OPEN SOURCE TOOLS FOR E-LEARNING USED IN TEXTILE EDUCATION

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REZUMAT. Educația la distanță este pe cale de a deveni o formă din ce în ce mai utilizată și acceptată metodă de învățare, prin introducerea Tehnologiei Informației și Comunicațiilor (TIC) și utilizează metode și tehnici ce includ transmiterea de cunoștințe tradiționale și moderne. Există multe instituții private și publice, non-profit și și nu numai, care oferă cursuri de la distanță la nivel mondial, de la instruirea de bază până la cele mai înalte niveluri de studii (licență, master și doctorat). Aceste organizații utilizează diferite tipuri de instrumente offline și online. În această lucrare sunt prezentate câteva instrumente open source cum ar fi: instrumente de creație de conținut, sisteme de management a învățării și cloud LMS.

Cuvinte cheie: educație la distanță, LMS, cloud, authoring tool.

ABSTRACT. The distance education is becoming an increasingly common and accepted form of learning as the introduction of Information Communication Technologies (ICT) and uses methods and techniques include the transmission of traditional and modern knowledge. There are many private and public, non-profit and for-profit institutions worldwide offering distance education courses from the most basic instruction through to the highest levels of degree and doctoral programs. These organizations used different types of offline and online tools. In this paper are presented open source tools like authoring tools, learning management systems and cloud based LMS.

Keywords: distance education, LMS, cloud, authoring tool.

1. INTRODUCTION

The distance education is becoming an increasingly common and accepted form of learning as the introduction of Information Communication Technologies (ICT) makes the possibilities of Communicating across distances of space and time. Distance Education is unique as it encourages a more flexible learner centric approach and provides opportunities for learning anywhere and anytime. There are many private and public, non-profit and for-profit institutions worldwide offering distance education courses from the most basic instruction through to the highest levels of degree and doctoral programs. Vocational education is one of the most common fields where distance education in any form is used [2].

Despite the debate about distance education, there is no doubt that distance education is different from other instructional approaches. Garrison and Shale define distance education as an education type that offers a minimum set of criteria and allows more flexibility [3]. They suggest that:

− distance education implies that the majority of educational communication between teacher and student occurs none contiguously.

− distance education involves two-way communication between teacher and student for the purpose of facilitating and supporting the educational process.

− distance education uses technology to mediate the necessary two-way communication.

E-Learning methods and techniques include the transmission of traditional and modern knowledge. Using technologies ICT (information and communication technologies) (multimedia processing and asynchronous or synchronous communication), allows the user to understand and access the knowledge and skills in a domain of knowledge [1]. E-Learning is an educational environment with upward trend continues a collaborative process aimed at increasing individual and organizational performance. Basically, its success is given by friendly and efficient access to information and knowledge of the latest and more advanced forms of presentation, assimilation and evaluation of differential access to knowledge and the different categories of students, addressing the most diverse types of training and learning, using tools such as web platforms, communications systems, preparation of documents and management of knowledge.

A definition of these tools can be: *„A learning tool is any software or online tool or service that*

can be used for your own personal learning or for teaching or training". These tools can be classified in five categories: virtual learning environments (VLEs), authoring tools, collaborative tools, assessment tools and specialist software. Any software or online tool or service that can be used for your own personal learning or for teaching or training can be used and appears in different stages in online education. These stages of online education can be identified as follows [5]:

Stage 1, between 1980s and early 1990s, was characterized by the fact that the lecturer places his notes and presentations into an online repository or file server with shared drive. Only registered students on the network have access to the course and download the material as required.

The stage 2, typical of 1990s, was characterized by the using a home-grown system and/or externally-developed Learning Management System (LMS) by lecturers. The almost activity is centralized on the LMS and only students registered on the course have access, usually available through Internet technology. The lecturer was "sage on the stage", that share the knowledge by lecturing to an audience. The tools used were course authoring.

In the stage 3, the LMS remains the centralized teaching and learning environment, but increases the importance of tools that come with the LMS software. This is software for delivering, tracking and managing training. LMSs range from simple systems for managing training records to software for distributing courses over the Internet and offering features for online collaboration. In many instances, corporate training departments purchase LMSs to automate recordkeeping as well as the registration of employees for classroom and online courses. Student self-service (e.g. self-registration on instructor-led training), training workflow (e.g. User notification, manager approval, waitlist management), the provision of online learning (e.g. Computer-Based Training, read & understand), on-line assessment, management of continuous professional education (CPE), collaborative learning (e.g. Application sharing, discussion threads), and training resource management (e.g. Instructors, facilities, equipment), are some of the additional dimensions to leading Learning Management Systems [11].

Stage 4 is represented by MOOC which is an acronym for a Massive Open Online Course. If the terms *Online* and *Course* in the context of education are familiar, the other two terms means: *Massive* refers to the number of students (over 200 students simultaneously engaged in the course) and *Open* refers to the software used by staff and students is open-source, registration is open to anyone, the curriculum is open, the sources of information are open, the assessments processes (if they exist) are open and the learners are open to a range of different learning environments, concept inspiring by Couros work [7]. The student activity happens outside of the LMS, such as in personal blogs, a personal portfolio, websites, tweets, uploads into video hosting sites, networking sites and virtual worlds. All this information is combined as a series of links and descriptions which is sent (usually via email) to the teacher. The role of the teacher is to keep the learners abreast of learner's activities in the LMS with the help of the newsletters, forums, email, etc. The learners must access this information, reflect on it, return to their activities and the process continues, and this process may be realized in LMS.

It is observed a large number of LMS out in the educational market. The classification of LMS platforms can be done according to the following criteria: functionality (ease of use and content creation), the number of students that can use platforms and cost. According to [8], the five best free Learning Management Systems for online courses are: *Academy of Mine*, *MOODLE*, *.LRN*, *eFront* and *Dokeos*. Other classification indicates the following order: *Moodle*, *.LRN*, *eFront*, *Dokeos*, *Sakai* and *ATutor* [9]. Review about best e-learning platform for academic institutions offers the following results: *Moodle*, *Blackboard*, *Kenexo*, *Digitalchalk* and *eFront* [10].

Moodle is probably the most prominent one, but are other open source LMS available. The beauty of open source LMS/e-Learning software is with the right support/skills, which you may start using them with no licensing fee; however you may want to take support from the community or work with vendors who have experience dealing with these products for assurance and support. In this paper is presented different solutions for textile education using authoring tools, course builder and LMS.

2. OPEN SOURCE ELEARNING TOOLS FOR TEXTILE EDUCATION

2.1. Course Authoring Tools

In eLearning, authoring tools enables users to create learning content from scratch, typically in a simple template where authors can view the output, while they input it, exactly as it will appear to learners. In this paper is presented two of these tools: eXe and Xerte.

eXe is an open source content authoring application that allows you to design eLearning courses without HTML or XML knowledge, because there is

a simple HTML editor or you can add text in Word. It is SCORM compliant and can run on Windows, Mac, or Linux. *eXe* is meant primarily for use by teachers and academics. There are two stages to be used *eXe*: creation of materials using the *eXe* file on the local computer and export as web pages to be loaded into the Web Learn (figure 1).

Xerte is an open source suite of browser-based tools, *Xerte* lets you to author content with no programming knowledge required. It allows for the creation of mobile compatible content that does not rely on Flash [4]. It is currently in use by a variety of corporate and higher education organizations. Currently the software has reached version 3.0 beta. *Xerte* is a suite of tools for the rapid development of interactive learning content. *Xerte* make it easy to perform simple, common tasks, yet possible to do anything you want. *Xerte* seeks to provide a focus on the types of problems and situations that developers of interactive learning content frequently encounter. *Xerte* provides a visual, icon based authoring environment that allows learning objects to be easily created with the minimum of scripting (it is necessary knowledge of Action Script) (figure 2).

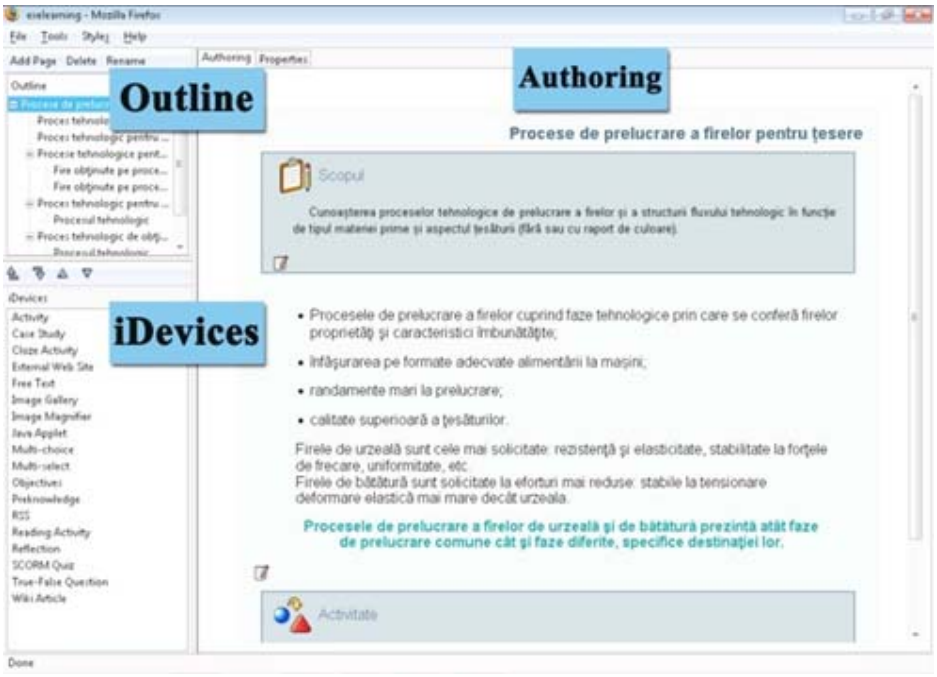

Fig. 1. The main eXe screen.

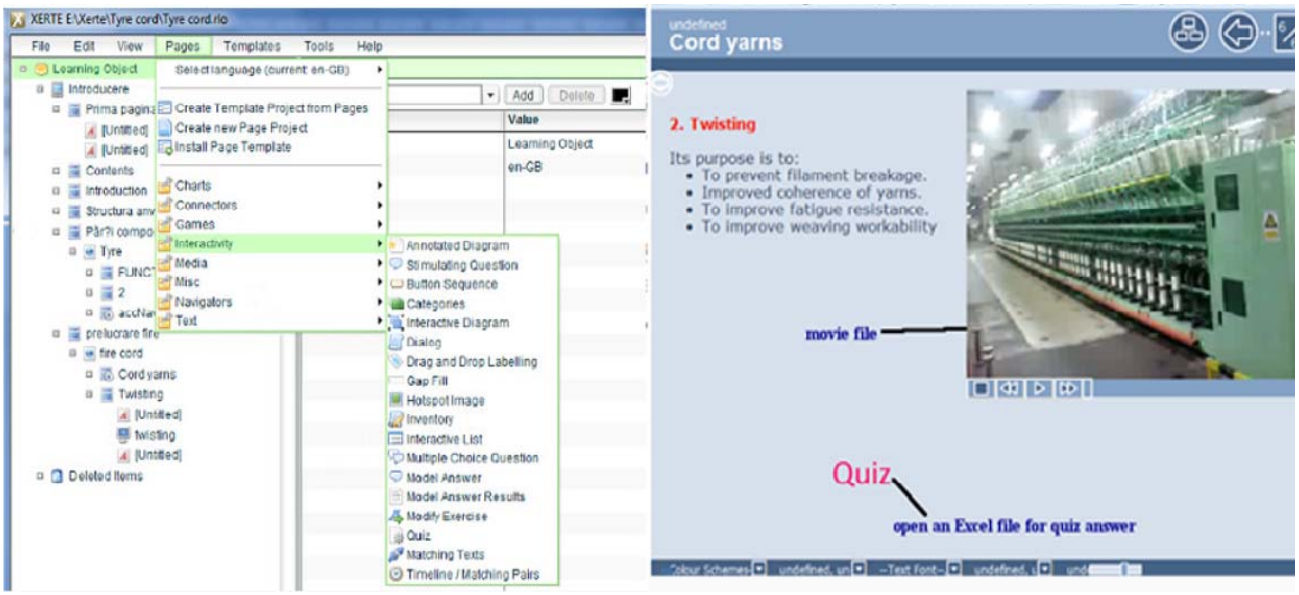

Fig. 2. Xerte interface and project result.

2.2. Learning Management System Tools

A learning management system (LMS) is a software application or Web-based technology used to plan, implement, and assess a specific learning process. Typically, a learning management system provides an instructor with a way to create and deliver content, monitor student participation, and assess student performance. A learning management system may also provide students with the ability to use interactive features such as threaded discussions, video conferencing, and discussion forums. The Advanced Distance Learning group, sponsored by the United States Department of Defence, has created a set of specifications called Shareable Content Object Reference Model (SCORM) to encourage the standardization of learning management systems [6].

Moodle is the biggest in the domain of open source LMSs. *Moodle* is primarily aimed at the education market, but is also used by plenty of corporations for eLearning and training purposes, including big guys like Cisco and Subaru. Being open source *Moodle* is totally free, but certain optional peripherals and support from third parties can cost money, and it should be stressed that open source solutions can cost as much or more than proprietary software because of the internal tech resources you need to devote to implement and maintain them (figure 3).

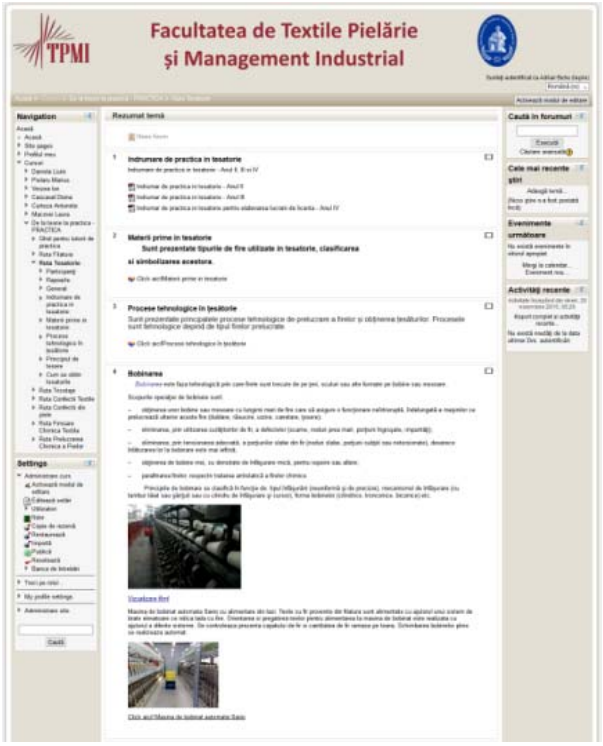

Fig. 3 – Moodle platform

eFront has been designed to minimize the clicks to go from one point of the interface to another. The sidebar helps as a central navigation or search point throughout the system. A main difference between *eFront* and Moodle is that *eFront* has been built from scratch to attract and retain users. Its interface is well structured, with vivid icons and colours and with a minimum amount of popups. In all aspects *eFront* is more web 2.0 than Moodle and more suited for a new wave of learners. Another advantage is that *eFront* is certified for its compliance with Sharable Content Object Reference Model (SCORM) standard, because Moodle is SCORM compatible, but not certified from Advanced Distributed Learning (ADL) organization. SCORM is the current standard for the creation and deployment of interactive web-based learning courses. *eFront* comes with an enterprise dedicated edition that offers support for job description, skills management, branches, detailed employees log, reports for the best candidates for certain jobs, career management etc. On the other side Moodle is mainly educational oriented.

For the editing of unit content, the user must be logged as a professor which must describe the lesson and create the content using the tools on the top of the lesson editing (figure 4) (copy, paste, format paragraph, insert pictures, links (YouTube, etc.).

2.3. Cloud LMS

Today's educators and human resources departments are increasingly relying on cloud-based platforms for managing their online classrooms. There are plenty of ways that an educator or trainer can utilize a learning management system (LMS), with the most popular applications offering tools for the delivery, documentation, tracking, and reporting of online training and education programs.

By managing student curricula and evaluation systems in the cloud, academic administrators are able to open their doors to a worldwide student body. Some institutions may also choose learning management systems as an add-on to their traditional courses, providing local students with avenues for communicating with teachers and collaborating with their peers when they're working outside the classroom.

A list of the top five cloud-based learning management systems available for educators today, based on a combination of functionality, ease-of-use, and cost, it is presented below: Absorb LMS, Firmwater LMS, Bridge Corporate LMS, SkyPrep and TalentLMS. Moodle developed a cloud platform for smaller users (maximum 50 users). An example of Moodle cloud is presented in figure 5.

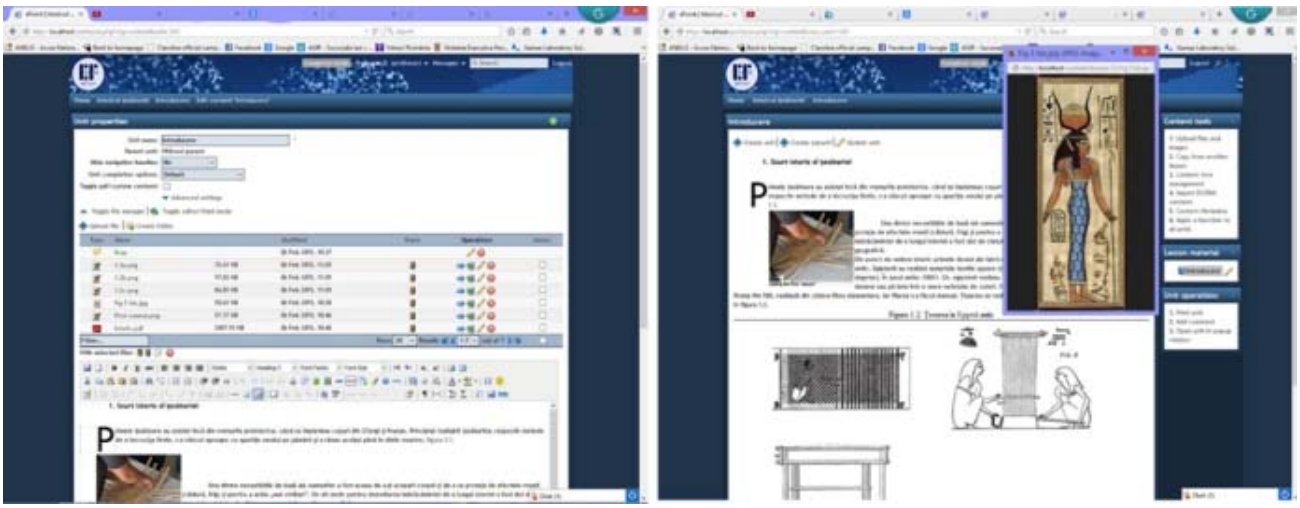

Fig. 4. Creating unit content (editing and final aspect) eFront LMS.

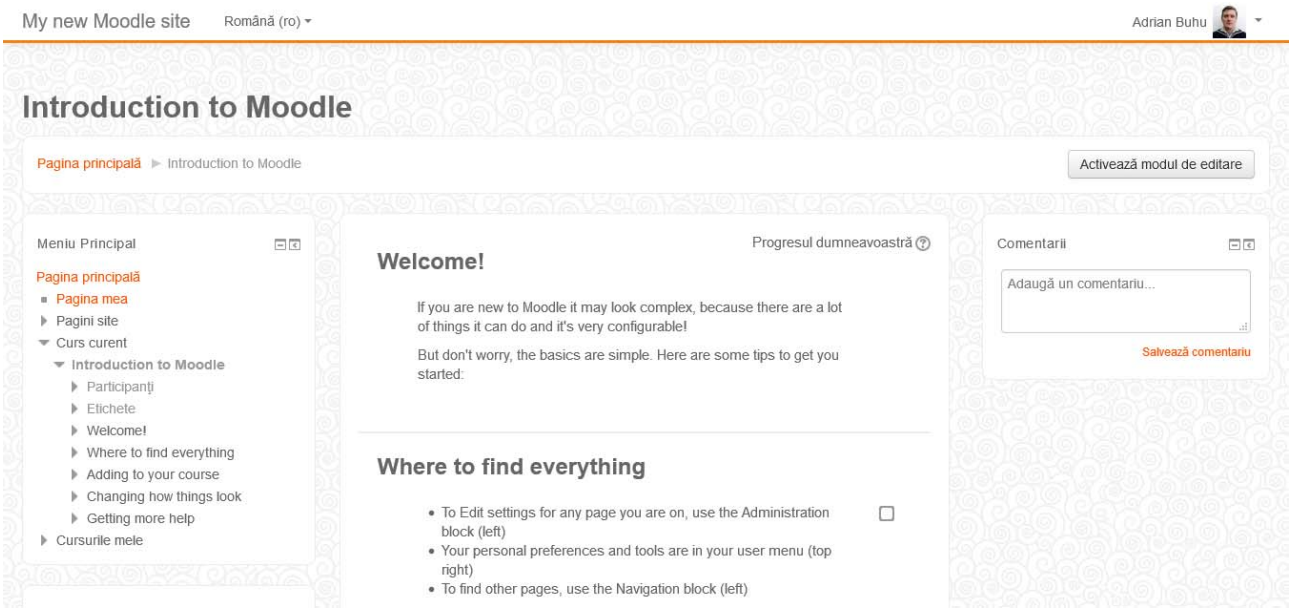

Fig. 5. Moodle cloud platform [12].

3. CONCLUSIONS

In this paper is presented different solutions for textile education using authoring tools, course builder and LMS. These solutions are based on open source software or open source online tools and are classified in three types:

− Course Authoring Tools are authoring tools which enables users to create learning content from scratch, typically in a simple template where authors can view the output, while they input it, exactly as it will appear to learners and results can be used online and offline.

− Learning management system (LMS) is a software application or Web-based technology used to plan, implement, and assess a specific learning process. LMS platform, like Moodle or eFront, require a minimum infrastructure (servers and software) exists within educational institutions.

− Cloud LMS are cloud-based platforms for managing online classrooms or courses.

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