

# VIRGE: Tutoring English over the Web through a Game

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## 1. Introduction

In the recent years, the learning of a foreign language has become more important and necessary than ever for many people of many different countries and mother tongues. The increasing necessity for learning a foreign language coincides with the Internet era, which has brought people closer through the computer communications. Thus, the Web seems a very appropriate medium for teaching a foreign language since it can ensure that the audience may be anywhere in the world and hence a web-based language tutoring system can be addressed to natives of different countries. However, one important issue that has been rather overlooked so far is how such tutoring may take place in a motivating, engaging and cross-cultural manner.

## 2. Operation of VIRGE

One approach that seems very promising in terms of a motivating and cross-cultural way of teaching is to invite the culture of computer games for creating language tutoring systems. Indeed, many researchers, such as Papert [1], point out the potential benefits of education from computer games. In the case of language tutoring systems the use of computer games may additionally provide a cultural internationalisation and wide acceptance of these systems by audience all over the world.

In view of the above, we have developed a Virtual Reality (VR) game for tutoring English as a foreign language over the Web. The educational game is called VIRGE (VIRtual Reality Game for English) and intends to motivate and engage students through the use of a game.

However, using the technology of computer games in education does not automatically ensure the desired educational benefits. If the educational game has not been designed carefully in terms of content and pedagogy the desired results may not be achieved. Moreover, especially for the case of Web-based educational games there are two important additional problems. First, there has to be a high degree of individualisation in the educational game since it is meant to be used by many different kinds of users of varying backgrounds and needs. Second, the complex graphics of games render the applications very

demanding in terms of resources and thus the technology that has to be used for the deployment of games over the Web has to be very efficient and reliable.

The problem for the individualisation has been addressed by using the technology of Intelligent Language Tutoring Systems (ILTS). ILTSs are Intelligent Tutoring Systems (ITSs) that specialise in teaching languages. As such they base their reasoning on their student modelling components [11]. As a result, VIRGE monitors closely the actions of students while they play the game and creates an individual student model for every student-player. Then it generates individualised instruction and advice for students based on these student models that are kept in the Web server. The student characteristics that are being modelled concern the knowledge level of students as well as their behaviour while learning, which can be connected to their emotions. Finally the problem of the deployment of the ILTS-game over the Web is addressed using the technology of Web services. The advantage of Web services is that they allow a program to pass anything through the Internet by using interfaces.

## 5. Conclusions

In this paper we have shown how an ILTS may be combined with the technology of Virtual Reality games and used over the Web for teaching English as a second language. The benefits of the combination of the above technologies are particularly important for the domain of a foreign language teaching because they allow the creation of engaging and motivating educational applications that are cross-cultural.

## 6. References

- [1] Papert, S. "The Children's Machine: Rethinking School in the Age of the Computers". *Basic Books*, New York, 1993.
- [2] Self J. "The Defining Characteristics of Intelligent Tutoring Systems Research: ITSs Care, Precisely", *International Journal of Artificial Intelligence in Education*, 10, 1999, pp. 350-364.