Metaverses and Education

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The internet offers new options to work, have fun, interact, communicate, and share knowledge daily. Time and space are redefined. Time, day, and place are no longer obstacles to joining interactive experiences that bring together individuals from anywhere in the world in a single virtual environment.

Exploring the opportunity of having together individuals in a virtual environment is imperative to optimize student learning. During the pandemic, teachers look for ways to "be together" with students unable to meet in a face-to-face classroom. As a result, teachers had to change their old and deep-rooted didactic-pedagogical habits and launch themselves into the digital world that seemed to many a terrifying world.

After months of confinement and the eagerness to continue the educational work, several teachers that faced the challenge of teaching in virtual environments became aware of the importance of the four pillars for 21st Century Education presented in the UNESCO Report by Délors: learning to learn, learning to do, learning to live together, and learning to be.

There were many attempts, mistakes, and achievements, considering that working in the virtual world is not just replicating what is done in the face-to-face classroom. The environments (face-to-face and virtual) require different ways of planning, organizing, and implementing educational and evaluating activities. But all the effort and dedication of many teachers have shown and expanded the possibilities of new educational post-pandemic paths. Frontiers for the new, rethinking Education opened with more flexible, dynamic, and collaborative didactic practices that better fit contemporaneity.

Virtual classrooms, virtual environments for collaborative learning, immersive environments, and artificial intelligence as support tools for the teacher's work gained importance. Therefore, Metaverses are now emerging. If well-tested and explored, it can be an effective tool for teaching and learning, especially for the new generations that already move with a certain ease and fascination through the digital world.

What are Metaverses?

For those who don't know, Metaverse is a 3D virtual environment that allows users to interact, collaborate, learn, and have fun using their own avatar.

Metaverses combine different concepts, mainly as virtual environments built and modified to mimic real (or fantasy) spaces in 3D. In other words, the Metaverse is an enlargement (or extension) of the real world into the virtual world on the internet. To interact in this environment, users use avatars, or free representations of themselves, which need to be connected via the internet in real-time to the Metaverse. This dynamic creates an immersion in which people in their avatars feel belonging to that environment. This enables the recognition of real-life patterns and interaction in entertainment, education, and collaboration environments where individuals don't need to be physically present for this interaction, generating a transformative experience.

The concept of the Metaverse is not new. Online games where users use avatars to interact and explore different virtual environments are the precursors of the Metaverse. MMORPG (Massive Multiplayer Online Role-Playing Game) is one of the first examples of players interacting in a fantasy world through avatars. It was followed by the game Second Life, where customization, both avatars and the world, reached such comprehensive concepts of freedom that made it popular. One could say that it was the first real metaverse. As the name suggests the user could have in the virtual world a second life, represented by an avatar that could resemble the user and "live" in a place the way the user wanted. However, due to the lack of technology at the time, and the lack of a long-term sustainable commercial development and exploitation

> *Learning to learn, learning to do, learning to live together, and learning to be. The pillars for Education in the 21st century.*

plan, Second Life ended up falling into obsolescence and eventually disuse.

Metaverses had become popular these days for commercial exploitation, especially when Mark Zuckerberg announced the transition of the Facebook brand name to Meta. In addition, games such as Fortnite and Roblox promote paid and/or free events within their virtual spaces, such as exclusive concerts by real artists represented by their respective avatars and with limited access. These new formats allow metaverses to evolve and expand into a real new world to be explored, including through Education.

However, the use of the Metaverse in Education is not something simple. It is up to both institutions and teachers to familiarize themselves with immersive tools that allow students to have experiences similar to those they experience in face-to-face classroom environments..

Metaverses and education: innovation or novelty?

Using an environment like the Metaverses as an educational tool does not guarantee innovation, only a novelty. The Covid-19 pandemic, for example, placed the school-student relationship within the virtual environment from online classes and video calls compulsorily. However, it practically followed the same traditional format of teacher-transmitter and student-receiver. It is worth pointing out that innovation, a creative way of using technology, takes advantage of all the possibilities and potentialities this technology offers. If not, keeping the already known formats and processes in different supports and/or technologies is a novelty, not an innovation.

In the Metaverses, students can exchange and build knowledge in real time, interacting with each other and with the 3D environment. Moreover, this knowledge can be registered for other users to modify or interact, or even for the future. Thus, since their adoption, traditional educational models, such as student-receiver and teacher-transmitter have given way to more interactive and collaborative models, since their adoption.

From the initial teacher training, it is necessary to insert more disciplines on digital literacy to master the Metaverses, and explore their potentialities, especially in didactic and educational practices. Theory and Practice are two sides of the same coin.

However, the focus should not be only on the initial teacher training. It is also necessary to emphasize continued training. It is also essential to emphasize continuing education. Taking teachers to constantly update themselves and insert them in the digital world is critical so that they can, with their knowledge of

technological resources, arouse in students an interest in learning, especially in those students from the generation of digital natives.

The virtual world and the real-world mix and integrate. It is necessary to pay attention to this new reality present every day. In the case of Education, it is worth reflecting on the fusion of these worlds, always aiming at achieving better learning results.

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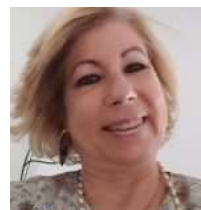
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This article is a result of the authors´ ascertainment and analysis, without compulsory reflecting CEST opinion.