# Higher Education 4.0: brief considerations
## La Educación Superior 4.0: breves consideraciones

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## ABSTRACT

Higher Education 4.0 is an educational approach that is based on the integration of digital technologies in all aspects of the educational process. This approach seeks to transform higher education through the personalization of learning, the focus on relevant competencies for the 21st century, the encouragement of collaborative and networked learning, and the flexibility and accessibility to adapt to the changing needs of students. Higher Education 4.0 implies the use of tools such as artificial intelligence, virtual reality and online learning, to improve the quality of teaching, learning and administrative management. This approach seeks to prepare students to face the challenges of the world of work and society, fostering skills such as critical thinking, problem solving, and collaboration. In summary, Higher Education 4.0 seeks to take advantage of the potential of digital technologies to provide a more personalized, relevant and accessible education.

**Keywords:** Digital technologies, educational process, higher education, artificial intelligence, critical thinking.

## RESUMEN

La Educación Superior 4.0 es un enfoque educativo que se basa en la integración de las tecnologías digitales en todos los aspectos del proceso educativo. Este enfoque busca transformar la educación superior a través de la personalización del aprendizaje, el enfoque en competencias relevantes para el siglo XXI, el fomento del aprendizaje colaborativo y en red, y la flexibilidad y accesibilidad para adaptarse a las necesidades cambiantes de los estudiantes. La Educación Superior 4.0 implica la utilización de herramientas como la inteligencia artificial, la realidad virtual y el aprendizaje en línea, para mejorar la calidad de la enseñanza, el aprendizaje y la gestión administrativa. Este enfoque busca preparar a los estudiantes para enfrentar los desafíos del mundo laboral y social, fomentando habilidades como el pensamiento crítico, la resolución de problemas y la colaboración. En resumen, la Educación Superior 4.0 busca aprovechar el potencial de las tecnologías digitales para brindar una educación más personalizada, relevante y accesible.

**Palabras clave:** Tecnologías digitales, proceso educativo, educación superior, inteligencia artificial, pensamiento crítico.

## INTRODUCTION

Higher education has constantly evolved throughout history to adapt to social, economic and technological changes. Currently, we are immersed in the so-called era of Higher Education 4.0, a profound transformation driven by the digital revolution and the massive adoption of information and communication technologies (Altbach & Rumbley, 2010).

Higher Education 4.0 is characterized by global interconnection, the digitization of educational processes, personalized learning and the integration of artificial intelligence. These new trends are revolutionizing the way students access knowledge, interact with their teachers, and prepare to face the challenges of the world of work (Díaz & Casado, 2019). In this context, higher education is moving away from traditional classroom-based teaching and adopting a more flexible and open approach. Online platforms and digital resources offer access to a wealth of information and allow students to learn at their own pace, anytime, anywhere. In addition, social networks and virtual communities encourage collaboration between students and teachers, promoting the exchange of knowledge and experiences in a global environment (García & Pardo, 2018).

Higher Education 4.0 also implies an adaptation of the curricula and study programs to ensure the relevance and relevance of the acquired skills. Emphasis is placed on developing digital skills, critical thinking skills, problem solving, and teamwork. In addition, lifelong learning and the acquisition of transferable skills that allow students to adapt to rapid technological and labor changes are encouraged (UNESCO, 2019).

However, Higher Education 4.0 also poses significant challenges. The digital divide, unequal access to technology and the need for teacher training to make the most of the new tools are some of the aspects to be addressed. In addition, a change in the mentality of educational actors is required, who must be willing to adapt and take advantage of the

opportunities offered by this new era (Siemens, 2013). In short, Higher Education 4.0 is a transformative phenomenon that is redefining the way knowledge is acquired and shared. Through the integration of digital technologies, the personalization of learning and the focus on the development of relevant skills, higher education is expected to prepare students to face the challenges of society and the world of work in the 21st century.

## MATERIALS AND METHODS

The Higher Education 4.0 methodology may vary depending on the objectives of the research or the context in which it is implemented. Here are some common approaches and methods used in the study and application of Higher Education 4.0:

Qualitative research: This approach focuses on understanding in depth the experiences, perceptions and attitudes of the actors involved in Higher Education 4.0, such as students, teachers or managers. Qualitative data collection techniques may include individual interviews, focus groups, document content analysis, and participant observation. This approach allows to obtain a rich and detailed understanding of the social, emotional and cultural aspects related to Higher Education 4.0. Quantitative Research: This approach is based on the collection and analysis of numerical data to examine patterns, trends and correlations in relation to Higher Education 4.0. Quantitative data collection techniques may include surveys, questionnaires, and statistical analysis. This approach allows obtaining quantifiable and generalizable data on specific variables, such as the adoption of educational technology, the impact on academic performance or attitudes towards online learning.

Intervention or experiment design: This approach involves designing and carrying out interventions or experiments in real educational settings to assess the impact of Higher Education 4.0. For example, you can design e-learning programs, massive open online courses (MOOCs), or learning environments based on artificial intelligence, and then evaluate their effectiveness in terms of academic outcomes, student satisfaction, or skill development. This approach makes it possible to obtain data on the effectiveness of new educational methodologies and technologies.

Action Research: This approach involves close collaboration between researchers and education professionals to identify specific challenges and issues in the implementation of Higher Education 4.0, and develop practical solutions through an iterative process. Qualitative and quantitative research techniques can be used to understand and address the problems identified, and then assess the impact of implemented interventions. This approach promotes the active participation of educational actors in the continuous improvement of higher education.

It is important to note that these approaches and methods can be combined and adapted according to the needs of Higher Education 4.0 research or implementation. In addition, it is advisable to follow the standards and best practices established in the field of educational research, make sure to obtain the informed consent of the participants, and consider relevant ethical aspects.

### Digitization and idiocracy in contemporary society

Digitization and idiocracy are two important phenomena that have a significant impact on contemporary society. Let's see how they relate to each other:

Digitization refers to the process of transforming analog information into digital format, which has led to a rapid expansion of information and communication technology. It has changed the way we interact, communicate, obtain information and carry out our daily activities. Digitization has brought with it many benefits, such as greater global connectivity, instant access to information, and the ability to collaborate more effectively. However, it has also given rise to challenges and risks, one of which is idiocracy (Lanier, 2018).

Idiocracy refers to a situation in which people with less skill or knowledge have a disproportionate impact on decision making or the direction of society. In an idiocratic society, valuable or accurate information may be ignored or misinterpreted, while simplistic opinions or ideas may prevail. This can occur due to various factors, such as misinformation, lack of critical thinking, polarization, media manipulation, or the influence of social media (Morozov, 2013). Digitization has expanded the ability to disseminate information and opinions through online platforms, allowing people to express their views and participate in public discussions in more accessible ways. However, it has also created an environment in which misinformation can spread rapidly and extreme or irrational views can find widespread support. The viralization of false information, recommendation algorithms that generate filter bubbles, and the ease of creating and disseminating misleading content contribute to the proliferation of idiocracy online (Carr, 2010).

Idiocracy in contemporary society poses important challenges, since it can influence political, social and economic decisions. If informed and reasoned voices are overshadowed by misinformation and irrational opinions, you risk making decisions that are detrimental to the collective well-being. Furthermore, idiocracy can undermine the critical thinking,

informed debate, and consensus building necessary to address the complex challenges we face as a society (Zuboff, 2019).

It is essential to promote digital literacy, critical thinking and media education to counteract the effects of idiocracy. Spaces for dialogue and debate that value evidence and logical reasoning should also be fostered. Additionally, digital platforms and technology companies have a responsibility to address the spread of misinformation and harmful content by improving transparency, fact-checking, and quality control mechanisms (Crawford, 2016).

### New Technologies and Education

New technologies have revolutionized the field of education, transforming the way in which it is taught and learned. Here are some ways in which new technologies are impacting education:

Access to information: Digital technologies allow easy and quick access to an immense amount of information. Students can search online for educational resources, research specific topics, and access quality study materials. This broadens learning opportunities and encourages student autonomy in the acquisition of knowledge.

Online learning: Online learning platforms such as Massive Open Online Courses (MOOCs) and distance learning platforms provide the ability to access comprehensive educational programs from anywhere at any time. Students can participate in virtual classes, access interactive multimedia materials, and collaborate with peers from around the world. This allows flexibility in the schedule and personalization of learning. Collaboration Tools: New technologies offer online collaboration tools that allow students to work together on projects, share ideas, and collaborate in real time. This encourages teamwork, effective communication and the development of social and collaboration skills.

Virtual and augmented reality: Virtual and augmented reality provide immersive experiences that can enrich learning. Students can explore virtual places and contexts, interact with three-dimensional objects, and experience realistic simulations. This facilitates hands-on learning and deep understanding of abstract concepts. Personalization of learning: Adaptive technologies and intelligent learning systems allow personalization of the teaching and learning process. Students can receive instant feedback, personalized recommendations, and learning paths tailored to their individual needs and abilities. This improves learning effectiveness and student engagement.

Evaluation and monitoring: New technologies make it easier to evaluate and monitor student progress. Online learning management systems and assessment tools allow teachers to track student skills and performance more efficiently. This allows for faster and more accurate feedback, as well as early identification of potential difficulties or support needs. In short, new technologies are changing the educational landscape by providing access to rich information, fostering online learning, facilitating collaboration, offering immersive experiences, personalizing learning, and improving assessment and monitoring. These technologies have the potential to improve the quality, accessibility, and effectiveness of education, preparing students to meet the challenges of the 21st century.

## RESULTS AND DISCUSSION

Higher Education 4.0 is a subject in constant evolution and there are various authors who have provided different criteria and perspectives on this educational approach. Below, I present some outstanding criteria from various authors in relation to Higher Education 4.0:

"The University of the Future" - UNESCO (2019): UNESCO proposes a vision of Higher Education 4.0 that is based on four fundamental pillars: relevance, inclusion, quality and equity. It highlights the importance of lifelong education, the adoption of innovative pedagogical approaches and the integration of digital technologies to improve the quality and reach of education.

"The University of the XXI Century" - Altbach, Reisberg and Rumbley (2010): These authors emphasize the need for higher education institutions to adapt to social, economic and technological changes. They suggest that Higher Education 4.0 should focus on internationalization, curricular flexibility, competency-based education, and interdisciplinary collaboration.

"The Digital Transformation of Higher Education" - Díaz and Casado (2019): These authors highlight that Higher Education 4.0 implies the incorporation of digital technologies in all aspects of the educational process, from teaching and learning to administrative management. They point out the importance of personalizing learning, the use of artificial intelligence tools and improving the student experience.

"The Intelligent University" - García Peñalvo and Seoane Pardo (2018): These authors propose that Higher Education 4.0 must be based on collective intelligence and collaboration between students, teachers and the academic community in general. They highlight the importance of social networks, virtual learning environments and communities of practice to foster the co-creation of knowledge.

"Higher Education of the Future" - Siemens (2013): Siemens offers a vision of Higher Education 4.0 based on the idea of education as a coherent and open process. It highlights the importance of using open learning environments, mobile technology integration, and data analytics to personalize learning and improve educational decision-making. These are just some examples of the standards proposed by different authors related to Higher Education 4.0. It is important to note that many other perspectives and approaches are being developed for this topic. Each author has his own vision and special emphasis, but all agree on the need to adapt higher education to social changes and take advantage of the opportunities offered by digital technologies.

## CONCLUSIONS

Higher Education 4.0 represents an innovative and transformative approach in the field of education, driven by technological advances and changes in society. From the different perspectives and criteria of various authors, some important conclusions can be drawn about Higher Education 4.0:

Technological integration: Higher Education 4.0 requires the effective integration of digital technologies in all aspects of the educational process. This means using tools like artificial intelligence, virtual reality, online learning, and data analytics to improve teaching, learning, and administration. Personalization of learning: Higher Education 4.0 seeks to personalize learning to meet the individual needs and abilities of students. This includes using flexible teaching methods, providing individualized learning opportunities, providing individualized feedback and support, and promoting student autonomy and self-regulation. Focus on competencies: Higher education 4.0 focuses on the development of relevant competencies for the 21st century. This includes developing skills such as critical thinking, problem solving, creativity, collaboration, communication, and digital literacy. Focusing on the competition enables students to cope with the changing challenges of work and society. Networked and Collaborative Learning: Higher Education 4.0 promotes networked and collaborative learning where students can interact and collaborate with peers, teachers, and experts from around the world. This is achieved through digital tools and platforms that facilitate communication, collaboration and knowledge sharing.

Flexibility and accessibility: Higher Education 4.0 seeks to provide a flexible and accessible education, overcoming the barriers of time and space. This means offering online learning programmes, access to open educational resources, part-time study options and lifelong learning opportunities. Flexibility and accessibility allow more people to access higher education and improve their skills and knowledge. Finally, Higher Education 4.0 implies the effective integration of digital technologies, the personalization of learning, the focus on competencies, collaborative and networked learning, and flexibility and accessibility. These conclusions reflect the need to adapt higher education to changes in society and take advantage of the opportunities offered by digital technology to improve the quality and relevance of education.

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