Chapter XXIII
Inhabited Virtual Learning Worlds and Impacts on Learning Behaviors in Young School Learners

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ABSTRACT

The paper outlines a new paradigm and its underlying rationales for implementing networked learning environments that is emerging from new technologies such as multi-user platform, virtual worlds, virtual learning community, and intelligent agents. The proposed paradigm of the networked learning environments is described as inhabited virtual learning worlds (IVLW), which is a shared learning space in 3-D format and populated with avatars that are the representations of learners who are geographically dispersed around the world. The virtual learning worlds are also composed of objects such as intelligent agents and learning materials. A pilot system is created based on the discussed rationales of inhabited virtual learning worlds. A preliminary empirical study focusing on the selected learning behaviors in young learners also has been conducted with the pilot system. The results of the empirical study and suggestions for enhancing the pilot system are discussed in the closing section of the article.
INTRODUCTION

There is much discussion pertaining to the potential of information technology to transform strategies of learning and create a learning society that values the principles of knowledge economy. However, the potential has yet to be realized due to a lack of sound networked learning paradigm and rich digital content. Furthermore, after decades of endeavors by the researchers and practitioners in the field, the search for a profound pedagogy for the application of Internet in education continues (Concord Consortium, 2002). It is obvious that there remains a great deal to be learned about networked learning or virtual learning, especially in the issues of designing networked learning environments and digital learning content.

After much hype for several years in the field of education, especially at K-12 levels, networked learning has come to redefine itself for reality. To date, there exists no clear evidence that Internet or information and communication technology has brought significant “added values” to conventional education or learning approaches (Lin, 2001a). It seems that a sufficient and sound networked learning environment has not revealed yet.

In addition to a lack of qualified digital content, the existing networked learning environments or Web-based learning platforms function more as an information warehouse than as a learning space. Above all, most Web-based networked learning environments currently available are in a teacher-centered or information delivery paradigm. This paradigm of networked learning usually discourages learning engagement and creates strong student isolation. This type of learning is passive and unable to engage student in active learning. Online students may find it difficult to follow the learning tasks and to monitor their progress (Lin, 2001b). Learning community and learning supports that are needed for motivating learning in online learning are completely missing in the teacher-centered or information delivery model. Hence, learner engagement of learners is absent.

A new paradigm in designing networked learning environments that is different from the existing Web-based teacher-centered or information delivery paradigm is needed. Based on the current study in the field and advent of new information technologies (Concord Consortium, 2002), one solution is the incorporation of inhabited virtual learning worlds with the support of intelligent agents.

The fundamental rationale for inhabited virtual learning worlds (IVLW) is creating a shared and immersive learning space that is in 3-D format and populated with avatars where they can pursue collaborative learning activities and form a vibrant learning community (Vlearn3D, 2002). Avatars, the representations of learners in the space, can talk, walk, move, gesture, point within the IVLW and interact to each other or with objects in the IVLW, which contributes to intense social and intellectual interactions. Furthermore, IVLW can be seamlessly integrated with existing Web pages and teleported to other learning resources. The features thus extend the accessibility of information to avatars in the IVLW (Lin, 2002).

According to Gilbert’s definition, an intelligent agent is “software that assists people and acts on their behalf” and it could make “computer systems easier to use by allowing people to delegate work back to the computer” (Gilbert, 1997). Research on intelligent agents has mushroomed in the past few years. There are two conflated areas of the research on intelligent agents currently (Isbister, 2005). One focuses on the use of artificial intelligence (AI) techniques to create software that performs information filtering and other autonomous tasks such as computing or searching for learners. Intelligent agents of this sort, referred as autonomous agents, may or may not display any explicitly anthropomorphic features. The other focuses on the agents acting as an interface metaphor that assists the learner in interacting with the system or environments. The latter, also known as interface agents, may or may not incorporate new AI techniques. The
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