Navigating through the knowledge of education

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ABSTRACT

The aging process in the world calls for older adults to be more active and inserted in society. Brazil is currently experiencing this issue of aging in a sudden and accelerated way, requiring education and health professionals to take a more assertive look at the theme of the elderly, involving health education. Current technologies advance exponentially, promoting technological education in health, a new design in health systems, both care and educational, and so that this population can actually benefit from all technological proposals, education for the elderly as well as the use of technological tools is essential. And this implementation of digital in the analog world happens through educational technologies such as Virtual Learning Environments, Internet of Medical Things (IMoT), Virtual and Augmented Reality (VR/AR), among others.

Keywords: Education, Elderly, Technology, Health, Aging.

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INTRODUCTION

THE AGING PROCESS IN BRAZIL AND IN THE WORLD

In reality, today there are no longer conditions to separate mind and body, body and psyche, because they are inseparable aspects. We could also add the family and social environment as important aspects to be considered in the disease. The World Health Organization itself defines health as a state of complete physical, mental, and social well-being and not just the absence of disease (De SEGRE, 1997). And it is an undeniable fact that longevity is humanity's greatest achievement, but the urgency of putting the issue of aging on the public agenda is also indisputable, especially in countries like Brazil. Thus, we consider elderly individuals aged 60 years or older and they are currently a rapidly increasing population, demanding this new look from health professionals (gerontology, geriatric dentistry) on the psychosocial aspects of this population, given their great vulnerability that comes from physical transformations, through equally differentiated mental states that together sometimes result in a new social adaptation. (UNA SUS, 2020).

In ten years, the percentage of people aged 60 and over went from 11.3% to 14.7% (9 million elderly people in Brazil), a result largely due to variations in the fertility rate and more preventive medical actions, now moving the country in the race to implement adequate infrastructure for the new demographic profile (Jornal USP, 2023). Due to the increase in life expectancy, the elderly represent the fastest growing population group in Brazil. Elderly people with low income (lower schooling) represent the highest proportion of illiterate people in Brazil. Currently, it is estimated that 18% of the elderly aged 60 and over are illiterate, despite the fact that a large part of public policies in favor of literacy are still focused on young people and adults (IBGE 2018a, IBGE 2018b).

In the context of Brazil, it is essential to replace the traditional model that associates older people with the past, as a burden, dependence and disability, and to adopt the view that they are active builders, participants in political practice, combative claimants and aware of their rights. Older people are demonstrating that they are not citizens without a future, possessing not only life experience, but also being active agents of change, responding to broader transformations in society (DIAS, 2001). Human aging has an impact on society as a whole, due to its multifaceted nature, we can thus mention the valuable life experience of aging in the face of the current challenges of a world in strong and rapid geophysical and atmospheric transformation, shaping new social models.

A study entitled "The Future of Retirement" was conducted by the Hongkong and Shanghai Banking Corporation (HSBC) Insurance and the Oxford Institute of Ageing (UK) to understand the profile of older people. This study covered 21 countries and territories on five continents, interviewing 21,000 people between the ages of 40 and 79. The study underscores the importance of older people as active contributors to society. They do volunteer work, actively participate in the

community through work, pay taxes, financially support their families, contribute to household chores, and care for grandchildren and elderly and debilitated people.

Individuals between the ages of 60 and 70 are considered a valuable resource to society rather than a burden. It is crucial that those in power recognize this and implement policies that allow older people to remain active as they wish or are able (SILVA, S, 2008). This underscores the importance of rethinking aging as a phase in which people continue to be able to actively participate in society, both consciously and critically. Therefore, it is necessary to implement policies that meet the needs and desires of this age group.

HEALTH AND ADHERENCE TO TECHNOLOGICAL EDUCATION

> "The rights of the elderly in Brazil are guaranteed by the Federal Constitution and Law 10.741, of October 1, 2003, known as the Statute of the Elderly." the right to education, culture, sport and leisure;" (2003, law 10741 – Statute of the Elderly)

IMAGE 1

Source:www.shopify.com/br/stock-photos/computador

Since 2003 with the Statute of the Elderly, the right to health and education of this population is guaranteed by federal law. Therefore, denying them an education that allows them better care and access to health would be a denial of the established legality. And, obviously, here comes a key point to be thought about and even more discussed: how to assimilate the benefits of a digital world having lived most of your life in a world with only analog tools?

The information processing of the elderly is a little slower, modifying the response to any and all external stimuli, generating the issue of a singular behavior, not uniform, but which requires adequate knowledge on the part of the professional. The psychic part of these elderly requires a knowledge base on the part of health professionals to know how to serve this public, providing them

with well-being and developing a relationship of trust, either through the human aspect or through technological tools that can help their education and also health education. With the advancement of technology in the educational context and the use of technological resources, man is gaining more and more power with respect to the individual and the world he wants to know. Digital technologies in the educational context emerged in the 1970s in Brazil and had the implementation of digital resources from 1980 onwards. These technologies are part of the daily school life of many educational institutions in our country. (Gomes et al. (2017).

With advancing age, there is a higher incidence of general health problems, exacerbated by poor oral conditions, either due to lack of proper hygiene or inefficient basic oral health guidelines (FERREIRA et al., 2021). To improve oral health conditions and control markers of aging for the systemic health of older adults, it is crucial to adopt preventive approaches that utilize appropriate educational materials to promote health and encourage them to preserve their natural teeth for as long as possible. Therefore, prevention should be incorporated into attitudes and practices throughout life. The elderly need guidance to perform effective oral hygiene (VILA et al., 2007).

Educational technologies in health are important tools to mediate teaching and learning processes, seeking to facilitate the construction and reconstruction of knowledge. A variety of educational technologies are used to promote the health of older adults, including videos, mobile apps, booklets, and manuals. With the increase in the elderly population, there is a growing motivation among researchers to develop new technologies to promote health education (SÁ et al., 2019; NIETSCHE et al., 2005).

Within this context, it is crucial to recognize the importance of educational technologies in learning and in the oral health education process, which brings many markers of aging in the general health of the elderly, helping to understand oral hygiene guidelines and facilitating health promotion (LIMA –Costa, 2018; SOUZA et al., 2021). Digital education and digital health go hand in hand when we approach the aging process, so it is worth mentioning the current technological advances that will benefit the health of the elderly or aging, paving the way for digital education. In recent years, the convergence of digital technology with healthcare has revolutionized the way we approach health promotion and care for individuals, especially those who are aging after the age of 40. Digital health, composed of a series of innovative tools and technologies, is becoming increasingly relevant in the education and care of this population.

A study conducted during the Covid 19 Pandemic in 2020 with older adults from a health promotion program showed that implementing a Digital Inclusion Program for the Elderly in a Virtual Learning Environment is possible because the group reached the level of Technological Appropriation and Fluency, as most of the elderly were able to use the proposed applications (Galetti, Vendola et al, 2023). Currently, nursing also benefits from video call technologies for initial

interviews with older adults who are contracting health plans and even for interfacing with family members for elderly people hospitalized in hospitals or permanently in Long-Term Care Institutions (LTCF).

Artificial intelligence (AI) emerges as a powerful ally in this context. Through advanced algorithms and machine learning systems, AI can analyze large volumes of healthcare data, identify patterns, and offer valuable insights to medical and healthcare professionals, as well as the full range of patients. In the case of aging individuals, AI can help personalize treatment plans, predict health risks, and offer personalized lifestyle recommendations. Another promising technology is augmented virtual reality (VR/AR), which provides immersive and interactive experiences. In the context of health education for the aging public, VR/AR can be used to simulate clinical situations, such as rehabilitation exercises, cognitive skills training, and fall prevention practices, allowing users to learn more effectively and safely. The Internet of Medical Things (IoMT) also plays a key role. Through connected devices such as health monitoring sensors and wearable devices, aging individuals can track their vital signs, physical activity levels, and sleep patterns in real-time. This data can be shared with healthcare providers, allowing for more efficient remote monitoring and early interventions. Telemedicine, in turn, facilitates access to quality healthcare and education, especially for those facing mobility challenges or living in remote areas. Virtual consultations conducted by doctors and nurses, remote patient monitoring, and remote follow-up programs are examples of how telemedicine is transforming the delivery of care to the elderly, making it more convenient and accessible. Finally, Big Data analytics plays a crucial role in digital health for the aging public. By analyzing large sets of health data, such as electronic medical records and information from monitoring devices, researchers can identify health trends, predict disease patterns, and develop personalized interventions to improve the quality of life for older adults.

In summary, digital health offers a wide range of possibilities for educating and caring for the ageing public after the age of 40. With the intelligent use of technologies such as artificial intelligence, augmented virtual reality, the Internet of Medical Things, telemedicine, and big data analytics, we can promote a more integrative and personalized approach to health care and education based on studies, tests, and scientific evidence. At this stage of life, educational technology is empowering seniors to live healthier, more independently.

TECHNOLOGIES IN EDUCATION AND HEALTH

In recent years, we have witnessed a revolution in the way education is conceived, delivered and absorbed, driven by the advancement of digital technologies. Digital tools have dramatically transformed the educational landscape, providing new opportunities for learning, collaboration, and

personalization. In this text, we will explore some of the most relevant digital tools today, examining their impact on education and how they are shaping the future of learning.

ONLINE LEARNING PLATFORMS

One of the most significant changes in education is the rise of online learning platforms. With the advent of high-speed internet and the proliferation of connected devices, it has become possible to access a vast array of educational resources anytime and anywhere. Platforms like Coursera, edX, and Khan Academy offer online courses taught by world-renowned institutions and experts in a variety of fields. Not only do these platforms democratize access to education, allowing people of all backgrounds and geographic locations to access high-quality content, but they also provide flexibility and convenience for students who want to learn at their own pace. (Coursera, 2024), edX, 2024 Khan Academy, 2024)

VIRTUAL LEARNING ENVIRONMENTS

Virtual learning environments (VLEs) are another digital tool that is transforming education. These environments, which include learning management systems such as Moodle and Blackboard, offer an online platform to facilitate interaction between students and teachers, the sharing of educational resources, and the delivery of course content. LMS allow educators to create dynamic virtual classrooms where students can access course materials, participate in online discussions, submit work, and receive feedback from teachers. Additionally, VLEs can be customized to the specific needs of each educational institution, providing a learning experience that is tailored to students' preferences and goals. (Moodle 2024 and Blackboard 2024)

VIRTUAL AND AUGMENTED REALITY TECHNOLOGIES

Virtual reality (VR) and augmented reality (AR) are emerging as powerful tools to transform education. With the use of devices such as VR glasses and AR apps, students can be transported into immersive virtual environments that simulate real-world experiences. These technologies are particularly effective in teaching practical subjects such as science, engineering, and medicine, where students can perform experiments and procedures in a safe and controlled virtual environment. Additionally, VR and AR can be used to create highly engaging and interactive learning experiences, increasing student interest and motivation. (JETS, 2022 BRI, 2020)

Artificial Intelligence and Big Data

Artificial intelligence (AI) and data analytics (Big Data) are playing an increasingly important role in personalizing education. Through advanced algorithms and big data analytics,

educational platforms can assess student performance, identify areas of difficulty, and tailor course content according to each student's individual needs. Additionally, AI can be used to provide instant feedback to students, helping them monitor their progress and identify areas for improvement. Data analytics also allows educators to identify large-scale learning trends and make curriculum adjustments to optimize teaching and learning. (Frontiers, 2020)

IMAGE 2

Source: www.dreamstime.com

CONCLUSION

Digital tools are revolutionizing education in unprecedented ways, offering new opportunities for learning, collaboration, and personalization. Online learning platforms, virtual learning environments, VR and AR technologies, artificial intelligence, and data analytics are shaping the future of education, making it more accessible, engaging, and effective. And the aging process as an

integral part of the life of the human being who acquires longevity is inserted in this context of futuristic learning that is already present. The digital inclusion of the elderly is now a reality for their personal education, health education and learning vehicle for health promotion and treatment. As we continue to move forward into the twenty-first century, it is crucial that educators, educational institutions, and policymakers recognize the transformative potential of digital tools and work together to make the most of these innovative technologies for the benefit of all learners.

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