A 3D Situated Language Exercising System in the WWW Environment

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ABSTRACT

Situated learning is a very effective method in learning a language. Applying the multimedia technology to the World Wide Web (WWW) for situated learning is a widely discussed topic and has been extensively researched in recent years. This paper has analyzed the requirements for situated learning and has built an architecture that can help to support linguistic situated learning over the Internet. This architecture does not only preserve the original advantages of the WWW in multimedia and interactive Web pages, but it also includes a 3D environment to simulate real life scenario. Finally, the paper builds a prototype of Internet education's research plan in French to reveal the possibility of the presented architecture.

Keywords: 3D VR; distance learning; multimedia; WWW

INTRODUCTION

Linguistics was derived from the early tradition of hearing, speaking, reading and writing. These also represent four mainstream methods of teaching which present a variety of language learning theories. With the evolution of research, judging different language-learning theories’ principles has changed the four standard methods. It is not difficult to perceive that situated learning has officially become one of the principles (Richards & Rodgers, 1998; Ho, 2002). In many foreign language courses, the teacher will have situated conversation with students based on the course requirements, or will ask some students to practice conversation through role-play games. Many courses will allow grouped students to practice situated conversion of the learning materials with one another during the course; they may even use the course materials and topics to have the students act out a drama performance. Many school’s foreign language departments will host annual activities like German week or French week that allow the students to participate in related cultural activities such as wine tasting and cultural expo. This allows the students to better understand the culture and its specialties contained in the language.
In addition, annual drama is also an important functional activity in which the student is involved in role-play and practicing language through situated simulation. Situated learning, therefore, has become a recognized teaching method in many schools.

With the rapid development of network and 3D technologies, the 3D multi-user virtual environment has become a popular research topic. An increasing number of educationists have begun using these technologies to build a vivid learning environment. The 3D Virtual Radiopharmacy Laboratory (Alexiou, Bouras, Giannaka, Kapoulas, Nani & Tsaitsos, 2004) is designed and implemented in the framework of the VirRAD European project. This laboratory represents a 3D simulation of a radio-pharmacy laboratory where learners, represented by 3D avatars, can experiment on radio-pharmacy equipment by carrying out specific learning scenarios. Web-based Virtual Laboratory (WBVL) (Dong & Zhu, 2001) is an infrastructure to aid the education of undergraduate’s engineering experiment curriculum. Using the WBVL infrastructure has successfully implemented several virtual engineering chemical and mechanical experiments.

This paper focuses on combining the 3D Virtual Reality with the WWW environment to build an Internet education environment that will suit the situated language learning purpose. The following sections illustrate the characteristics of situated learning. Its importance to language learning is then followed with the analyses of the procedural process of situated language learning. Based on the processes above, an interactive environment is setup and working flow is designed to comply with the situated learning process. Finally, a prototype is implemented for French Internet education’s research plan.

**SITUATED LEARNING**

Situated learning is a contextual learning that takes place in and through interaction with others in problem-solving environments that are authentic rather than decontextualized. It is fundamentally a social process, not solely in the learner’s head (Jonassen, 1999). In Young’s work (1993) on situated learning, he argues that knowledge is an active relationship between learner and the environment, and must take place when the learner is actively involved with authentic, complex instructional content. In the situated learning approach, knowledge and skills are taught in contexts that reflect how the knowledge will be used in real-life situations. Brown, Collins and Duguid (1989) emphasize that situated learning, both outside and inside of school, advances through collaborative social interaction and the social construction of knowledge.

Situated learning, like action learning, stresses that behavior change is more likely to occur as a result of reflection on experience. Social interaction is a critical component of situated learning — learners become involved in a “community of practice” which embodies certain beliefs and behaviors to be acquired (Lave, 1988). Orey and Nelson (1994) elaborate on this explanation, stating that “learning requires more than just thought and action, or a particular physical or social situation, or just receiving a body of factual knowledge; it also requires participation in the actual practices of the culture.”

Based on the above scholars’ research and discussions, one may conclude that situated learning is hoping to build a contextual, real-life and high interactive practice environment. This kind of learning environment can clearly build a simulated real-life situation learning environment. The main
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