ON SPECIFIC METHODS OF THE NEW TECHNOLOGIES OF COMMUNICATION AND PERFORMANCE – INDIVIDUAL/COLLECTIVE

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Abstract

"Do not be afraid of computers. I fear lack of them" - said Isaac Asimov. We live in an era of computers and Internet. Life would be much more difficult if it is not impossible without them. Modes of teaching and learning have undergone a revolution in recent years. Many universities and educational institutions offer online courses for students. E-Learning System does not require a classroom, does not require a teacher or a blackboard. One of the features of e-learning is that it is not influenced by age, being valid also for a child but for a 50 years adult or even more. For all of them it is an entirely different experience to learn online, where all communications and correspondence is done through the websites. In this context, the paper presents current trends in online learning in some European countries with particular reference to Romania 's alignment to the new communication technologies. Specifically, the reference is made to distance learning courses in the Faculty of Mathematics and Computer Science and AeL courses in high school.

Keywords: e-Learning, Moodle, A*e*L, distance learning, recommendation systems

Lifelong Learning

Lifelong learning involves the shift from traditional forms of education concerned – first – to transmit knowledge to other learning opportunities, targeted to a greater extent on process and results [Clark, 2007; King 2010; Varanasi, 2010]. How are offered different learning opportunities is essential to encourage and assist adults in access to education.

In addition to the costs of admission, assessment and quality assurance decisions taken by the organizing institution on how access to knowledge, learning content, knowledge structure, methodology of teaching/learning/assessment and learning support arrangements are essential to determine adults to overcome barriers related to age, occupation and personal problems of each.

Flexibility is an important element in attracting adult learning courses as a way to ensure personalized personality: the student can receive face-to-

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face, mail and/or online. Such courses are organized in different European countries: Estonia and Slovenia have plans with special learning education. There are personalized programs for adults in France, often within an organization to groups. Individual learning plans are used in Italy Hungary, Portugal and Sweden.

Another way to respond to the needs of the flexibility of independent learning for adults is offered in place, time, duration, and intensity of learning content and it can be adapted to individual requirements. Independent learning can be organized by an institution or may occur remotely by correspondence or online. If supported by a tutor or mentor, such learning can be a useful option for people with little time available. Guided independent study in Belgium is used for secondary education and examinations for public positions. In Estonia, higher secondary schools for adults offer the students the opportunity to learn as external student. CIDEAD is a public body In Spain, providing secondary education through distance work/independent who cannot attend conventional schools.

Public support measures designed to help adults to obtain specific qualifications are almost compulsory education in all countries.

For example, in Ireland and Malta (for literacy) they use educational television and radio programs. Study circles and joint approaches to learning (using mentors and leaders) are believed to be the most appropriate in Slovenia.

Literacy activities are often considered non-vocational education Non-formal adult education, but they can occur as a mean of support in case of formal education. ICT training is covered by the offer of formal and non formal, non-vocational adult education, but tends to be more prevalent in the latter.

Mentoring activities of the non-professional education of adults face many challenges in most countries: limited standards and quality assurance professionals tend to operate as recommendations rather than as mandatory requirements. Increased efficiency through better education and training quality standards is a major theme of reform for most countries. An analysis of a non-professional adult education in various countries is to highlight these essential elements:

- systematic approach to non-professional adult education, formal and non-formal, a comprehensive framework of lifelong learning
- decentralized structures for a better analysis of local needs and opportunities for achieving greater coordination and partnerships
- maintain a balance between values and civic, social and economic needs
- provision of resources to the participants focused on measures and actions aimed at strategically under-represented groups
- maintaining a public network of flexible structures for adult education

- an emphasis on response to learning needs and other needs of adults with low education in the interest of democratic institutions, social cohesion and economic development
- providing effective support for learning, including information and guidance
- An integrated system of qualifications, with provisions for validation of informal and non-formal learning
- develop policies, structures and measures to address issues related to quality assurance and performance results
- systematic approach to initial and continuing training of the education non-professional staff.

The new principle of school education "learn today, produce today", which replaces the old "learn today, produce in the future" tends to approach the adult education, although key differences remain. For example, "adult educator" has no concept of the decisive meaning of a particular person as in case of children, but primarily means the unfolded work.

E-Learing

E-Learning systems have become very popular in the last decade, especially in schools, colleges and universities. Also, more training institutions use the concept of lifelong learning into their management systems. There are currently marketing a variety of systems such as e-Learning: *Moodle*[5], *Sakai*[6], *ATutor*[7], freely available under open source or commercial and A*e*L[8], *Microsoft Learning Manager*[9], *BlackBoard*[10]. These systems are available as desktop applications or as online learning platforms.

Online systems make available a Web space in which teachers posted or edit learning materials, homework for students, etc. These systems also offer online testing. National Council of Academic Evaluation and Accreditation (CNEAA) has set standards on the use of e-learning platform (e-Learning) in distance education. In Romania e-learning was defined as follows [Istrate, 2007]:

(1) More broadly, through eLearning (or eLearning) means all educational situations in which significant use ICT facilities.

(2) In a narrow sense, eLearning is a type of distance education as a planned teaching-learning experience organized by a material environment

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[5] http://moodle.org
[6] http://sakaiproject.org/
[7] http://www.atutor.ca/
[8] http://advancedelearning.com
[9] http://learning.microsoft.com/Manager/Catalog.aspx
[10] http://www.blackboard.com

that provides a logical and sequential order to be assimilated by students in their own way. Mediation is done by new information and communication technologies – in particular through the Internet
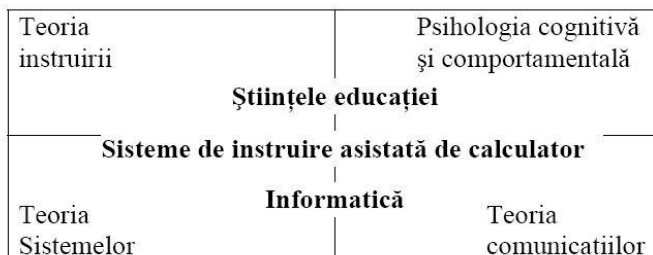
Teoria instruirii	Psihologia cognitivă și comportamentală
Științele educației	
Sisteme de instruire asistată de calculator	
Informatică	
Teoria Sistemelor	Teoria comunicațiilor

Figure 1. *Computer-aided instruction systems*

In Romania, the academic world, one of the most used e-learning platform is Moodle. MOOD – Modular Object Oriented Dynamic Learning Environment – is a dynamic learning platform developed multi modular in object-oriented environment. This is a course management system (Course Management System - CMS), a software package designed to help teachers to make quality online courses and coordinate the results of learner/student. Such systems are sometimes called Learning Management Systems (LMS) (systems coordination/management of learning), Virtual Learning Environments (ELVs) (virtual learning environments) and Learning Content Management Systems (LCMS) (content management systems learning). Users need only a browser (eg IE, Firefox, GoogleCrome, etc.) to attend a course in Moodle. Written in PHP, Moodle runs without modification on Unix, Linux, Windows, Mac OS X and any system that supports PHP, including most Web providers (those hosting websites). Information is stored in a single database: MySQL and PostgreSQL are best supported, but can be used with Oracle, Access, Interbase, ODBC and others.

Moodle has its origins in an educational project developed by Martin Dougiamas at Curtin University of Technology, based on the idea to improve the management system provided by WebCT platform. Moodle version 1.0 was released on August 20, 2002, as a system for configuring e-Learning for the academic course. Subsequent developments have brought many improvements and extensions of functionality, so that the platform Moodle is now used not only in universities but in schools, primary schools, nonprofit organizations, private companies, independent teachers and even parents who want to educate their children.

The Http://moodle.org site is a central point of information, discussion and collaboration between different types of system users of Moodle: system administrators, teachers, researchers, teachers and course developers.

Adopting Moodle platform, allows integration into a genuine international community, with access to educational and scientific experience. The platform has been translated into over 50 languages including: Arabic, Catalan, Chinese (Simple and Traditional), Czech, Danish, Dutch, English (British and American), Finnish, French (France and Canada), German, Greek, Hungarian, the Indonesian, Italian, Japanese, Maori, Norwegian, Polish, Portuguese (Portugal and Brazil), Romanian, Russian, Slovak, Spanish, Swedish…

In the Faculty of Mathematics and Informatics, we have implemented Moodle platform for students from the Department of Distance Learning. It can be accessed at: http://idinf.ucv.ro/moodle. Figure 2 shows the main page of this system. Moodle E-learning saves in a database a log of activities performed by users (courses attended, examinations or quizzes performed, marks obtained, accessed resources, topics taught, etc.). Volume of information collected over time becomes quite large and their manual analysis is quite difficult. Data Mining offers us techniques and efficient algorithms that allow automatic analysis of these journals.

To help students, we developed an extension of e-learning system Moodle [Gabroveanu, 2008, pp 1-5], implemented as a module, with the aim of extracting useful semantic metadata generation and supply personalized content to users. This module analyses data on the activities of users in the system. Data are stored in the database and the module extracts some information not directly visible using data mining techniques [Iancu, 2006, p. 55-64]. Basically, the information in this journal is mined and a set of boolean association rules are extracted. These association rules are then moved to Jena rules making judgments.
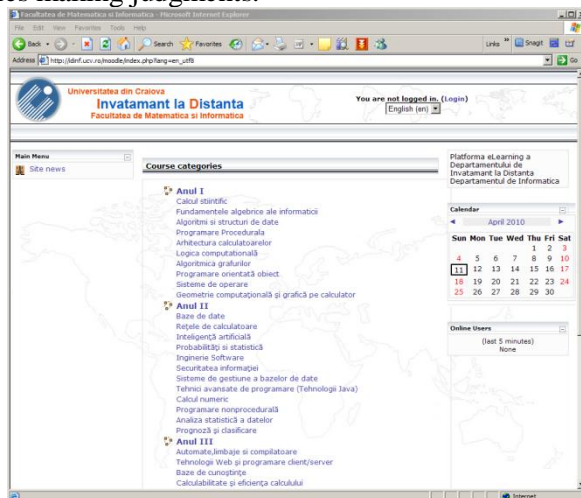

Figure 2. *Moodle Platform – Home Page*

Based on this information, the module is able to make some recommendations to users and inform them about certain changes in the system. For example, for a student it may recommend to read some resources, to get the necessary knowledge in order to promote a particular test. The module provides information and suggestions tailored to the user who log into the system. For example, the module is able to recommend follow a particular course only to users who have not followed that course yet. Teachers can also use the information extracted from the module in order to improve the quality of training and make recommendations to students.

Example:

1) Consider the association rule derived from data mining process: *82% of students who attended the Web Technologies (WT) course, attended the Web Applications (WA), too*.

Under such a rule, we can recommend certain students who have *already received the WT course, and have already attended the WA*, to consider their choice, possibly in the near term. Consider that student Michael, who followed the WT course was logged in and he goes to the page in which the courses are presented. We can recommend him to choose WA course next semester, a recommendation that we do not do to another student Mircea who has already attended WA course. These recommendations are dynamically generated by the module, according to the student when the page is accessed by the student and they are not pre-calculated.

2) Consider a more complex association rule, obtained from data mining process: *74% of students who chose the course of WT and passed the T2 test, accessed the resource Res1 and solved the A1 issue.*

The result of applying such a reasoning rule, can guide the student to read some resources and make some actions in order to be prepared for a test. Thus, only for students who satisfy all the requirements of the premise we recommend those parts of the conclusions that have not been done yet. We must suggest to Michael who attended the WT course, and who already accessed Res1 resource, to solve the A1 issue in order to be ready for the test T2.

In higher education, during ES program (Educational System) of the Ministry of Education, in many schools and colleges was introduced e-learning programs AeL (over 2000 installations). ES has been implemented by the software company SIVECO Romania SA, the hardware equipment being provided by Fujitsu – Siemens, HP and IBM.

AeL is optimized for synchronous learning, and the whole lesson is controlled by the teacher. The teacher can compose, control and monitor the lesson using AeL. The AeL teacher can:
- send lesson time activities to students individually, depending on the their capacity or knowledge
- control how students interact with AeL

- administer and monitor tests
- communicate with students via discussion board and e-mail

AeL is one of the factors responsible for strong support in the areas of decision making, control, planning, forecasting, tracking and forecasting.

Figure 3. *AeL platform – math lesson*

AEL provides interactive lessons for most subjects in the curriculum. In Figure 3 it can be seen a very friendly graphical user interface of a math lesson in which is presented the solving of problems in the minimum and maximum level.

As well as Moodle programme, *AeL* offers support for many languages and it is easily reconfigured.

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