

Metaverse-Enhanced Learning in Secondary Schools in Israel: Training, Instruction and Learning Processes (Poster)

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**למידה במטאוורס בחטיבות ביניים בישראל: תהליכי הכשרה,
הוראה ולמידה
(פוסטר)**

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Abstract

Metaverse represents the integration of physical and virtual worlds enabling social interactions with user digital avatars (<https://www.merriam-webster.com>) through virtual reality (VR) headsets. Significant benefits to Metaverse and VR assisted learning are the ability to situate the learning in high-risk or expensive locations (Villena-Taranilla et al., 2022) and significant levels of presence, engagement, retention and transfer of learning materials (Makransky & Mayer, 2022). However, certain aspects of VR learning are challenging – cognitive overload (Peterson et al., 2020), privacy protection (Wang et al., 2022a), antisocial behavior (Kun, 2022) and physical reactions to headgear overuse (Wang et al., 2022b).

A central characteristic of the Metaverse is the ability to socialize and collaborate with users within Metaverse spaces (Wiederhold, 2022). The **e-CSAMR** model (Shamir-Inbal & Blau, 2021) integrates digital collaborative learning levels (*Knowledge Sharing, Cooperation, Collaboration*) into the SAMR 4-tier model of educational technology integration (*Substitution, Augmentation, Modification and Redefinition*). Eshet-Alkalai (2012) defined a conceptual framework of **Digital Literacy** skills listing six thinking skills necessary for successful digital world navigation. We can assume that Metaverse-enhanced learning will emphasize socio-emotional and real-time thinking competencies, both found to be overestimated by students but underdeveloped in technology-enhanced formal education (Porat et al., 2018).

The current study examines teacher training, instruction and learning processes in Metaverse assisted learning in secondary schools according to the following **research questions**:

1. What are the characteristics of professional development for teaching in Metaverse and which pedagogical design and technological skills are promoted in such training?

*Proceedings of the 18th Chais Conference for the Study of Innovation and Learning Technologies:
Learning in the Digital Era*

D. Olenik-Shemesh, I. Blau, N. Geri, A. Caspi, Y. Sidi, Y. Eshet-Alkalai, Y. Kalman, E. Rabin (Eds.),
Ra'anana, Israel: The Open University of Israel

2. What aspects of cognitive, emotional and social learning perceived by students are prevalent in Metaverse and whether these aspects evolve over time?
3. Which digital literacy competencies of students are developed in Metaverse-enhanced learning and is there consistency between actual and perceived literacies?

Methodology: The research will analyze Metaverse-enhanced learning in Israeli secondary schools – at school and at home. We will conduct semi-structured interviews with 5 decision-makers, 15 teachers and 15 students exploring the various cognitive, emotional and social learning (Caspi & Blau, 2011). 20 Metaverse-enhanced lesson observations will assess actual instruction. Metaverse integration analysis will be according to the e-CSAMR framework. Following qualitative analysis, we will quantitatively assess and compare the digital literacy skills among 100 metaverse students and 100 other technologies students. Additional 20 lesson observations will enable detecting longitudinal changes in the pedagogical design. The study will contribute to technology-enhanced research, educational practice, and teacher training.

Keywords: Metaverse enhanced learning, digital literacy skills, VR teacher training, VR Worlds in education.

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