



## NEW OER TECHNOLOGIES FOR ENHANCED LEARNING

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### Summary

*The paper focuses on techniques for creating Open Educational Resources (OERs) based on a new way of presenting learning content using self-learning and adaptability. The available formats of OER have a static form and differ little from digital learning resources, and so a new approach to the presentation of learning material is necessary to facilitate the transition from a static to a dynamic, interactive and adaptive learning approach. Distance learning must awaken learners' interest in the material presented. E-learning courses should contain different presentations of educational resources, reduce dependence on the teacher and offer the possibility of learning at any time and in any place where there is access to the Internet. OER projects are sustainable and scalable only when users develop them for themselves with the help of Web 2.0. The use of OERs is accompanied by object technologies development which will play a key role in accumulating and sharing knowledge by means of the World Wide Web learner support services.*

*Macromedia Flash courses have more practical value than ordinary digital resources. Flash technologies for creating Flash applications guarantee a high speed of course development and integration with any platforms, browsers and systems, and they provide an opportunity to implement courses meeting SCORM Standards. Innovative IT will help universities to reach new segments of the educational services market.*

### Introduction

The development and widespread diffusion of information technology give rise to new opportunities for learning. Higher education institutions have been using the Internet and other digital technologies for several years and have accumulated some experience in creating learning materials. The creation of quality content based on digital resources and new software tools developed worldwide is a real challenge for education. Open Educational Resources (OERs) may be a sound strategy for meeting this challenge.

OER projects can expand access to learning for everyone and thus widen participation in higher education. Learners get the support of the web community, and teachers are provided with an opportunity to download learning resources, and integrate and adapt them. But the available OER formats have a static form and differ little from digital learning resources. A new way of presenting learning material is necessary to facilitate the transition from a static to a dynamic, interactive and adaptive learning approach.

Distance learning must awaken learners' interest in the material presented. E-learning courses should contain different presentations of educational resources, reduce dependence on the teacher and provide the possibility of learning at any time and in any place where there is access to the Internet. OER projects are sustainable and scalable only when users develop them for themselves with the help of Web 2.0. The technology of developing an e-course by an individual teacher is being replaced by the idea of a so-called "knowledge society" – technology which brings together the efforts of educational and subject experts and professionals in software, support services, hardware, database management, training support and development. This implies teamwork by enthusiastic and interested people communicating in discussion groups, with each participant having some special knowledge.

Open educational practices involve learners in active, constructive engagement with content, tools and services in the learning process, and promote learners' self-management, creativity and teamwork.

The use of OERs is accompanied by object technologies development which will play a key role in accumulating and sharing knowledge by means of the World Wide Web learner support services.

Learning objects are a combination of learning material and educational process elements. An elementary learning object contains:

- learning material;
- multimedia;
- a glossary;
- communication tools;
- practical tasks;
- control tools (tests, questions);
- metadata; and
- instructions for handling object content.

Learning objects are to be created by teachers and are then placed in repositories by e-learning experts (course developers) and delivered to learners by means of Learning Management Systems. It is this repository of objects that will play a key role in accumulating and disseminating knowledge with the help of web services. This requires immediate and full utilization of all the possibilities provided by Learning Content Management Systems. Educational repositories will become active information providers and ensure that their holdings can be easily discovered and accessed by potential users.

OER technologies make it possible to offer additional paid services including formal assessment of those wishing to study the course, different certification schemes, face-to-face and on-line tutoring and full versions of educational courses.

The use of the concept of learning objects helps to customize learning material to the knowledge base and preferences of learners and reduces teachers' participation in educating a large number of distance learners because courses of this kind are 'self-educating'. An adaptability algorithm may require repeated study of learning objects (as parts of other educational courses) and, in this case, a learning object may be presented more extensively, including:

- references;
- illustrative examples; and
- detailed charts.

Interactive adaptable courses have the following advantages:

- realization of learners' optional opportunities (intensive learning, new products learning);
- the possibility of curriculum navigation, taking into account the competence level of a learner.

We have developed a model of an interactive system for producing original web courses with ongoing updating of the learning content. The most adequate platform for producing adaptable OERs is Adobe Flash technology. Macromedia Flash courses have more practical value than ordinary digital resources. Flash technologies for creating Flash applications guarantee a high speed of course development and integration with any platforms, browsers and systems, and they provide an opportunity to implement courses meeting SCORM Standards.

Flash technologies have additional advantages, such as: attractive design, convenience in operation and navigation, animation support, graphics and video, improved interactivity, flexibility and adaptability. Ready-to-use electronic courses can be placed in a repository of an information portal and presented as a product for commercial use.

The application of a complex interactive system for producing on-line educational courses involves:

1. integration in the educational process of courses based on the principles of self-education and adaptability;
2. changing the role of a teacher in distance learning, raising his/her capacity and reducing the cost of educating a new specialist;
3. the possibility of using new quality material in the educational process, especially in distance learning;
4. possibilities for facilitating the production and editing of the content;
5. different learning materials with visual and audio effects, animation and interactive elements and possible feedback; and
6. multilevel and diversified educational user-oriented e-courses.

New information technology and the implementation of innovations will equip learners with the competences, knowledge and skills for personal and professional achievement and help universities reach new segments of the educational services market.