Edoo: Involving Teachers in the Development of E-learning Material

Alenka Kavčič, Ciril Bohak, Matevž Pesek, and Matija Marolt,
University of Ljubljana, Faculty of Computer and Information Science
{alenka.kavcic, ciril.bohak, matevz.pesek, matija.marolt}@fri.uni-lj.si

Abstract

In this paper we present the Edoo initiative that aims for increased involvement of teachers in the process of e-learning materials creation. Its main goal is to connect two distinct communities - teachers as users of e-learning materials and programmers as creators of e-learning materials - through the online portal and learning site designed for support and collaboration. The goal of the initiative is to increase cooperation between the two communities, thus overcoming the domain gap between them. The idea of the initiative was well received among teachers, who are missing appropriate learning materials and lack the ability to adapt existing materials to their specific teaching needs. We started the initiative in spring 2013, while the first collaborative projects are being implemented in the winter semester of 2013/2014. The expected result of the initiative is the creation of quality didactic applications that teachers can use in their classes. Besides, we aim at modular and adaptable educational applications with publicly available source code to enable its customization and further development.

Keywords

e-learning, educational materials, user centric development, knowledge exchange.

Introduction

Although a vast amount of e-learning materials has been produced in the last years, teachers are still struggling daily to find appropriate materials for their lessons. The problem often lies in poor flexibility of the prepared materials, which do not always correspond to specific topics, convey the preferred teaching style, or suit the individual learning scenarios for a particular educational context. Teachers tackle this problem by adapting existing materials or developing their own materials, which requires adequate ICT skills that not all teachers possess. An alternative is to adapt their teaching scenarios to correspond to existing materials without any changes, taken as it is. Needless to say, the second option limits teachers' creativity and diminishes the educational value of their lessons.

In addition, the curriculum, which needs to be followed, may change, which may make existing materials obsolete. The didactic materials are often distributed in the final executable version which is unmodifiable. By implementing educational applications in a modular way, it is possible to reuse individual parts for changed learning scenarios. Another way of prolonging the utilization of applications is to separate the application's framework from its content, which allows teachers to modify the content (e.g. text or images) without affecting the application's structure. Maintaining a source code repository is also very important for prolonging application's lifespan, allowing a developer to modify the code and add new functionalities.

To overcome these problems, we introduced the Edoo initiative for encouraging enhanced collaboration between producers of learning materials and its users.

Edoo Initiative

The main idea behind this initiative is to connect developers and users, enabling their active collaboration, and thus bridge the gap between users and producers of e-learning materials in order to increase their quality and value. Edoo is based on voluntary activity of the involved parties, which mainly collaborate through a web portal, where members exchange ideas and comments along with keeping track of joint projects. The ultimate goal of the initiative is to create quality didactic applications that suit the needs of teachers.

Developers

A community of developers is currently built around a group of second cycle computer science students attending the E-learning course at the Faculty of Computer and Information Science, University of Ljubljana. We are expecting to extend this community with other enthusiast programmers, who wish to contribute their time and knowledge for achieving the common goal.

The E-learning course is an elective course that focuses on technological aspects of e-learning, where students have to create and deliver an educational game at the end of the semester. From our previous years' experience, we have found the students enrolled in the course usually have good knowledge and experience in programming, software development and engineering, but their didactic competences are rather deficient.

The Edoo initiative was proposed to overcome these shortages in didactic games development. Coupling our students with experienced school teachers, who can share their rich pedagogical knowledge, would create a win-win situation for both communities.

Teacher's Involvement

Collaboration of teachers in our initiative is a key factor for success. We engaged a group of enthusiastic teachers, eager to actively participate in the development process during the whole semester. We were targeting mainly teachers in primary and secondary schools that have innovative ideas on how to improve their lectures with the use of attractive e-learning materials, but are unable to achieve effective results due to inadequate ICT skills.

We started with the Edoo initiative in spring at the SIRikt 2013 Conference (SIRikt, 2013), where we presented our idea to the broader teacher community and invited participants to join the online community. All teachers that were interested in the presented idea were invited to the First Edoo Workshop at the beginning of the summer school break. This workshop was intended to introduce our idea in detail, present our past work in e-learning materials development, discuss current problems regarding existing e-learning materials, and most importantly engage a group of interested teachers to actively participate in the development process by providing ideas and relevant feedback on suitability and utility of the developed educational software.

The Second Edoo Workshop was organized at the beginning of the new semester, just before students started working on their projects. At the workshop, we presented the projects proposed by teachers and formed additional ideas for projects. We also refined all the ideas to be carried out in the first round during the semester. The workshop was also an opportunity to clarify participating teachers' interests and establish associations with students' project groups.

Web Portal and Web Classroom for Collaboration

To enable effective cooperation between teachers and our students, we established an online web portal (Edoo, 2013) that is intended mostly for presenting the Edoo initiative to the public and all interested parties, focusing on current events and promotion of the idea of synergy. The portal also offers the contact information for all volunteers interested in participating in the initiative.

We also established a Web Classroom that forms the heart of the ongoing collaborative development process, as it offers a platform for communication. We used the Moodle platform that most teachers already know and use in their everyday school activities. Familiarity with the platform is very important for stress-free use and activity management, thus allowing teachers to focus on the content itself.

For each project, a separate course was created in Moodle, enrolling members of the students' development team as Developers (Teacher's role in Moodle with rights to add and modify course content) and all interested teachers as Notion Leaders (Student's role in Moodle with rights to access content and participate in forums). A forum was set up for meetings and discussion, purifying the ideas, and designing new didactic expedients for different school subjects.

The developing educational application is uploaded as course content (use of SCORM packages is foreseen), preferably at the end of each iteration in the development process, thus enabling its instant use and testing within the Moodle environment. Teachers' feedback is then provided through forum discussions, suggesting improvements of the developed application that are considered by developers and tackled in the next iteration.

Development Process
During the winter semester of 2013/2014, when first application prototypes will be developed, we will obtain some initial experiences needed to effectively manage collaboration of teachers with student developers. We expect to identify the specifics of such teamwork that will enable us to prepare examples of good practices for future development of educational materials.

These trial developments of educational applications will provide an insight into the creation process and collaboration of the two communities, which will help us to prepare a modified model of the development methodology that takes into account the specifics of student projects and involved volunteer on-site users.

Conclusions and Future Work
The initiative is still at its early stage, nevertheless, initial analysis of progress reports gathered within the course show increased enthusiasm for didactic application development along with higher productivity and more focused pursuit of the objectives. The final results will be analyzed at the end of the course. Usability, modularity and modifiability will be the main aspects of material evaluation. Teachers' feedback will provide the basis for the next iteration of projects starting in the fall of 2014. By correcting the difficulties identified in the first phase of our trial development process, we expect to improve the output of our initiative. The source code repository is expected to support the produced didactic tools. By making the source code publicly available, we also hope for involvement of external partners, enthusiasts and teachers with ICT skills in the future. The repository will hopefully provide a good starting point for material personalization.

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