

Moodle E-learning Environment as an Effective Tool in University Education

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Abstract-The rapid development of Information and Communication Technology (ICT) is more widely influencing all human beings, in professional and private lives. ICT and its applications are interacting with environments, roles, and processes of social and psychosocial change. New solutions for prolonging work ability and postponing aging through computer based learning and e-learning are opened. In this paper, it is argued that blended learning with computer based learning in the Moodle e-learning environment based on social constructivist learning theory is an effective tool for teaching and learning of occupational health and healthy workplaces discipline based on Ergonomic knowledge. The author has twelve years experience of computer based teaching for full time students and for students of distance learning. Students age is between nineteen and fifty-eight years. The author's own teaching experience of the Moodle e-learning environment for creating and providing different courses in the Tallinn University of Technology, will be presented. According to the questionnaires given more to 1000 students at the end of each course, the teaching and learning in the Moodle e-learning environment as blended learning is very useful for development of a learning culture in higher education. The effectiveness and motivation for learning are higher than providing traditional methods of learning. The high appreciation of e-learning in the Moodle e-learning environment is the same of students of all ages. E-learning in the Moodle e-learning environment is one of the very perspective solutions for lifelong learning.

Keywords-Moodle; E-learning; Blended Learning; University Education; Convergence

I. INTRODUCTION

We are living in time of deep global changes. Technology, economy, norms/values and labor market are changing on a global level. The impact of rapid development of Infocommunication Technology (ICT) on all aspects of the society is described in the Convergence Model on ICT and psychosocial life environment (Fig. 1). Effects on humans are becoming more multifaceted and complex [1].

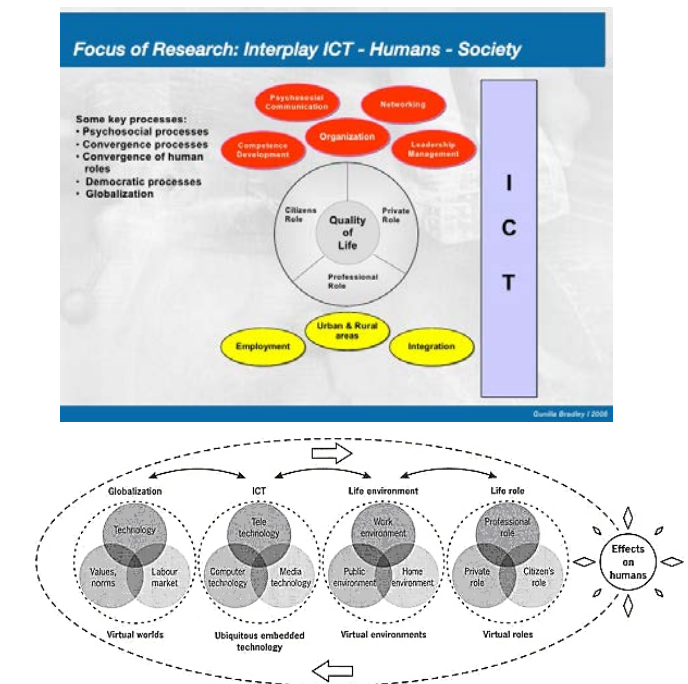
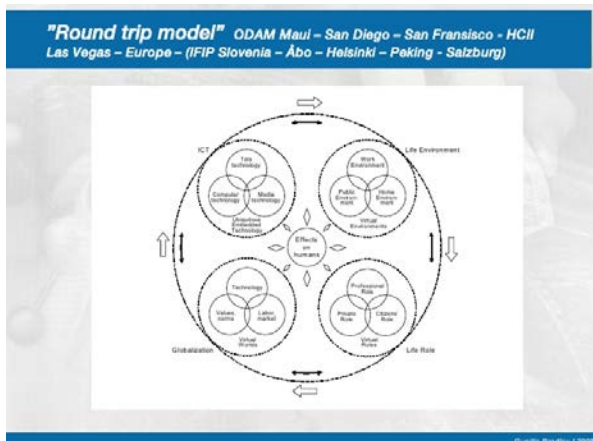


Fig. 1 Convergence model on ICT and psychosocial life environment [1]

The important key processes in the model are Convergence, Interaction, Participation, Psychosocial processes, Globalization and Democratic processes. Complexity characterises these processes. There are four level of analysis: individual, organisational, communal, and societal. Converging circles graphically reflect the ongoing processes. There is ongoing interaction between clusters of circles. Structures impact on human beings, but human beings also impact structures.[1].

The convergence model implements accessible information for creating and enhancing educational applications. Information and communication Technologies (ICT) are widely believed to offer new options for Web-mediated courseware design. Multimedia and online courseware development accentuates a belief that highly graphical (or visual) delivery media will meet the individualised instructional requirements of diverse student cohorts [2].

II. A NEW CHALLENGE FOR HIGHER EDUCATION IN THE CONVERGING WORLD

We teach in a time of a rapid change, when for the first time we are preparing students for a future we cannot clearly describe, said David Warlick [3]. In this situation, new challenges for the higher education continue.

III. LEARNING SCIENCES AND E-LEARNING

The learning sciences are a multidisciplinary, empirical discipline that studies learning both through modern, situated and cognitive learning theories and through learning environment designs (both activities and artefacts or technologies) that are implemented in real contexts. Particular attention is paid to the connection between design and learning and to the context-sensitivity of learning interventions. These features allow the learning sciences to inform e-learning research and development and suggest that Learning Sciences may play a greater role in e-learning research in the future. [4].

With respect to e-learning theories, the learning sciences draws on many traditions to explain one of the most central phenomena of interest, namely how people learn [5].

IV. BLENDED LEARNING: THE CONVERGENCE OF ONLINE AND FACE TO FACE EDUCATION

Blended learning is the integration of face-to-face and online learning to help enhance the classroom experience and extend learning through the innovative use of ICT. Blended strategies enhance student engagement and learning through online activities to the course curriculum, and improve effectiveness and efficiencies by reducing lecture time.

Blended learning, combining the best elements of online and face-to-face education, is likely to emerge as the predominant teaching model of the future. The growing interest of blended learning (combination of traditional teaching methods of face to face and online media) in higher education is indicated by the increasing number of studies in this area [7, 8, 9, 10, 11, 12]. The effectiveness of the Moodle e-learning environment as an effective online learning tool in blended learning is argued.

V. MOODLE E-LEARNING ENVIRONMENT AS AN EFFECTIVE ONLINE TOOL

At the University of Central England in Birmingham (UCE), academic staffs are encouraged to incorporate both traditional and web-based ICT (information and communication technology) modes of teaching and learning in the courses they delivered, using Moodle software. Preliminary quantitative evaluations at UCE have revealed that over 70 percent of the 388 students in the sample from across all faculties claimed to have enjoyed using the web-based aspects of blended courses. Over 75 percent of a sample of 329 students felt that Moodle had helped them learn the subject and nearly 80 percent of the sample reported that they would like future modules blended in this way [10].

VI. EXPERIENCE OF TEACHING/LEARNING BY THE SUPPORT OF MOODLE E-LEARNING ENVIRONMENT

Since autumn 2000, the courses were provided by using the learning materials on the special internet site [9]. Since the years from autumn 2006 to autumn 2011, the courses of Risk and Safety Sciences and Working Environment and Ergonomics were created in Moodle e-learning environment. All courses are provided as blended learning: the traditional face-to-face method is blended with web-based support in Moodle e-learning environment. In the Autumn of 2006 the first course of discipline of Working Environment and Ergonomics was provided for full-time students of the Faculty of Economics and Business Administration in the Moodle e-learning environment. In this course 166 students at Bachelor level participated. In the Spring of 2007 this course was

provided with seventy-two participants for distance-learning students of the Faculty of Economics and Business Administration [13, 14, 15, 16, 17, 18, 19, 20]. In the Autumn of 2008, 2009, 2010, 2011 the courses of Working Environment and Ergonomics were provided for full time students at Bachelor level. On average, there are 250-300 students participated in these courses each year.

VII. AIM OF THE STUDY

The aim of the study is to find out how students appreciate the courses provided in Moodle e-learning environment.

VIII. MATERIAL AND METHOD

At the end of the courses, a questionnaire was given to all groups of students. The questionnaires were given to 860 students in the course of Working Environment and Ergonomics (Bachelor level, 92% were filled) and to 74 students of the course of Risk and Safety Sciences in the Virumaa College of TUT (Diploma level, 90% were filled), to 42 students of the course of Risk and Safety Sciences in the Tartu College of TUT (Diploma level).

Students had to answer the following five questions:

1. How do you appreciate the Moodle e-learning environment?
2. Which part of the course interested you most?
3. Which part of the course was unclear for you?
4. How do you like to use the obtained knowledge in practice?
5. Do you like to learn more ?

IX. RESULTS

96% Of respondents answered that Moodle e-learning environment is very effective learning tool. Students wrote that they are encouraged and motivated to learn more in Moodle e-learning environment and they do not like to learn courses which are not in Moodle e-learning environment. The materials in Moodle e-learning environment are clear. 80% Of respondents answered that their participation in forums and other activities available in Moodle e-learning environment is very useful for learning from each other obtaining new knowledge. Some students wrote that availability of course materials and activities in Moodle e-learning environment encourage their interest for classroom activities and the face to face contact with teacher is now in a new level. Students appreciate high that they can learn in Moodle e-learning environment at time and place suitable for each student. Some students wrote that the experience of learning in Moodle e-learning environment is helpful for development of their self- discipline.

X. DISCUSSION

According to experience with computer-based learning since the year 2000, providing of courses in Moodle e-learning environment are more effective than providing the courses where course materials are available on the website. It is very effective in that students' activities from participation in learning forums and learning from each other are encouraged. The problem is that sometimes students hesitate to participate in learning forums because they are sometimes afraid that other students can read their letters on learning forums. The efficiency of learning process depends on the style of creation of the course. The course had to be designed simply and clearly encouraging students own activity in the learning process. The assignments encouraging students

activity have to be provided. In comparison of the previous results, Moodle was introduced (only materials were available on the website), students are more satisfied and motivated to learn the discipline. Students appreciate high that can fill all the assignments in Moodle e-learning environment, which is more suitable for students. Before Moodle was introduced, the filling the different assignments was more complicated. There is no statistical differences of the satisfaction of the courses before Moodle was used. Before Moodle was introduced all the solutions of web based learning were highly appreciated by the students in comparison of traditional courses without using web tools. After Moodle was used, the motivation of students and their own activity in the learning process, the students interpersonal contacts (learning from each other) were successfully increased. After Moodle was introduced, for the teacher the online contact with students and monitoring their activities has successfully been improved.

XI. CONCLUSIONS

We are living in time of a converging world and deep global changes. For the first time we are preparing students for a future we cannot clearly describe. New challenges for teaching and learning for higher education continue. The growing importance and new dimensions of the face-to-face learning are opened by the rapid development of educational ICT technology. The importance of interpersonal contacts is rising. Blended learning by using the Moodle e-learning environment is very effective tool for university education. Blended learning in the Moodle e-learning environment is one of the very perspective solutions for lifelong learning. The courses on which the online and face-to-face delivery are blended will have the predominant role in the future.

XII. FUTURE RESEARCH

Future research will be related to relations of Moodle e-learning software development with rapid development of tablet computers and smartphones. New dimensions and possibilities of e-learning augmented by Moodle e-learning are opened towards more personal solutions and involve the possibilities of social media. The most central phenomena of the research will be how people learn in our rapidly changing and converging world within deep global changes.

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