

Educational inclusion and its meaning for the achievement of sustainable development from the use of Artificial Intelligence

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Abstract—In recent years, educational inclusion has acquired significant relevance in the global development agenda. As society grapples with complex and urgent challenges such as climate change, poverty and inequality, it is increasingly recognized that inclusive education plays a critical role in achieving sustainable development. In this context, Artificial Intelligence (AI) has become a powerful tool that can enhance educational inclusion and accelerate progress towards the sustainable development goals. The objective is to carry out an analysis about educational inclusion and its meaning for the achievement of sustainable development from the use of Artificial Intelligence (AI). The deductive method and exploratory research are used to analyze educational inclusion and sustainable development from Artificial Intelligence. It resulted in the implementation of various Parameters of considerations of excellence and quality in educational processes, concrete ways in which AI can help improve inclusive education and challenges and ethical considerations of implementing AI in educational inclusion. It is concluded that the need to promote policies and strategies that effectively integrate AI into educational systems, in order to achieve solid educational inclusion and move towards sustainable development. The importance of collaboration between governments, educational institutions, AI experts and society in general is underlined to ensure responsible and beneficial use of technology.

Keywords—Educational inclusion, attention to diversity, sustainable development, artificial intelligence.

1. INTRODUCTION

Educational inclusion is decisive for the achievement of sustainable development since quality education is essential for economic growth, social equity and the progress of humanity[1]. Nations that invest in this policy have greater possibilities of reducing poverty, improving the well-being and health of their people, as well as promoting gender equality and considerably reducing social inequalities. Likewise, educational inclusion can also foster innovation and technological progress, which in turn contributes to improving economic efficiency and productivity. By ensuring that all students have access to a quality education, talents and skills can be developed that may otherwise have gone untapped, potentially limiting the economic and social potential of any nation [2]. Educational inclusion is essential for the achievement of sustainable development, since it can promote social and economic equality, innovation and human progress in general. By investing in a quality education and ensuring that all students have access to it, you can help build a more just, equitable and prosperous society for all[3][4].

At present, as part of the use of information and communication technologies, artificial intelligence has opened up great potential for education, among other functions, it can adapt learning to the individual needs of each student, this is useful for students with specific needs or disabilities, as artificial intelligence can provide learning materials and exercises tailored to their skill level and learning paces.

Sustainable development has as its primary objective to perpetuate the human being as a species, satisfying its present and future needs and through the responsible use of natural resources. It is necessary to achieve an equitable and livable society.

Goal 4 of the 2030 Agenda proposes "guaranteeing equitable and quality educational inclusion and promoting learning opportunities throughout life and for all" This implies a challenge for education as it is necessary to broaden the conception of inclusion with emphasis on attention to the different expressions of development[5].

Educational inclusion is closely related to the achievement of sustainable development. According to UNESCO (2008) policies, all students must receive quality care in accordance with their basic learning needs to achieve the maximum potential development of each individual with emphasis on the most vulnerable groups.

The concretion of what was previously expressed imposes an approach that generates change in the conception of education. The participation of teachers and other social actors are decisive for the achievement of quality comprehensive training of the new generations based on the identification of possibilities, potentialities and opportunities for precise educational intervention in different scenarios, in correspondence with diversity[6].

How to develop equality and equity for sustainable development in contemporary education?

It is a social right to provide quality education from positions of equity and equal opportunities. Sometimes these concepts are totally identified, however, both are presupposed and excluded at the same time. In education, equality refers to the idea that all students have the right to identical opportunities and educational resources, that is, access to the same quality of education, regardless of ethnic, socioeconomic, gender, or other origin.

For its part, equity in education takes the form of the idea that all students should receive what they need to be successful in their learning process. This means that some students may need additional differentiated resources and attention to have the same educational opportunities as others who do not.

That is why equality requires treating all people in the same way, for its part, equity requires treating all people fairly, in accordance with their unique needs and circumstances. In the educational sector, it is essential to work for the sake of equality and equity to ensure that all students have access to an excellent education and the same opportunities to achieve success.

The objective is to carry out an analysis about educational inclusion and its meaning for the achievement of sustainable development from the use of Artificial Intelligence (AI).

The reviewed articles related to educational inclusion considered in the research are:

Inclusión educativa y cultura inclusiva. [7]. Aulas abiertas a la inclusión [8]. Componentes y dimensiones que caracterizan una buena praxis en Educación Infantil (0-3 años) [9]. Evaluación de la inclusión en educación superior mediante indicadores [10]. Implicaciones pedagógicas y organizativas de un proyecto de educación alternativo para la etapa de Educación Infantil en España [11]. Integrating Equity, Diversity, and Inclusion throughout the lifecycle of Artificial Intelligence in health[12]. Building Inclusive and Equitable Artificial Intelligence for Education[13]. From Conventional to Sustainable SHM: Implementation of Artificial Intelligence in The Department of Civil Engineering, University of Malaya[14]. Automatic Adaptation of Open Educational Resources: An Approach From a Multilevel Methodology Based on Students' Preferences, Educational Special Needs, Artificial Intelligence and Accessibility Metadata[15]. Improving Equity and Access to Higher Education Using Artificial Intelligence[16].

The deductive method and exploratory research are used to analyze educational inclusion and sustainable development from Artificial Intelligence.

This research resulted in various parameters of considerations of excellence and quality in educational processes, concrete ways in which AI can help improve inclusive education, and challenges and ethical considerations of implementing AI in educational inclusion.

It is concluded that the need to promote policies and strategies that effectively integrate AI into educational systems, in order to achieve solid educational inclusion and move towards sustainable development. The importance of collaboration between governments, educational institutions, AI experts and society in general is underlined to ensure responsible and beneficial use of technology.

2. *Materials and Methods*

In the first instance, in Materials, an information search was carried out from different sources that allowed us to analyze the most relevant aspects of educational inclusion and its meaning for the achievement of sustainable development from the use of Artificial Intelligence.

2.1 *Materials*

In correspondence with the above, it is essential that teachers understand the processes and phenomena that constitute the essence of human variability and its manifestation in the educational teaching process. This domain will simply taking actions aimed at identifying, avoiding or mitigating individualized limitations in students during the development of learning activities [17]. In this process, the positive influences of the various social interactions play a preponderant role in terms of the positive support of the teacher's work. Educational inclusion and attention to diversity at the educational level involve, among others, public policies, the availability of resources, the training process of the education professional, the improvement of practicing professionals and the development of

investigations[18]. These aspects guarantee the improvement of a pedagogical practice focused on individualized educational attention, a guarantee of quality teaching. In contemporary pedagogical practice, it is important to consider the conditions of the settings where the teaching-learning processes take place[19]. Likewise, the conception and execution of the curriculum in correspondence with the educational demands of the schoolchildren and the theoretical, methodological and ethical preparation of the educators. This enables an educational attention directed to the attention of the needs and the development of potentialities[20]. It is essential to add to what was previously analyzed the search for methods and means in correspondence with educational needs and the development of teaching with a rights approach aimed at guiding mediators in the family and in the community so that they become agents that promote development. In this way, the educational influences of this triad would be more coherent and comprehensive [21]. From the perspective of law, referring to the significance that people living with disabilities are educated in truly inclusive contexts is an aspect that must be considered by all educational institutions. The conditions must be created and the necessary adaptations made so that everyone in their diversity has a quality education and students are not segregated to institutions in which they are grouped due to their developmental condition[22][23].

2.2 Methods

To carry out this investigation, the deductive method was used with the investigation would explore, in addition to a literary review and official websites regarding educational inclusion and sustainable development from Artificial Intelligence.

In the first instance, an exhaustive review of the available literature on computer security and the application of artificial intelligence in administrative management in higher education is necessary.

As a second instance, once the specific needs have been identified, a consideration of actions that distance them from the excellence and quality required by a contemporary educational process is carried out.

In the third instance, the concrete ways in which AI can help improve inclusive education are highlighted.

As a fourth instance, the challenges and ethical considerations of implementing AI in educational inclusion are established.

3. Results

3.1 Parameters of considerations of excellence and quality in educational processes

- ✓ Consider that all difficult-to-educate students need special education.
- ✓ Refer children to other specialists, in order to offer a service that is not within their reach, according to their way of thinking.
- ✓ Stigmatizing students for low achievement, disability, lack of skills, and slow pace of learning.

- ✓ Lack of knowledge of some students during class, so they appear inactive due to the teacher's inability to teach them to learn from their specific characteristics.
- ✓ Little use of educational communication by the teacher with respect to the family of the students in order to achieve support that contributes to eradicating the deficiencies of their children in the educational field.
- ✓ The teacher does not surpass himself, nor does he investigate, he applies old theories, he gets carried away by daily intuitions and other negative practices.
- ✓ Lack of improvement that leads to the use of old theories in the teaching-learning process.
- ✓ The services available for specialized attention to students are not used.
- ✓ The treatment towards children lacks love and understanding, so an environment that is affective enough to predispose children to learning is not created.
- ✓ Variants of child abuse are used in order to guarantee the discipline of the collective.
- ✓ The teaching-learning process is not carried out in conditions of democracy and equity in which the student is considered a subject of law.

Sustainable development in a society can only be achieved when there is equity, equal opportunities, participation, justice, peace, love, among others. All of the above is made difficult in a society where there is exclusion, segregation, discrimination, illiteracy, violence and disrespect for the human rights of all individuals.

3.2 Among the concrete ways in which AI can help improve inclusive education, the following can be cited:

Teaching accessibility: Use AI in the learning of students with a specific disability, for example, the generation of audio transcripts in case of hearing difficulties, or the description of images for the learning of students with some manifestation of visual disability.

Personalized learning: With AI, learning can be adapted to the specific abilities and needs of each student, for example, by helping to identify the areas in which students have problems in order to provide them with learning materials that enable you to correct your difficulties.

Machine Learning: AI enables students to help students learn effectively by identifying patterns in their learning data, helping to determine areas where they need to work more intentionally.

Support for teachers: AI can help teachers identify and respond to student needs more efficiently, for example by identifying students who need extra attention based on performance, it can even provide suggestions for learning materials for this purpose, in this way, the curricular adjustment would be more effective.

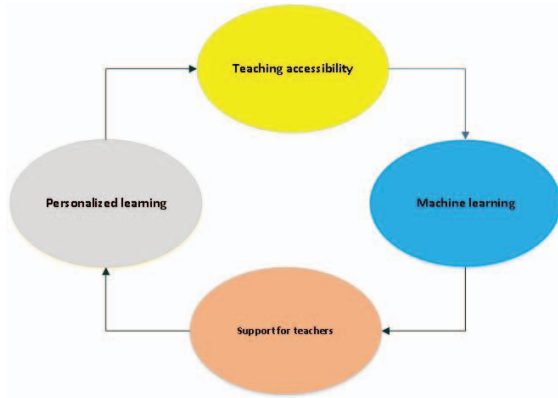


Figure 1. Ways to support inclusive education with AI

Artificial Intelligence has great potential to significantly improve inclusive education due to its contribution to the individualization of learning, to improving the accessibility of teaching, to the support of teachers in the achievement of the teaching-learning process and to the improvement of the machine learning in general. This, without neglecting to take into account that the application of AI in the educational sector must always be very careful and ethical to guarantee in this way that its use is rational, responsible and effective for the benefit of all students, which, to in turn, it would guarantee sustainable development in the educational field of current generations.

3.3 Challenges and ethical considerations of implementing AI in educational inclusion.

The implementation of artificial intelligence (AI) in inclusive education poses many challenges and ethical issues that need to be carefully addressed. While artificial intelligence can increase the accessibility and personalization of education for all students, it also raises concerns about equity, privacy, discrimination, and technology addiction.

Within these, fairness and algorithmic bias are considered: AI algorithms can perpetuate or exacerbate existing inequalities. If there is bias in the training data, AI can replicate and amplify those differences, potentially exacerbating exclusion and discrimination rather than promoting inclusion. Privacy and Data Protection: The implementation of artificial intelligence in education involves the collection and analysis of vast amounts of personal data about students. It is very important to ensure the protection of privacy and data security against misuse or unauthorized access. Accountability and transparency: The opacity of AI algorithms raises ethical issues. Artificial intelligence systems used in education need to be transparent, understandable, and explainable so that students and teachers can trust them and make informed decisions.

Based on ethical considerations Human-Centered Design: The primary goal of AI in education should be to enhance the

learning experience for all students, respect individual needs, and respect the rights and dignity of each student.

Human Monitoring and Evaluation: While artificial intelligence can provide valuable assistance, educators and education professionals must play a central role in the educational process. Human monitoring and evaluation is needed to ensure that AI does not replace human interaction and support.

Transparency and Accountability: Educational institutions and AI providers need to be transparent about how the technology is used, what data is collected, how decisions are made, and what steps are taken to avoid bias and discrimination. They should also establish accountability mechanisms to address any ethical or legal issues that may arise.

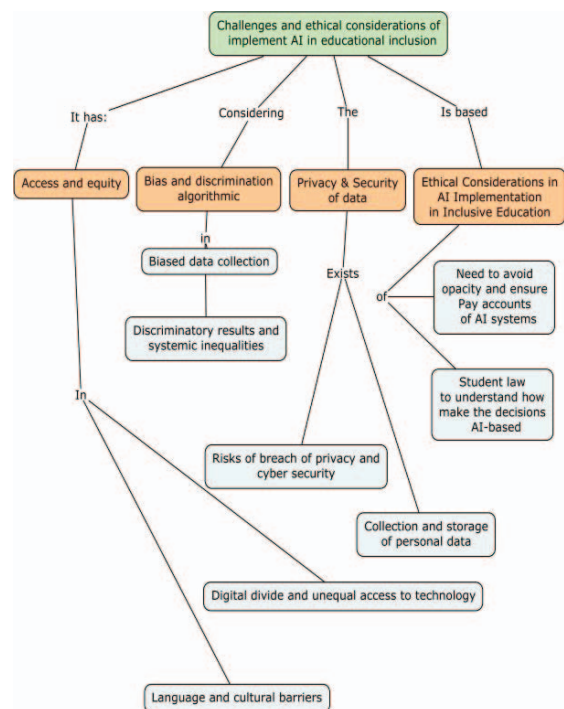


Figure 2. Challenges and ethical considerations of implementing AI in educational inclusion

4. DISCUSSION

The solutions provided by the referenced authors [7-23], on educational inclusion and its meaning for the achievement of sustainable development from the use of Artificial Intelligence (AI). This can facilitate educational inclusion in several ways. First, you can offer personalized accommodations and supports for students with disabilities or specific needs. AI systems can analyze data on student performance and learning preferences, enabling individualized instructional strategies to be designed. This helps overcome traditional barriers and provides equal opportunities for students with different abilities and learning

styles. However, the implementation of AI in inclusive education also poses challenges and ethical considerations.

5. FUTURE WORK AND CONCLUSIONS

Going forward, further research may provide a solid foundation for improving the understanding and effective use of artificial intelligence to promote inclusive education and achieve sustainable development. These recommendations will not only advance scientific knowledge, but will also influence policy-making and implementation of AI-based inclusive education practices.

In conclusion, the need to promote policies and strategies that effectively integrate AI into educational systems is highlighted, in order to achieve solid educational inclusion and move towards sustainable development. The importance of collaboration between governments, educational institutions, AI experts and society in general is underlined to ensure responsible and beneficial use of technology.

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