


# Chapter 11

## Metaverse in Higher Education and the Metaversities: Disruptive Technologies and Innovations in Industry 5.0 for Phygital Transformation

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### **ABSTRACT**

*This chapter was written based on an exploratory study, reports, and articles current at the time of writing; however, over time, it tends to have historical characteristics in relation to metaversity. The objective was to highlight the growth mindset and disruptive technologies and innovations for the metaverse in higher education. In the exploratory research, it was revealed, in the metaverse ecosystem, the existence of metaversities, the possibilities of the metaverse for higher education institutions and the presence of phygital transformation in educational contents and activities. It was concluded that new research and new paradigms are needed for disruptive technologies in the metaverse ecosystem and metaversity has the potential to bring together realities, simulations, campus replicas, time and space travel, and meaningful and immersive experiences with augmented reality, virtual reality, mixed reality, and extended reality.*

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## **INTRODUCTION**

The facts relevant to the writing of this chapter are the advance of immersive worlds in the metaverse and the possibilities for business in ecosystems with technologies based on augmented reality, virtual reality, and mixed reality. It is known that there are paradigm shifts and disruptive technologies for e-housing and consumption in the metaverse and in the advancement of industry 5.0 are augmented reality, virtual reality, and mixed reality for business applications.

It is clarified that the word metaverse will be used with lowercase letters, even though it is known that the term metaverse was a kind of collective digital space with compatibility and convergence with reality in the work of Stephenson (2000) published in the 20th century. This chapter intends to highlight the principles of the metaverse to support the understanding of the metaverse ecosystem, technological resources and applications based on artificial intelligence.

There are many advances in the field of Internet of Things (IoT), artificial intelligence, Big Data, blockchain and augmented, virtual and mixed realities and having the metaverse principles highlighted tends to help in understanding the contexts of cloud platforms, quantum computing, cybersecurity, and telecommunications recursions. The era of metaverse and technological trends mobilize industry 5.0 for phygital transformation.

Mobile and fixed devices are present in the metaverse ecosystem that has computational resources oriented to augmented, virtual and mixed realities, however not all higher education institutions include disruptive technologies in prescribed curricula, in the way of accessing knowledge and in successful and innovative experiences, therefore, it is necessary to understand the fundamentals of the metaverse for the paradigm shift that integrates technologies and artificial intelligence to the human growth mindset for operational, tactical and strategic thinking in industry 5.0.

Higher education institutions are responsible for the phygital transformation in society, which is increasingly becoming a (cyber) society with the advancement of mobility in the palm of hand and the advent of web 4.0. After all, it is in [innovative] technical education and higher education that young people perceive the possibilities for society 5.0 with hands on, with prototyping [pivoting] digital solutions and with recent theories about the metaverse ecosystem.

It is the paradigm shifts, the growth mindset, disruptive technologies, disruptive innovations, and human beings that develop new concepts. Although the scientific community may be reluctant to adopt the new foundations, with demonstrations and assumptions there will be convincing new theories to solve contemporary and complex problems.

People, according to Kuhn (1998, p. 212), tend to believe in new paradigms if they [the paradigms] solve problems that still cannot be solved with known concepts

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