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SCALE_UP – an active learning cases modelling at Kaunas UAS

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Abstract

The article reviews SCALE-UP (The Student-Centered Activities for Large Enrollment Undergraduate Programs) active learning environment and Cloud Computing technologies Enabled Active Learning know-how, the main requirements for a SCALE-UP type classroom and educational model. Transfer of this good practice of equipping two SCALE-UP classes at Kaunas University of Applied Sciences is discussed. This article presents the modelling case for Software Engineering, Data Management Technology, Business Economics and Management Courses. Each of those courses consists of lectures and practical activities. Three phases are underlined for each topic: 1) the problem based learning; 2) practical activities by tutoring; 3) collaborative learning. The lectures and practical work are combined and executed as a whole in the frame of SCALE-UP study plan and an active learning scenario. The classroom is equipped with a virtual workplace, cloud computing services, open resources on the Internet, e-libraries and subscribed databases. The study results considering the assessment of collaborative learning outcomes and the use of cloud computing technologies are discussed.

Keywords: Collaborative active learning, Cloud Computing technologies Enabled Learning, SCALE-UP learning environment.

1 Introduction

The new approach to teaching and learning in higher education is no longer directly related to systematically organized studies. Teaching is viewed as the process which enables people to develop their knowledge, understanding, abilities, values, attitudes and experience. The implementation of this idea is concurrent with learning environments which put emphasis on equipping students with effective and interactive learning tools and devices that correspond to the student's learning habits and needs. The question is: what kind of technological and educational conditions and innovations will be needed to achieve that? What learning environments have to be created and what learning technologies need to be chosen in order to improve students' perception of conceptual (theoretical) subject-matter, their ability to solve problems, study results and motivation? Conventional lectures, when the study material is uploaded and easily available in the virtual environment, is becoming less than effective method of teaching. At Kaunas University of Applied Sciences, the availability of study material in virtual learning environments has generated the need to modify conventional lectures by integrating active learning methods [1].

Active learning means the student's active participation in the learning process [4], the most advanced thinking skills such as analyzing, synthesizing, and assessing [3], interactivity defined by the interaction between the student and the lecturer, between students, the student and the subject-matter, and the student and tools needed to accomplish the task [10]. In order to achieve such level of interaction and student activity it is necessary to appropriately reconstruct the physical space in relation to the virtual learning environment. Successful examples of such reconstruction are SCALE-UP (Student-Centered Activities for Large Enrollment Undergraduate Programs) and TEAL (The Technology Enabled Active Learning) projects*.

Since 2010 Kaunas University of Applied Sciences has been developing the environment of active collaborative learning as based on the good practice of SCALE-UP and TEAL projects.

The article discusses the practice of developing the active collaborative learning environment by setting up studio-like SCALE-UP classrooms at Kaunas University of Applied Sciences while making use of the already existing e-learning infrastructure and MS Visual Studio software tools for visualization, simulation, experimentation and designing.

The aim of research: to analyse the case practice of active collaborative learning environment and cloud computing technologies enabled active learning while modelling the contents of the Software Engineering study subject.

The subject of research: SCALE-UP active collaborative learning environment.

The methods of research: analysis of scientific literature, case study, survey.

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*SCALE-UP. The Internet resource:
https://www.researchgate.net/publication/266882822_Student-Centered_Activities_for_Large-
_Enrollment_University_Physics_SCALE-UP
TEAL at MIT. The Internet resource:
http://web.mit.edu/8.02t/www/802TEAL3D/teal_tour.htm

2 Good practice SCALE-UP and TEAL projects

SCALE-UP is a learning environment created to stimulate active collaborative learning in a studio-like classroom [6]. The requirements for such environment were shaped during the implementation of the SCALE-UP project at different universities including North Carolina State University (USA). The main achievements of the project: improved understanding of conceptual (theoretical) material; more positive approach to studies; increased motivation; improved study results and augmented problem solving abilities; decreased student wastage rates [2].

3 Setting up SCALE-UP classes at Kaunas University of Applied Sciences

The first SCALE-UP classroom at Kaunas University of Applied Sciences was set up in October 2010. There are four round tables of six computerized workplaces – for the total of 24 students and one computer-equipped workplace for the lecturer. There is a wireless Internet connection. Students can also use their personal computers. Students are able to perform individual or group tasks, demonstrate the results and discuss them in groups or together in the classroom; they can show the results from their workplace via the video projector. All the course material prepared by the lecturer is available in the virtual learning environment. The SCALE-UP project at Kaunas University of Applied

Sciences is being continued. In October 2014 the second SCALE-UP classroom was opened.

4 Conclusions

1. The newly-equipped class at Kaunas University of Applied Sciences meets all major requirements for SCALE-UP infrastructure and potential to implement a SCALE-UP didactic model.
2. The classroom can be used to teach different exact and technology science subjects (general and specialized): mathematics, physics, information technology, programming, engineering, data management technology, business economics and management, process management and others.
3. Information technologies used in the classroom are easily integrated into the already existing e-learning infrastructure developed at Kaunas University of Applied Sciences and create additional possibilities for active learning and setting up of the student-oriented environment, as well as the development of lecturers' qualification by introducing them to the SCALE-UP didactic model and its implementation.

Acknowledgments

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