Education in Virtual Environment

Mihaela Banek Zorica
Department of Information Sciences
Faculty of Humanities and Social Sciences, University of Zagreb
Ivana Lučića 3, 10 000 Zagreb, Croatia
mbanek@ffzg.hr

Antonija Lujanac, student
Department of Information Sciences
Faculty of Humanities and Social Sciences, University of Zagreb
Ivana Lučića 3, 10 000 Zagreb, Croatia
ahorvat2@ffzg.hr

Summary

Students are our most precious resource, and as such should be cultivated with the utmost care in well-designed educational environments. If our goal is to assist the learner in developing the knowledge, skills, and attitudes to join society as a functioning member, we should be oriented towards the future creating successful learning systems. Virtual environment potentially provides such a interesting, instructive, interactive environment also for students in Croatia, but there are some possible detrimental educational consequences. Anyone who is engaged in education must be aware that many of the necessary skills people learn through direct interaction with others even without technological intermediaries. This paper will give a general overlook on the characteristics of education in virtual worlds, give insight in pilot study on implementing virtual world in university classes and discuss both positive and negative sides of education in virtual environment.

Key words: virtual environment, Second life, education

Introduction

For more than three and a half centuries European and worldwide educational systems were based on the book as the sole medium for storage and transmission of information. Today, young people and adults live in a completely different media environment. Most of them possess a computer connected to the Internet, which is used for their work, education and leisure. Learning in a virtual environment poses a very practical and effective way of learning, but we should bear in mind that when implemented in the primary and secondary education it also has some negative consequences like insufficient physical activity and reduced immediately socializing with peers. This was confirmed by the survey of 3,833 primary and secondary pupils conducted in April, 2002 in Za-

greb area and central Croatia[1]. According to the results 43.70% of children attending primary school have personal computers in their homes and use them together with their friends still maintaining social interaction. However, students of high schools of which 60% regularly use the Internet reported that they spend more time on the Internet than with their friends which shows a decrease in their social interaction. Some respondents stated that they had to end many friendships due to spending too much time at the computer. On the other hand usage of technology had many benefits on educational process, like course and student administration which was confirmed in another research of the same the author. In teachers opinion use of computers loosens school curriculum, reduce the number of textbooks to be carried daily by the students, facilitates teachers administrative tasks, to name just a few.

Forms of education in a virtual environment

Today's ICT supported education is implemented in different types of classrooms: multimedia classrooms, interactive multimedia classrooms and virtual environments. Multimedia classrooms are usually equipped with TV, speakers and an LCD projector thus creating a first level multimedia environment that tries to respond to the student needs. Teaching mode is still oriented towards teacher as a "information keeper" i.e. teacher centred and does not respond to the learners individual needs. The only advantage of the multimedia classrooms versus classical classrooms is in students' experience which is enhanced due to the simultaneous activation of several perceptual organs ultimately leading to a positive knowledge transfer. Combination of these electronic devices with computer could lead to usage of enriched educational materials instead classic textbook. Offering internet connection and creating a network of computers enables creation of interactive multimedia classrooms which can offers teachers a good technological base for transformation of educational process into a student centred one this enabling and encouraging meaningful learning. It enables teacher to define the learning objective and create learning tasks that allows student to learn in, for them, the most suitable mode. By doing so learning becomes more interesting and responds to their personal needs and capabilities. One of the main challenges is the loss of control over the individual information needs of each student and possible information overload. Such a personalized learning environment requires work in smaller groups which in current school environment harder to ensure. Furthermore, teachers need to stimulate both individual and collaborative work. They need to develop social skills and learn how to evaluate and compare each ones work.

---

[1] Matijević, M. Internet, multimedij i cjeloživotno učenje. // Zagreb : Hrvatsko andragoško društvo, 2002, pp. 267-276.

Interactive multimedia classrooms are the easiest form of a virtual environment that endorses full interactivity. The most complex type, virtual classrooms (Figure 1), present a combination of interactive multimedia classrooms connected to the Internet and enriched with advanced audio-visual devices and virtual representation of the world. In these environments high level of interaction is obtained and physical location of students and teachers is in not of importance.

Figure1. Virtual classrooms should be connected [2]

Virtual classrooms should be created in the following manner:
- team of experts with the help of advanced technology generate virtual reality for every teaching situation and store it in the educational information system in order to make it accessible to all users,
- the teacher chooses the appropriate situation according to the teaching plan, and organizes educational environment (computer, audio-visual helmet, sensor gloves, etc.) which enables him to develop a learning program
- student interact with the system

The teacher chooses a learning objective and students themselves select the learning paths that the system generates. Students can create new situations, study them, change the method of trial and error and finally finish the learning task.

High quality virtual learning environments and intense activity of the student's perceptive organs create a "reality" in which students create cognitive and experiential effects in the process of learning. One of the many advantages of learning in such virtual environment is the interdisciplinary teaching scenarios in

---

[2] Virtual classroom // Virginia department of fire programs http://www.vafire.com/higher_education/virtual_classroom.htm (15.08.2009)

which knowledge is set in a broader context and becomes more comprehensive this of better quality.

Implementation of virtual environments in Croatia

Croatian initiatives in implementation of virtual environments of in school children education could be found in programmes for the gifted children. One successful example is "Worlds apparent reality" a IT and robotics programme that has resulted in creation of virtual world "Croatia". It is based on 3D Construction Kit, which is completely free and available online. Using this program, many children develop numerous architectural buildings (buildings, wind power, holiday resorts), set up exhibitions of pictures in museums, etc. by using 9000 previously defined objects as well as different types of 3D shapes and surfaces. Objects can be created in any 3D program (True Space, Imabot, Xelagot, even Visual Basic). Stimulating children participate in and develop virtual environment develops not only spatial perception, but also creativity, and due to communicate with people online has shown an increase emotional intelligence, today much appreciated of the once popular IQ (Figure 2).

Figure 2. Anita, hostess in a virtual world, "Croatia". Gestures and mimicry bots in virtual reality worlds are at a very high level.

Furthermore, some children also participate in the robot making courses using ROBOLAB system that expands the range of LEGO sensors, computer-controlled motors and RCX module (Figure 3) combining LEGO blocks with the right industrial microcontrollers (Figure 4).
Many children who have already participated in these courses were thrilled by the possibility to express their creativity in such a way.

Figure 3. Modul RCX

Figure 4. Creating a robot

Implementing virtual worlds in higher education

Under the project *Knowledge organization, management and sharing in electronic learning environment* financed by the Croatian Ministry of Science, Education and Sports an analysis of the existing game based environments and virtual worlds was undertaken. The decision of testing fell on the currently most popular one – Second life. Project goal was to test this environment and create an extension to the current Faculty of Humanities and Social Sciences (FHSS) e-learning environment specifically for the part-time students and their distant learning courses. Extending current electronic educational environment to the virtual 3D space was motivated by the fact that avatars and virtual worlds could partially substitute the real life classes and interaction both between students and between students and teacher. Moreover, interoperability between FHSS virtual learning environment OMEGA (based on Moodle) and the Second Life platform was also to be tested as a foundation for administration of classes held in real and virtual world.

Figure 5. Virtual learning space of Faculty of Humanities and Social Sciences, University of Zagreb in Second Life

561

Pilot study was based on one elective course *Information in electronic environment* offered to part-time LIS students. Introductory meeting was organized and students were informed on the procedures, tasks and learning objectives. They were divided in 3 groups of five, in order to give each student full support and individual teachers backup, while the course content was divided in three parts: introduction to Second life, teaching how to create object and decorate meaningful information space, and retrieval and evaluation of information found *in*-world. At the end of the course students were asked to evaluate course content, teaching methods and learning environment. Course was evaluated as a successful and proposition to hold similar courses was made. Students had learned how to act in virtual world and were able to utilize previously learned skills like information literacy, programming, reference service etc. As most of the student, attending this course, were employed in the school or university libraries, additional outcome is their introduction to new technology which they can now implement in their work environment.[3]

Educational side of virtual education
Often is emphasized potential negative impact of virtual environments on youth thinking together with violent computer games or the exposure of young to inappropriate web content. Many articles were written on these subjects so we would like to focus on some of the possible consequences of virtual education in youth education. For example, in Germany out of 11 million students 700 thousand experience that their behaviour interferes with their learning. Out of the 100 students they observed nearly 23% reported various forms of aggressive behaviour[4]. Teachers and professional staff often complain about the lack of time and would very gladly spend time doing more to raise young. Many students complain about the overcrowding learning material that remain on their cognitive level, but do not penetrate more deeply into their emotional lives. Moreover, materials contribute to the informational overload so relevant issues can not be discussed due to the fact that student concentration is reduced due to the lack of energy. Right there could we utilize the advantage of virtual environments in creating deeper connections to educational content and transfer knowledge not only memorizing facts. Multimedia and virtual classrooms can be perfectly used for faster adoption of educational and less important content, or for the deepening of knowledge and emotional experiences of educational and important facilities. Interdisciplinary classrooms that support reduced material cause positive emotions such as curiosity which will open the way to the

---

[3] Banek Zorica, M. Spiranec, S. Pavlina, K. Immersive worlds as educational environments. In Research, Reflections and Innovations in Integrating ICT in Education, MICTE 2009. Lisabon: Formatex, 2009

[4] Winkel, R. Djeca koju je teško odgojiti. Zagreb : Educa, 1996, pp. 26-27.

emotional world of students. Virtual representation of the students can easily environment where they connect with the concrete practice and in which students develop motivation and positive emotions such as feelings of success and usefulness. Positive emotions that arise when learning certainly do not encourage aggressive behaviour which often occurs due to dissatisfaction of students who do not see the usefulness of material exhibited by frontal teaching. Research shows that the concentration of students in the last twenty years has reduced by more than 70% together with the knowledge they need to master multiple magnification[5]. Many teachers fear allowing students to use technology in the classroom can cause complete chaos and lack of control, but they forget that the new generation of students must learn to use technology and school. Educational institutions should offer students knowledge, skills and emotions that will be required after completion of classes, in their professional lives.

Implementation of computer technology is not about teaching but about learning[6]. In relation to the book it allows endless variations in the realization of the educational tasks while respecting the principles of multiple intelligence and humanly organized schools. Learning in a virtual environment enables a new kind of communication between participants. It enables a teaching process that encourages students for greater openness in communicating in a way that seems useful, interesting, and for crucial for the contemporary society. Virtual education acquires work habits and self-confidence and develops a sense of responsibility and creativity.

Conclusion

Comparing the advantages and disadvantages of learning in a virtual environment it has become clear that today's generation wants and needs information-based education using new media. All the negative consequences of virtual education can be avoided when including virtual learning environment in the regular school system, because then students will learn self-knowledge and skills they need in order to be equal members of information society. In Croatia, initiatives for providing creative learning virtual reality and virtual worlds have started. Through virtual education, it is possible to achieve a better relationship with young people who will surely be grateful for a sign of desire to understand their modes of communication as transformation of traditional learning environments.

---

[5] Borba, M. Building Moral Inteligence. San Francisco : A Wiley Company, 2001.

[6] Drucker, P. Nova zbilja. Zagreb : Liber, 1992, p. 221.

References

Banek Zorica, M. Spiranec, S. Pavlina, K. Immersive worlds as educational environments. In Research, Reflections and Innovations in Integrating ICT in Education, MICTE 2009. Lisabon: Formatex, 2009

Borba, M. Building Moral Inteligence. San Francisco : A Wiley Company, 2001

Drucker, P. Nova zbilja. Zagreb : Liber, 1992

Encarnacao, J.L; Leidhold, W; Reuter, A. Expertenkreis Hochschulentwicklung durch neue Medien. http://www.bertelsmann-stiftung.de/bst/de/media/xcms_bst_dms_13133_13134_2.pdf (15.08.2009)

Gardner, H. Disciplinarni um. Zagreb : Educa, 2005

Makanec, B. Kako u darovitih učenika poticati kreativnost kroz informatiku i robotiku. Zagreb : Centar za poticanje darovitosti djeteta, 2005.

Matijević, M. Internet, multimedij i cjeloživotno učenje. Zagreb : Hrvatsko andragoško društvo, 2002

Winkel, R. Djeca koju je teško odgojiti. Zagreb : Educa, 1996