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The effects of digitization on accessibility to education

Les effets de la numérisation sur l'accessibilité à l'éducation

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Abstract:

This article aims to highlight the effects of digitization and the problems related to digital accessibility that pivot between technology and educational equity, Something that offers immense potential, but also challenges related to digital access that require continuous attention. This fusion of technology and education redefines the dynamics of learning, stimulating self-learning and propelling access to a diversity of knowledge that requires thoughtful integration and personalization of teaching.

During this article, we will present the various challenges related to digital access, ranging from the evolution of teaching methods that are no longer limited to the introduction to computers but which goes beyond this process to the evaluation of the student's performance to take advantage of these new technologies, to infrastructure and connectivity problems. Thus, digitization is a complex alteration towards a more accessible, personalized and centered education.

Keywords: digitization; education; digital accessibility; educational equity; teaching.

Résumé :

Cet article vise à mettre en évidence les effets de la numérisation et les problèmes relatifs à l'accessibilité numérique qui pivot entre technologie et équité éducative, Chose qui offre un potentiel immense, mais aussi des défis liés à l'accès au numérique qui exigent une attention continue. Cette fusion de la technologie et de l'éducation redéfinit la dynamique de l'apprentissage, stimulant l'auto-apprentissage et propulsant l'accès à une diversité de connaissances qui nécessite une intégration réfléchie et une personnalisation de l'enseignement.

Lors de cet article, nous présenterons les différents défis liés à l'accès au numérique passant de l'évolution des méthodes d'enseignement qui ne se limitent plus à l'introduction aux ordinateurs mais qui va au-delà de ce processus à l'évaluation de la performance de l'étudiant pour tirer profit de ces nouvelles technologies, jusqu'aux problèmes d'infrastructures et de connectivité. Ainsi, la numérisation est une altération complexe vers une éducation plus accessible, personnalisée et centrée sur l'apprenant, nécessitant prudence, innovation et engagement envers l'équité éducative.

Mots clés : la numérisation ; l'éducation ; l'accessibilité numérique ; équité éducative ; enseignement.

Introduction:

In an ever-changing landscape of education, the rapid emergence of digitization marks a major turning point, redefining the very foundations of the way we learn and teach. The alliance between technology and education creates a universe rich in opportunities while presenting crucial challenges, transforming the traditional classroom into a dynamic digital learning space.

This radical transformation, catalyzed by the fusion of the digital world and education, offers a diverse range of possibilities. Access to an infinite multitude of knowledge is becoming easier; the boundaries of traditional textbooks are being erased in favor of online educational resources ranging from explanatory videos to interactive courses. This diversity of materials stimulates curiosity and promotes self-study.

However, this digital revolution is not limited to a simple modernization of educational materials. It symbolizes a complete metamorphosis of educational paradigms, embracing every aspect of learning.

Nevertheless, in the midst of these promises and potentialities, a critical necessity emerges to balance digital enthusiasm with educational prudence. The problem to be posed in this context is therefore how to take advantage of digitization to forge an education that fully embraces the opportunities offered by technology, while ensuring equitable access and educational relevance?

The methodology adopted in this article is rather based on a literature review, to explore and synthesize existing research on digitization in education and analyze the work to establish a solid foundation by integrating various perspectives on the implications, benefits and challenges of digitization in education.

To answer this problem we will start with a literature revue to have a brief presentation of digitization in education and the concept of accessibility in the digital context to then address the effects of digitization on education through the change in learning methods and the challenges related to digital access.

1. Literature revue:

1.1. Digitalization in education:

In the dynamic landscape of contemporary education, digitization is emerging as a powerful catalyst for change, fundamentally reshaping the way we learn and teach. The convergence of

technology and education has created a universe of opportunities and challenges, redefining the traditional classroom and opening new paths to learning.

First, the digital term is itself multidimensional and dependent on uses (Bourgeois and Ntebutse, 2020). Digitization facilitates access to an infinite wealth of knowledge. Students can explore online educational resources, from explanatory videos to interactive courses, expanding their understanding of topics beyond the limits of traditional textbooks. This diversity of materials stimulates curiosity and encourages self-study.

Digitalization in the context of education represents a complete metamorphosis of traditional educational paradigms, catalyzed by the ingenious integration of technology in every aspect of learning. This digital transformation offers a wide range of tools and resources that, properly integrated, can enhance the educational experience in various ways.

The work of (Collins & Halverson, 2009) highlights the emergence of new forms of digital literacy necessary to navigate in a world where information retrieval and communication largely depend on advanced digital skills.

(Carretero, Punie and Vuorikari, 2021) see that learners will have to develop digital skills to become citizens of the 21st century, and achieve technological skills standards to live in an increasingly digitized global landscape.

At the same time, the writings of (Mishra & Koehler, 2006) highlight the need for a judicious integration of technology into the teaching process, emphasizing that pedagogical effectiveness derives from the way teachers use technology in the specific context of their classroom. To take full advantage of these advantages, it is crucial that digitization is thoughtfully integrated into the educational process. Teachers play a central role in this integration, requiring continuous training to effectively use these tools at the service of learning.

.However, the work of (Selwyn, 2011) calls for caution, stressing that digitization can also strengthen inequalities in access, creating a "digital divide" that could marginalize certain communities.

1.2. Accessibility in the digital context:

Accessibility in the digital context represents a crucial intersection between technology and educational equity.

The work of (Warschauer, 2003) highlights the promise of universal access to information that digitization offers. By breaking down geographical barriers, technology is expanding the educational scope, allowing learners in remote regions to access educational resources that were once inaccessible. This opens a new chapter in the democratization of education, offering entire communities learning opportunities that transcend traditional boundaries.

(Van der heiden & al., 2015) emphasize the importance of digital accessibility as a fundamental right, especially in the field of education. By adopting an inclusive perspective, the authors argue that digital accessibility is not simply an additional advantage, but an ethical necessity to guarantee equitable participation in education. This perspective highlights the crucial role of accessibility in creating equitable learning environments, where every learner, regardless of their abilities, can fully participate.

Digital accessibility also improves the experience for all users, creating more user-friendly interfaces and facilitating access to information. These advantages expand the scope of learning by making educational resources more usable and understandable for a diversity of learners.

The importance of accessibility in the digital context is not limited to simple regulatory compliance. It is an educational and societal imperative, ensuring that technological advances benefit all learners, thus promoting inclusive and equitable education. Digital accessibility thus becomes a master key to unlock the doors of education for all, reflecting the commitment to educational societies that leave behind any form of barriers.

According to this literature review, we can formulate several research hypotheses:

H1: The integration of digitalization in education promotes the personalization of learning, allowing learners to progress at their own pace and in a way adapted to their individual learning styles.

H2: Digitalization is leading to a significant evolution of traditional teaching methods towards more interactive, connected and learner-centered approaches

H3: Obstacles such as the digital divide, the costs associated with equipment and connectivity, as well as limited digital skills, pose significant challenges to digital accessibility

2. The effects of digitization on accessibility to education:

2.1. The evolution of teaching methods:

The evolution of teaching methods in the digital context is a dynamic field. The increasing integration of technology in the classroom is a major trend highlighted by the writings of (Keengwe and Onchwari, 2009). These researchers highlight how the judicious use of digital devices, educational applications and online platforms transforms teaching by offering more engaging and interactive learning experiences.

When the environment is digital, it is then participatory, spatial, and encyclopedic (Murray, 2017), the creation of disseminable content (Dooley et al., 2016), microblogging as a communication tool for scientific content worked on in the classroom (Becker and Bishop, 2016) or digital photography as a support for the development of metacognitive skills (Gutierrez de Blume et al., 2016) are methods adopted by the school for a more personalized teaching experience diverse.

The writings of (Siemens and Downes, 2008) on connectivism emphasize the importance of connectivity in learning, highlighting social networks, online communities and other digital tools to create connected and collaborative learning environments.

Digitization in education is not limited to the introduction of computers in classrooms. It is a complete revolution that encompasses the use of technology to optimize every aspect of the educational process, from access to educational materials to the evaluation of student performance. This change is not only technological; it is cultural, transforming the teacher-student dynamic, reshaping pedagogical methods and challenging the traditional boundaries of learning.

Another aspect of the evolution of teaching methods is the individualization or personalization of learning. Online educational platforms allow courses to be adapted according to the pace and learning style of each student. Automated assessment tools provide immediate feedback, allowing learners to quickly understand their mistakes and progress more efficiently.

(Bates, 2019) examines emerging e-learning models and highlights the advantages of flexibility, accessibility and personalization of learning that digitization can offer.

The work of (Johnson & al., 2012) highlights the transition from a teacher-centered teaching approach to a more learner-oriented methodology. They highlight the growing importance of

the personalization of learning, facilitated by educational technologies, to meet the individual needs of learners.

Educational technologies play an essential role in the implementation of personalization. Interactions with peers and teachers can be individualized to align with each student's current level of competence. In a digital context, adaptive educational platforms use algorithms to personalize learning routes, providing content and activities adapted to each learner. This allows students to choose activities aligned with their interests, and can strengthen their intrinsic motivation.

2.2. The challenges of digital accessibility:

Digital access, although increasingly widespread, is facing various challenges that can create inequalities in society. Here are some of the main challenges related to digital access:

- **Digital Divide:** the digital divide refers to the disparities in access to information and communication technologies. It can be based on factors such as geography, socio-economic status, education and age. Populations in rural areas, disadvantaged communities and the elderly often face difficulties in accessing digital devices and the Internet.
- **Cost of Equipment and Connectivity:** digital devices such as computers and smartphones can be expensive, and access to a high-speed Internet connection can also represent a financial burden for some families. This may exclude those who cannot afford these equipment or the necessary Internet packages.

- **Limited Digital Skills:** even if physical access to technologies is available, some people may not have the necessary digital skills to use these tools effectively. This may be especially true for older generations or for those who have not had the opportunity to acquire these skills during their education. For this, several training courses for teachers have been provided. (Merroun & al.2023) have proposed in their work a hybrid continuing education plan adapted to the nature of teachers' work, their levels and their specialties in order to allow higher education teachers to acquire the necessary skills to integrate ICT into their daily lives with students.

- **Unsuitable Content:** the lack of digital content suitable for various languages, cultures and educational levels can be a challenge. It is important that digital content is accessible

and relevant to a wide range of users. The work of Prensky (2001) introduced the notion of "digital natives", highlighting how the new generation of learners, raised in a digital environment, requires adapted pedagogical approaches. This idea has influenced many debates on the need to rethink teaching methods to better align with the preferences and skills of today's students

- **Inadequate Infrastructure**: in some regions, the communication infrastructure may be inadequate, resulting in slow and unreliable Internet connectivity. This can be a major obstacle to access to digital content**.**

From a broader point of view, the writings of Zhao (2018) explore the challenges of preparing students to live in a digital society. It highlights the need to develop skills such as critical thinking, creativity and problem solving, rather than focusing only on technological skills, in order to prepare learners to succeed in an ever-changing digital world.

3. Conclusion:

In conclusion, digitalization in education represents a transformative revolution, opening unlimited horizons while presenting crucial challenges. The convergence of technology and education is redefining the dynamics of learning, propelling access to a diversity of knowledge and stimulating self-learning. However, this transformation requires thoughtful integration. Digital accessibility, as a crucial intersection between technology and educational equity, offers immense potential, but the challenges related to digital access require continuous attention.

The limitations of the current landscape must be recognized, and avenues for further research should be explored to refine and optimize the integration of technology in education. The research's principal contributions lie in shedding light on the multifaceted dynamics of the digitalization of education, serving as a catalyst for dialogue, and paving the way for future inquiries into the evolving intersection of technology and learning.

Overall, digitalization in education is a complex journey towards a more accessible, personalized and learner-centered education. Prudence, educational innovation and commitment to educational equity are essential for this digital revolution to fully realize its potential and open the door to inclusive and equitable education for all.

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