et al., 2023) due to the mediation role that technologies are acquiring both in personal and professional processes (Canese, 2022).

There has been a big change over the last years on Spanish context due to the legislation, so that teachers must improve their digital competences over the next few years (Barberà-Gregori & Suárez-Guerrero, 2021; Guillén Gámez et al., 2023; Jiménez Hernández et al., 2021) following UNESCO's guidelines on digital education to accelerate progress towards the achievement of Sustainable Development Goal 4 (SDG 4) for education, as well as to transform the modes of universal access to learning (UNESCO, 2018). Thus, schools have had to adapt to a situation that is constantly changing and evolving at a speed too fast to be able to adapt to the new challenges as illustrated by the sociologist and thinker Bauman (2013) with his concept of 'liquid modernity', which implies a current unstable, fluid and changing reality due, in large part, to the great speed of technological advances.

This is the reality in which we live and educators cannot be oblivious to it. The availability of electronic devices in the classroom is becoming more and more widespread, whether tablets, laptops, digital whiteboards, etc. But this does not imply that teachers have the necessary skills to handle them, nor that, even if they know how to use them, they do not have the necessary knowledge to make technology an adequate means to achieve meaningful learning in their students (Sailer et al., 2021).

Digital technologies have the potential to revolutionize education, but they have often been used in a way that simply reinforces existing educational models. Instead, as Laurillard (2009) explains, we should use digital technologies to rethink how we teach and learn, and to create new and innovative educational experiences. Using this approach, it is possible to generate educational practices that are more engaging, effective, and relevant to the needs of today's students, favouring personalized learning, collaborative and active learning, and bringing the teaching processes closer to the current reality of the students.

In fact, as previously mentioned, a multitude of programs are being implemented to improve the digital competencies of teachers at all levels, and there are more and more teaching projects where technology is the backbone of the learning process, trying to develop the approach of generating innovative practices through digital and technological resources. Experiences in higher education using videogames (Sierra-Daza et al., 2023), social networks such as Facebook (Chugh & Ruhi, 2018; Hershkovitz & Forkosh-Baruch, 2017), Twitter (Abella García & Delgado Benito, 2015; Chamberlin & Lehmann, 2011; Checa García, 2013; Junco et al., 2011; Ortega Barba & Banderas Campero, 2011; Ortí Martínez et al., 2023; Prestridge, 2014; Tur et al., 2017), Instagram (Erarslan, 2019; Zhu et al., 2022), or WhatsApp (Vilches & Reche, 2019) and other digital tools such as podcasting (Merhi, 2015), virtual education platforms (Angel Uribe & Cano Vásquez, 2011), the use of smartphones as a teaching-learning tool (López Noguero et al., 2023) and digital instruments to implement gamification and game-based learning (Cárdenas Moncada et al., 2020; Lin et al., 2018; Wahyuni et al., 2021) show that there is an increased interest on developing educational strategies based on pedagogical approaches that use digital tools to facilitate learning.

There are also multiple and varied practices in Early Childhood, Primary and Secondary Education, in which technologies have been learning mediators, as in the case of secondary music teachers who used ICT tools to improve the acquisition of knowledge of the subject (Hernández Portero & Colás Bravo, 2022), the use of the Flipped Classroom methodology in Social Sciences in Secondary Education to improve academic performance and the relationship between the teacher and his students (Burgueño, 2019), the production of oral narratives in Early Childhood Education through an app (del Moral Pérez et al., 2022) or the educational robotics as a way of providing meaningful learning experiences on K-12 students (Anwar et al., 2019).

The irruption of different AI applications and platforms has opened a wide range of possibilities for educators, and soon we will have multiple studies with educational experiences in which this tool is used, adequately or not, as a means or instrument to achieve learning. Therefore, it is considered necessary to point out the main implications of the use of AI in the classroom, without forgetting the ethical implications of using this type of tools.

3. AI: Challenges, Threats And Opportunities

Artificial Intelligence in Education (AIEd) unleashes new possibilities, potentials and hurdles in the realm of educational approaches. According to Ouyang & Jiao (2021) there are three paradigms in the utilization of AI tools in educational practices: AI-directed, utilized for representing knowledge frameworks and guiding cognitive learning processes; AI-supported, used to help learners while they are collaborating with each other; and AI-empowered, employed to facilitate empowered learning as learners actively take ownership of their own education.

Regardless of the paradigm used, we found in AIEd a series of challenges and difficulties inherent to the novelty of this type of tools. Some of them, described by Su et al. (2023) are: lack of knowledge,

skills and confidence of teachers in AI; lack of curriculum design; and lack of pedagogical guidelines. As pointed out before in the use of any digital or technological tool in education, one of the fundamental aspects to be taken into account at the beginning of such implementation would be the initial training of teachers and professors, which are concerned and even skeptical because of the lack of knowledge and the responsibility of using this kind of tools (McGrath et al., 2023). Afterwards, it will be necessary to analyze to what extent educational institutions and policies introduce AIEd in the centers and curricular and pedagogical designs, so that common lines can be followed for the development and implementation of these tools in schools and universities. But then, there is another challenge or threat that must be taken into account, which has to do with the ethical considerations regarding the use of IA with students and the ethical use that they may make of this type of tools. The implications in this area could involve aspects such as the invasion of students' privacy, the manipulation or segregation of certain information, even the lack of need to contrast the information obtained by the AI and the fact that we are feeding the tool with opinions, questions and content that may or may not be closer or less close to the truth.

Also, the use of this type of technologies can produce some negative effects, contrary to an adequate development of the skills associated with digital literacy, such as an excessive dependence on technology, lack of social interaction or, as indicated previously, bias errors (Cribben & Zeinali, 2023).

But, while educators may encounter initial challenges in developing AI educational designs for their students, these tools provide opportunities and benefits such as the personalization of the learning process; it can facilitate the teacher to answer student's questions; it can also provide the educators new teaching models, assessment systems or different pedagogical approaches; and even assist students on techniques, topics and even improve their writing skills on essays (Su & Yang, 2023).

There are also other benefits to be gained from the use of AI tools, such as:

- Data analysis and progress tracking: due to the ability to analyze large volumes of data the AI can enable educators to identify areas for improvement, detect learning patterns and provide a personalized learning process.
- Aid on administrative tasks: the automatization of tasks such as test grading, grade management or report generation could allow educators to spend more time interacting directly with their students.
- Stimulate critical thinking and problem solving: as, with these tools (and even other digital tools before), it is easier to access the content, the challenge is to discern the information obtained, contrast it, and discuss how best to arrive at it. In this sense, an opportunity could be the critical development of questions, given that this type of technology needs accurate questions to find the specific content sought.
- Prepare students for the future: AI is an emerging technology in many fields, so becoming familiar with its use can prepare students for the future workplace, where understanding AI and its applications will become increasingly relevant.

Like virtually every novel tool, AI emerges unstoppable with the feeling that it has the potential to provide students with new ways of learning and also give teachers innovative and effective educational strategies. In this sense, a series of opportunities and benefits of using these tools have been described, taking into account, on the one hand, the vulnerability of students and, on the other hand, their adaptability to the transformative and disruptive effects of AI.

Applications of AI such as ChatGPT, Gemini, and Bing are traditionally used to promote intelligent learning environments (García-Peñalvo et al., 2020; Koper, 2014) or learning analytics (Lang et al., 2022) are also important. Now, as García-Peñalvo (2023) points out, intelligent content generation applications are expanding the scope of educational opportunities, as virtual assistants offer a range of intuitive possibilities that have yet to be fully explored. There are many uses for AI applications in the classroom. For example, image generation applications for creating stories (Leonardo.AI, Dall-e) or similar applications such as Scribble Diffusion, which allows you to draw a sketch with the mouse and returns

an image created from the sketch that can be analyzed or transformed in an arts class. Other tools include Synthesia, which allows you to create and edit videos from text, and Murf.AI, which converts a text command into an audio speech.

Thus, educators should be involve in a training process in an active and participatory endeavor, aiming to empower them with the ability to effectively harness AI to fulfill their requirements. This process is described by Luckin et al. (2022) by the concept of 'AI Readiness', a 7-step way to start embracing and become competent on this matter. But, aside of just getting ready and be prepared to work with these tools, it is necessary to rethink the role of the teacher in the classroom, given that the inclusion of IA applications offers a series of strategies and knowledge that, until now, were part of the educator's job.

4. The Role of Educators: Ethical Leadership

Teaching involves so many different processes, and one of them will always be the transmission and imparting of knowledge. And, as Bakhurst (2020) points out, the relationship created between the educator and his students is crucial to also transmit, among other things, the love for knowledge. The interaction between the subjects that are an active part of the learning process provides a series of aspects that, for the moment, Artificial Intelligence is not capable of producing, such as emotional processes related to empathy or even other deeper spiritual processes such as compassion and transcendence.

And no matter how much they are trying to develop teaching AIs, which probably have correct and adequate answers with respect to the knowledge of the subject that the student is studying, and can even offer adaptive answers to generate dialogues with the students, the education of the human being needs a human perspective, as showed by Lee (2023).

The role of the educator, therefore, has a clear pedagogical and didactic scope, in which aspects of knowledge transmission, design of tasks and activities or evaluation and feedback of the work done by the students are clearly involved. But this role also includes interaction in dimensions that go beyond the purely didactics and are part of deeper aspects of the human being, such as the decision-making process, the moral dimension or spiritual development. For this, the teacher must acquire the role of guide and leader, which is a key factor in the development of the student's personality. In this sense, our approach would be to provide educators tools to implement an ethical leadership. This type of leadership is defined by Brown et al. (2005) as "the demonstration of normatively appropriate conduct through personal actions and interpersonal relationships, and the promotion of such conduct to followers through two-way communication, reinforcement, and decision-making" (p.120). Thus, an ethical leader is someone who acts with integrity and honesty, both in their personal and professional life. They are guided by a set of values that inform their decisions and behaviours, and they use their position of authority to promote good and to uphold ethical standards.

An ethical educational leader, following the conceptualization given by Berges Puyó (2022), creates an environment where everyone feels comfortable speaking up, promotes ethical behavior among all members of the school community, and makes sure that ethical considerations are at the heart of all decision-making. This kind of leadership produces in students, peers and families a greater commitment to the dynamics, content and even values that are transmitted. AI tools, tremendously useful in multiple aspects, do not yet have the capacity that an ethical educational leader demonstrates by connecting and inspiring the people around him. For its part, the ethical educational leader is at the forefront of these developments and points the way for the use of these types of tools by encouraging critical thinking and always providing a moral vision on how to use them.

An ethical leader educator would perform several important tasks regarding the use of artificial intelligence and its ethical implications. These tasks should include aspects such as:

- Teaching about AI: teachers should provide students with a basic understanding of these type of tools.

- Foster digital literacy: as one of the UNESCO's main goals (2019), digital literacy should also help students develop digital skills needed to properly interact with and understand AI, like the ability to critically evaluate and use AI technologies, as well as understand their benefits and limitations. Actually, knowing the basic functions of AI is an organic part of digital literacy for every citizen in an increasingly smart society (Yang, 2022).
- Foster clinical awareness: Educators can encourage students to develop critical and reflective thinking, encouraging them to question how data is collected and used.
- Discuss ethical implications: this involves discussing issues such as privacy, data bias, algorithmic discrimination, accountability in automated decision making and the social impact of AI. Teachers can encourage debates and ethical reflections so that students understand the implications of AI in their learning processes and in society.

In fact, for this last task it would be necessary for the ethical leader educator to take into account the eleven ethical principles that should guide the AI development described by Jobin et al. (2019): Transparency, Justice and fairness, Non-maleficence, Responsibility, Privacy, Beneficence, Freedom and autonomy, Trust, Dignity, Sustainability, and Solidarity. But also adding the ones added by Adams et al. (2023) on their analysis on K-12 students, which are specific for children and, in our opinion, could be outsourced to children of other ages: Pedagogical Appropriateness, Children's Rights, AI Literacy, and Teacher well-being.

These principles could be the guidance also to build general strong policies on the use of AI tools (when to use them, which ones, how to use them, etc.) so that each institution develops a concrete policy inserted in its social and cultural context, emphasizing the main ethical and moral values in order to maintain social harmony and balance (Öngören, 2024).

5. Conclusions and Implications

The impact that AI is having on society and education is undeniable, and the impact is likely to be greater in the future. Therefore, it is extremely important that educational institutions and educators get involved in the processes of knowledge and deepening of AI applications and tools, in order to anticipate the needs that may be generated in students who have probably used and known them even before them.

Therefore, a number of recommended actions to use AI tools could be taken by an educator who is an ethical leader:

- Conduct regular assessments of AI tools, for example, evaluate AI tools for bias and fairness before integrating them into the classroom or monitor their performance on students.
- Improve transparency and communication, communicating with students and parents on which AI tools will be used, what data will be collected and for what purposes.
- Ensure privacy and security implementing strict privacy policies to protect students information.
- Promote digital literacy and ethical understanding, encouraging students to think critically about the ethical implications of AI and technology in society.
- Promote inclusivity and equity. Ensure that AI tools are accessible to all students, and review the results given by AI tools so they support equitable learning opportunities.
- The educator should stay updated on the latest research and development in AI.
- Create an ethical framework for the use of AI, developing an ethical framework or guidelines for the use of AI in the classroom.

With all the technological and digital advances that are taking place so rapidly in this century, it is essential not to lose sight of the aspects that makes us human. Tagore (2012) identified these dimensions in the concept of truth: "the truth of man is moral truth and his emancipation lies in the spiritual life" (p.96), pointing out the moral and spiritual dimensions as those that are intrinsically linked to the human being. Even integrating the UNESCO's (2021) alert about the limits of principles that assume the

complete separation between human beings and technologies and the new conceptualization of 'human being' in a posthuman perspective, our approach has defended, on the one hand, the need to approach AI as an essential element in a postmodern and liquid society, and, on the other hand, the unavoidable presence of the human being in the learning processes. This presence is justified by the fact that the subject, as a human being, has capabilities, skills and dimensions that, for the moment, technology cannot reach, and that are essential in the integral development of citizens, such as emotional communication or spiritual development.

Education should focus not only on the necessary acquisition of knowledge, skills and competences to be able to adapt to the world we live in, but also on these more human, deeper aspects. An education of the individual that pursues the integral development of the subject, in all its dimensions, in a way similar to that described by Frankl (2003):

Education should encourage in young people a process of discovery of meaning. Education cannot give meaning. Meaning cannot be given because meaning has to be discovered; we cannot prescribe meaning. But that is not the point either; it would be enough if we were to refrain from blocking the process of discovering meaning (p.20).

In fact, after asking an AI tool such as ChatGPT about the aspects that are present in human beings and are purely human and not present in other living being nor in AI, the answer given involved dimensions previously mentioned: "Self-awareness, Emotions and feelings, Intrinsic morality and ethics, Genuine creativity and Awareness of time and mortality", characteristics that are part of Emotional, Moral and Spiritual dimensions. The AI application also pointed out at the end an interesting reflection: "However, the field of AI continues to evolve and it is possible that advances in these aspects will be made in the future" (ChatGPT, personal communication, 15th May 2023). This leaves an open door to two fundamental aspects linked to the future relationship between human beings and the digital: where should the limits be placed in the evolution of technological and digital development, and also it would be necessary to rethink, in the event that such advances take place, what would be the true nature and human identity.

All these circumstances represent a complex situation in the educational field, in which, according to the theoretical review carried out, it has been considered that the figure of the educator should be based on ethical leadership. In an educational context, ethical leadership involves guiding students and staff with integrity, fairness, and respect, while promoting ethical behavior, inclusivity, and social responsibility. Ethical leaders in education ensure that decisions and actions align with moral and ethical standards, fostering a positive and principled learning environment.

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