

**USAGE OF E-LEARNING SYSTEM UNITE IN INFORMATICS COURSE
OF SECONDARY SCHOOL
(EUROPEAN PROJECT'S CASE STUDY)**

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Abstract

The paper presents an approach, preparation, testing, implementation and evaluation of the outcomes of ongoing EU project UNITE (FP6 IST-26964, 2006-2008). An objective of the project is investigation and validation of the UNITE framework, i.e., technological platform, the pedagogical models, methodology guidelines and the eLearning scenarios (all together - the UNITE framework). The UNITE technological platform is an e-learning environment based on three technologies, which – at the beginning of the project - were already available 'standalone': Microcosmos, MTS-Infopool and m-Learning. As such, the UNITE platform provides a seamless integration of those technologies in a user friendly environment in order to offer the following functionality to the end user: eLearning management, content management, communication/collaboration, mobile learning. To carry out the implementation and validation of the UNITE framework each partner of the project involves in the project one or two schools, thus creating a network of schools (NoS). Physically, the NoS consists of 14 different schools from 10 European countries. The UNITE NoS provides feedback regarding usability of the platform (scenario- or task-based usability testing followed by SUS - System Usability Survey) and final socio-economic evaluation. The paper presents results in the respect to one of involved to the project secondary school.

Keywords

Authoring tools, Blended learning, CBL (Computer Based Learning), Collaboration, Collaborative learning, E-learning, Evaluation, Internet access, Learning management system, Metadata, M-learning, Platform, Portal, Repository, Tools

Introduction to the UNITE Project

The project "UNITE - Unified e-Learning Environment for the School" (FP6 IST-26964, 2006-2008) [□] is a Specific targeted research project (STREP) partially funded by European Commission within the 6th Framework Programme (FP6). The UNITE project consists of the following basic components: technological platform [□], pedagogical methodology

guidelines [1, 2], and eLearning scenarios [3]. The UNITE portal-like platform [4] is an e-learning environment based on three technologies Microcosmos, MTS-Infopool and m-Learning [5], and offer the following functionality to the end user: eLearning management, content management, communication / collaboration, mobile learning.

UNITE specifically supports forms of learning which are difficult to realize in the classroom and will explore innovative approaches of structuring and delivering content to the learner [6] such as mobile learning, exploratory learning and group learning.

UNITE generic eLearning scenarios present how user could exploit UNITE platform's potential when designing an eLearning scenario. UNITE eLearning scenario template and scenario examples define the general framework of UNITE scenarios - what an eLearning scenario should involve in theoretical basis [7].

Constantly while developing the pedagogical and technological concepts, a validation process will be run [8]. In parallel and in close collaboration with the validation, the project will carry out an intensive socio-economic evaluation [9]. This will lead to a profound evaluation of the project goals, taking all important aspects into account. Moreover, it will define the basis for the sustainability of the UNITE results after the end of the project [10].

Division of Applied Systems Software at Riga Technical University (RTU) is a UNITE project partner, which key responsibilities in the project include:

- monitoring of UNITE Network of Schools [11];
- designing the quantitative assessment methodologies for the validations [12];
- leading the validation activities in Latvia [13].

UNITE Network of Schools

One of the distinguishing features of the project is the investigation of sustainability and degree of deployment of project's results through the creation of the UNITE Network of Schools (NoS). The UNITE NoS provides a social and environmental basis for the investigation and validation of the UNITE framework, i.e., technological platform, the pedagogical models, and the eLearning scenarios that are create, integrated, populated and used in the UNITE schools [14, 15]

Primary UNITE consortium consists of technological partners (IGD, EMS and CTAD) responsible for development of UNITE platform and educational partners (EA, KTU, UCY, LiNK, CARE, CIST, UoM, UoS, UL-FSS and RTU) More information about UNITE consortium could be found on project's portal [16]. To carry out UNITE platform implementation each of educational partners involves in project one or two schools and plays a role of intermediary between primary UNITE consortium and school(s) of its responsibility (Figure 1). One of educational partners (EA) is a school by itself and therefore plays double role in the project. Detailed information about involved schools could be found in UNITE project's portal [17]. Physically, the NoS consists of 14 schools co-coordinated by educational partners from 10 European countries (Figure 2).

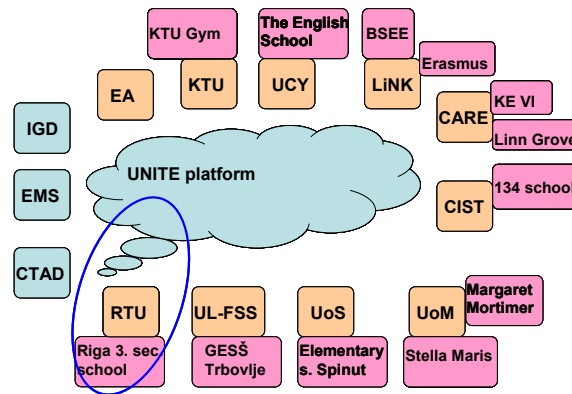


Figure 1. UNITE extended consortium


 Figure 2. Geography of the UNITE Network of Schools
 (Source: UNITE portal www.unite-ist.org)

Riga 3rd secondary school coordinated by RTU is an implementation area for the UNITE platform and validation activities in Latvia.

Functionality of the UNITE platform

Here come extractions from [□] describing UNITE platform's elements essential for scenario's creation and implementation.

UNITE platform supports the creation and management of so-called **Workspaces**, which promote the idea of a pedagogical multidisciplinary approach. Workspaces can be created by anybody who has the right to do so. Thus, not only teachers or school administrators, but even students, who have acquired this privilege, can create workspaces and invite schoolmates, teachers, or any other interested party to participate, as well as create dedicated user groups for a particular workspace.

Every workspace has its own description, syllabus, announcements, resource area (InfoPool), forum, chat, and MediaBoard, accessible by all workspace members. Within a workspace, the workspace owner can create tasks and appoint them as assignments to individual workspace members or workspace groups.

The repository **InfoPool** is the container for all eLearning contents. InfoPool is integrated in different types of areas (Public, User's or Workspace) with access rights appointed by each area. InfoPool supports SCORM-compliant reuse of content. The reusability of content in InfoPool is enabled through **Metadata**. Each item in the InfoPool is accompanied with a Metadata. Metadata of an item contains the title, description, keywords and educational

properties of the item. The Metadata edition is important for course classification and searching.

Course is a series of **Lessons** in a particular subject. A course in UNITE usually consists of several **Modules** of contents, accompanied with exercises and assessments. Courses are usually located in InfoPool. **Course Editor** allows either to create a course on the base of proposed template or from the scratch. **Course Viewer** is intended for navigation on existing course.

For every lesson the corresponding **Task** could be created, where pupils can receive all necessary information, e.g. regarding the course for current lesson. One of the advantages of the UNITE system is that pupils see only tasks available for the current lesson. There is an opportunity to control the amount of time available for pupils' answer in the UNITE platform. If student did not implement the task in given time, UNITE platform automatically disables this task for the current student.

UNITE platform allows teachers to create **Quiz** for the pupils. After quiz is created it is assigned to the current task. Student has to complete the quiz before going to the next task. Unite platform allows to use pictures and multimedia files in quizzes.

The m-learning component in the platform is represented by the **mediaBoard**. Students and teachers have all the flexibility they need in order to adapt their mediaBoard to their specific task or assignment. They can change the name of the mediaBoard, select a base image, add zones to the board, and select permission settings.

UNITE platform provides **Forum** and **Chat** functionality as well.

Implementation of UNITE in Riga 3rd secondary school

First stage of validation

From the period of February 1, 2007 till May 1, 2007 in Riga 3rd secondary school was made first stages of UNITE system's implementation and validation. One class with 31 students (average age of students is 16 years) participated. "ICT in Education, Work with Macromedia Flash" scenario for testing of UNITE platform was developed and implemented [□].

Second stage of validation

During the second stage of UNITE system's validation from September 4, 2007 till December 21, 2007 two new scenarios were developed and implemented, namely another ICT scenario "Microsoft Access" and Environmental Education scenario "18th of November – Latvian Republic Declaration Day".

The pedagogical approach in these scenarios puts emphasis on collaborative problem solving through social interactions and it conforms to constructivist approach to pedagogy.

Learning activities

Both implemented scenarios envisage a set of sequential activities drawn up in UNITE template [□]. Definitions of each activity consist of following sections:

- Learning tasks/ activities;
- Learning objectives/ outcome(s);
- Tools/ Resources;
- Assessment Strategy (Feedback and/or Evidence);
- Time allocated.

ICT scenario was implemented from September 4 till December 21, 2007(2 lessons each weak in class and some practical tasks for working outside school). Environmental education scenario was implemented from October 20 till November 20, 2007.

ICT scenario “Microsoft Access” envisages that students should:

- create video movies’ database from information retrieved from www.imdb.com;
- modify created database by adding additional tables of authors, pictures and video samples);
- create query for retrieving particular information from their database;
- create printing report;
- provide web access for created database and upload all results to their InfoPools.

In Environmental education scenario student should:

- collect information about November 18th in Latvia and create PDF tutorial document;
- find information about celebrating traditions of this date and create PDF document;
- take photos and video during celebrating on November 18, 2007 in Riga;
- find information of celebrating November 18th in other Latvian cities;
- create multimedia presentation of November 18th celebrating in year 2007 in Latvia.

Scenarios implementation

Totally 3 teachers and 35 pupils in age 16-19 from 2 classes participated in UNITE scenarios implementations. For scenarios’ content creation 40 keywords were added to metadata repository. Besides of UNITE tools a set of external applications were used by teachers for content production, namely Microsoft Access, PowerPoint, FrontPage, Dreamweaver, Photoshop, Flash, Excel, Movie maker, CorelDraw, Paint, Authorware.

During the scenario implementation pupils operated in Computer lab, Classes and out of schools - at home, historical location, public library, on movie. For anticipated by scenario as learners’ response content creation the following tools were used by pupils: Word, PowerPoint, Excel, Movie maker, Paint, Microsoft Access.

Scenario creation and implementation is rather labor-intensive work - each teacher in average had spent 44 hours for that, besides RTU spent additionally 64 hours for support of each scenario creation and implementation.

Implementation of scenarios gave valuable input to UNITE platform improvement - on the base of scenarios creation and implementation experience 4 proposals for platform’s functionality improvement were given to platform developers.

General advantages of using the UNITE system for the school where define as following:

- UNITE system allows students to work without teacher;
- ability to control any students’ work from any place in any time;
- ability to create personal workspace for any user in UNITE platform where user can save its own information;
- ability to access course materials using mobile devices.

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