EDUCATIONAL POTENTIAL OF 3D VIRTUAL LEARNING ENVIRONMENTS

Ress. Assist. İlknur Reisoğlu
Ress. Assist. Özlem Baydaş
Ress. Assist. Murat Çoban
Ress. Assist. Fatma Günay
Assist. Prof. Dr. Türkan Karakuş
Assoc. Prof. Dr. Yüksel Göktaş

Research problem: With the use of 3D virtual worlds in education, leading universities in the world have begun to use virtual campuses that they developed in instructional process (Cheryan, Meltzoff, & Kim, 2011). Users’ ability in designing interactive environments related with the desired content, their perceptions about being a part of the environment (Dalgarno & Lee, 2010) and their ability in developing interactive objects that lead dealing with the problems from a different aspect in 3D virtual worlds (Wang, 2012) have particular importance in this situation. All of the features mentioned about 3D virtual learning environments are worth to research due to its advantages that help students to construct and share their own knowledge (Omale et al., 2009). Thus, increasing number of studies related to the 3D virtual learning environments canalize researchers to classify or categorize related studies and examine simulations, games and social networks in the scope of 3D virtual worlds are limitations to analyzing current 3D virtual world studies. In this direction this study aims to examine empirical studies conducted on 3D virtual environments in terms of platform used, research aims, environment usage, environment development strategies and findings.

Method: The sample of the study is comprised of 100 articles about using 3D virtual worlds in education that match the criteria of empirical studies published in BJET, Computer & Education, Educational Technology Research and Development, Educational Technology and Society, Computer Assisted Learning, Computer in Human Behavior, Interactive Learning Environment during 2000-2012. Of these articles related with using 3D virtual worlds in education were examined at first. The articles were categorized as to platform used, environment usage, research aims, environment development strategies and behavioral, emotional, cognitive and social learning products indented for students using constant comparison methodology. During constant comparison analysis, firstly each of
the articles was examined and categories were determined as to article content, and finally comparisons were made with the categories obtained from another articles.

**Findings:** It was found that mostly SL and Active Worlds platform were used in 3D virtual worlds. When articles were examined, it was found that 3D virtual worlds used as a support for learning and environment for applying different learning approaches, research, game, simulation, social interaction, virtual classroom and campus environment and tool for supporting lifelong learning. According to the studies, environment development strategies were collaborative, situated, inquiry based, problem based, role plays, and project based, learning by doing and constructivist learning. The behavioral skills that students gain in 3D virtual learning environments include computer usage, collaboration, trial and error, discussion, research and practice. Also affective experiences were the sense of presence, motivation, responsibility, belonging, distraction, awareness. Cognitive skills were: analysis, evaluation, creation of knowledge, inquiry, depth thinking, problem solving, academic success, critical thinking, comprehension. Social experiences were social learning/ interaction, confidence, exchange of ideas and development of communication skills.

**Results and Discussion:** As a result of study, it was found that in most of the studies SL and Active Worlds were used as a platform. Properties of these platforms which provide synchronous voice (Alarifi, 2008) and written communication among students with the help of avatars and allow them to record their activities to the databases (Ketelhut, Nelson, Clarke, & Dede, 2010) were important factors in this situation (Dickey, 2011). As a result of the analysis, it was found that 3D virtual worlds mostly used as a support for learning and environment for applying different learning approaches. Hence, Hew and Cheung (2010) conclude that 3D virtual worlds can be used as an environment for communication, simulation and experiences. The results of the study showed that collaborative learning was the most considered approach in the studies. As such, Duncan and his colleagues (2012) conclude that collaborative learning and constructivist approach were mostly used in 3D virtual worlds. Categorizations of 3D virtual worlds revealed out that studies focused on the environment and students’ experiences. In addition, 3D virtual learning environments had a significant effect on the developments of students’ behavioral, affective and social experiences. Also Hew and Cheung (2010) suggested that 3D virtual learning environments affect students’ behavioral, emotional and social learning outcomes in a positive way. They revealed that 3D virtual worlds altered students’ motivation and satisfaction in a positive way, improve learning and increase social interaction, presence and the sense of belonging to a group by the help of avatars.
Kaynaklar


