Cognita's LMS and its Application in the University of Zadar Students' Education

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Summary

The application of new educational technologies in the education of students and pupils as well as all persons involved in the education system, nowadays becomes an imperative. Cognita's LMS is a programming tool for the creation of electronic educational materials used in distance learning, as well as a supplement to the traditional mode of education.
This paper describes the use of Cognita's LMS as a system for distance learning in students' education. Testing was conducted on a sample of one hundred students of the University of Zadar who have had the opportunity to use the learning system of Cognita.
By means of questionnaire and after using the distance learning system, the students evaluated syllabuses, online tests, the functionality of the system, and communication within the system. This paper examined the quality of educational content created and usefulness of information in this kind of students' education, as well as advantages and disadvantages of this form of education compared to traditional teaching. At the same time, the way students use educational technology was also investigated.

The research data were analyzed by methods of descriptive statistics using the software package of Statistica.
The informatization of education is becoming part of society education and a fundamental prerequisite to better quality education of young people.

Key words: technology, educations, distance learning, Internet, multimedia.

Introduction

In today's post-information age we have been witnessing a widespread use of ICT in all spheres of human activities, including education. Traditional models of education, although still largely present, are replaced or supplemented by new, more modern forms of education supported by the development of computers and computer technology and the Internet. Unlike the traditional model of education, where teachers' knowledge is conveyed in the classroom using chalk, board and language as a medium, more modern forms of education combine information and communication technologies - multimedia and the Internet in order to present knowledge to pupils and students, to interact with them, and to check their knowledge. Users can access online education teaching materials at any time in their normal environment and thus are not forced to attend classes at school.

Many social and economic changes that have marked the time in which we live have also created, besides new forms of education, new forms of learning, so that nowadays the term lifelong learning has become commonly used. According to Jasminka Maravić lifelong learning is defined as "learning activity throughout life, with the aim of improving knowledge, skills and competencies within personal, civic, social and business perspective."[1] A key problem that occurs in lifelong learning is computer literacy, which refers to the ability of individuals being constantly faced with abundance of information to find, extract and use the most needed pieces at a given moment. In addition to information literacy, the user must master new technologies and computer literacy, i.e., to acquire certain knowledge and skills to be able to use efficiently the content offered through the distance learning system.

Distance learning

The historical development of distance learning began more than one hundred years ago, if we include the oldest form of distance education - correspondence education. Distance learning is dependent on the available communication media. The first communication medium for distance education was a letter, and

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[1] Maravić, J. Cjeloživotno učenje. http://edupoint.carnet.hr/casopis/17/clanci/5.html (accessed on 16 May 2011)

later film, radio and television (public, cable, satellite). With the advent of new communication and computer media, some changes in distance education and the transfer of educational content became possible.

What does the concept of distance learning mean? Distance learning involves a form of teaching and communication between teachers and pupils or students who are separated by a space and sometimes time. By using communication technology, the distance between these two subjects, pupils/students and teachers is overcome, which enables them to communicate directly.

Today, very often the concepts of distance education or online learning are identified with the term of e-learning, which is not the same. E-learning (electronic learning, e-learning) is a form of distance education, but not necessarily be the case. It has been widely used since 1990 and many authors have offered numerous definitions of the term which can be found on the Internet, and in scientific and professional literature. The basic definition of e-learning involves "the use of multimedia and the Internet in order to improve the quality of learning - by providing access to remote information sources and services and facilitating collaboration and communication at a distance." [2]

Depending on the use of ICT in education, there are several forms of e-learning:

- traditional classroom instruction (*face to face*);
- traditional instruction supported by information and communication technology;
- combination of traditional instruction and distance learning, which has wide application in professional seminars and other educational programs;
- online teaching, organized entirely at a distance, using a Learning Management System (LMS) or videoconferencing.

The time and geographic flexibility, financial savings, but also financial benefits are usually mentioned as the main characteristics of e-learning, and thanks to them, e-learning introduces novelties in the education process, opens up new opportunities for exchanging ideas, knowledge and experience to different users. By using e-learning and sitting home at our computer, we meet and connect with experts from all over the world, discussing interesting topics and gaining new knowledge. E-learning is applied in three areas of education: in schools and institutions of higher education, for business education and education in the government sector.

Considering distance learning in higher educational institutions in Croatia, it should be noted that it is often combined with classic forms of education as a mixed model of education.

The introduction of e-learning in educational institutions, particularly higher education ones, according to Dragana Kupres, depends on the commitment and involvement of institutions in the introduction of e-learning at all necessary lev-

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[2] E-učenje. http://hr.wikipedia.org/wiki/E-učenje (accessed on 16 May 2011)

els.[3] The current problem in Croatia regarding distance education, is still a lack of interest among teachers and pupils / students to use e-learning in the process of teaching in elementary and secondary schools and institutions of higher education. It takes additional training of pupils / students and teachers to apply this form of education through a variety of online courses as those organized and carried out by Croatian Academic and Research Network - CARNet through the E- learning academy and Edupoint courses. It also requires stimulation of teachers for this type of work since making e-learning contents is not part of their jobs. However, pupils or students must, besides the existing skills and habits in a traditional learning, develop new e-learning skills and habits for learning via the Internet.[4]

Distance learning today is often carried out through a Learning Management System (LMS), one of the systems meant for the management of distant learning. LMS has several functions: registration and billing, process management, testing, mentoring and monitoring, user and administrator functions.[5] The first such system in Croatia was developed by Cognita.[6] On the basis of the company's distance learning management system, a survey among students of the University of Zadar was conducted, who, after using Cognita's LMS evaluated courses, online tests, the functionality of the system and communications within the system.

Survey method

The survey was conducted at the beginning of the academic year 2009/10 on a sample of 88 students of the University. The average age of respondents was 20 years.

The survey method comprises completing an anonymous questionnaire with twenty-two questions and circling the multiple choice answers. The results were analyzed using Microsoft Excel and the statistical package of Statistica, version 10.

Results and discussion

The research aimed to determine how respondents use the computer and for what purposes. We were interested in the attitudes of our respondents towards education in the future, and their knowledge of the latest forms of learning. The respondents mainly use computers at home and for more than 5 hours per week.

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[3] Kupres, D. Obrazovanje za e-learning. http://edupoint.carnet.hr/casopis/24/clanci/2.html (accessed on 16 May 2011)
[4] Watkins. R. Pripremanje studenata za učenje putem Interneta.
http://edupoint.carnet.hr/casopis/42/clanci/2.html (accessed on 19 June 2011)
[5] Löw, Z. Prvi hrvatski LMS. http://edupoint.carnet.hr/casopis/broj-08/clanak-02/index.html (accessed on 18 May 2011)
[6] Cognita company is engaged in the specifics of e-learning and employs specialists in e-learning contents.

Table 1. shows the average marks of the computer use in different software packages. The table shows that the computer is mostly used for writing and editing, and making presentations, followed by more complex programs such as Excel and Access, the programs for image editing and creating web pages and electronic mail.

Table 1. Average marks of the computer use in different software packages

PROGRAMME	AVERAGE MARK
MS Word	4.6
MS PowerPoint	4.6
MS Excel	4
MS Access	3.4
MS FrontPage	4
MS Publisher	2.5
MS Outlook Express	3.3
Adobe Photoshop	3.3
Macromedia Dreamveawer	2.3
Macromedia Flash	2.5
Macromedia Authorware	2.5
Corel Draw	2.7

The analysis of the results showed that all the respondents use only the observed system for e-learning, but have a positive attitude towards lifelong learning and 70% of the respondents plan to expand and update their knowledge in their lifetime. 84% of them think that a good web site is characterized by a good graphic design. 50% of respondents believe that a good web site is characterized by a high quality and clear content, which need not necessarily be current and simple.

Table2. Results of descriptive statistics for evaluation of graphic design, content topicality, content quality, content clarity, content simplicity

VARIABLE	DESCRIPTIVE STATISTICS (SPREADSHEET7)				
	Valid N	Mean	Minimum	Maximum	Std. Dev.
Graphic design	88	3.113636	1.000000	5.000000	0.964089
Content topicality	88	3.386364	1.000000	5.000000	0.836410
Content quality	88	3.068182	1.000000	5.000000	0.968414
Content clarity	88	3.318182	1.000000	5.000000	1.045466
Content simplicity	88	3.136364	1.000000	5.000000	0.846654
Loading speed	88	2.659091	1.000000	5.000000	1.092149

The table 2 gives an overview of the results of descriptive statistics for evaluation of graphic design, content topicality, content quality, content clarity, content simplicity and Cognita's LMS system loading speed. (t-test, df=87)

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Table 3. Matrix of correlations between the elements of Cognita company's LMS system

VARIABLE	Spearman Rank Order Correlations (Spreadsheet7) MD pairwise deleted Marked correlations are significant at p < 05000					
	Graphic design	Content topicality	Content quality	Content clarity	Content simplicity	Loading speed
Graphic design	1.000000	0.517888	0.518679	0.379489	0.600268	0.660887
Content topicality	0.517888	1.000000	0.554557	0.513669	0.560514	0.517529
Content quality	0.518679	0.554557	1.000000	0.516540	0.525789	0.441803
Content clarity	0.379489	0.513669	0.516540	1.000000	0.418031	0.372836
Content simplicity	0.600268	0.560514	0.525789	0.418031	1.000000	0.642105
Loading speed	0.660887	0.517529	0.441803	0.372836	0.642105	1.000000

It is evident from Table 3 that there is a statistically significant correlation between graphic design, topicality, clarity, simplicity, content quality, and loading speed of Cognita's LMS system. The highest correlation exists between the loading speed of the content and graphic design ($r = 0.660887$, $p < 0.05$).

Table 4. T-test results for the elements of Cognita company's LMS system

VARIABLE	Test of means against reference constant (value) (Spreadsheet 7)							
	Mean	Std. Dev.	N	Std. Err.	Reference constant	t-value	df	p
Graphic design	3.113636	0.964089	88	0.102772	0.00	30.29648	87	0.00
Content topicality	3.386364	0.836410	88	0.089162	0.00	37.98006	87	0.00
Content quality	3.068182	0.968414	88	0.103233	0.00	29.72085	87	0.00
Content clarity	3.318182	1.045466	88	0.111447	0.00	29.77362	87	0.00
Content simplicity	3.136364	0.846654	88	0.090254	0.00	34.75055	87	0.00
Loading speed	2.659091	1.092149	88	0.116424	0.00	22.83981	87	0.00

It is evident from Table 4. that there is a statistically significant correlation between graphic design, topicality, clarity, simplicity, content quality, and loading speed of Cognita's LMS system. The highest correlation exists between the loading speed of the content and graphic design (t-test, df=87).

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Table 5. Descriptive statistics results of assessment of navigation and interactivity of Cognita's LMS e-learning system

VARIABLE	DESCRIPTIVE STATISTICS (SPREADSHEET 15)				
	Valid N	Mean	Minimum	Maximum	Std. Dev.
Navigation	88	3.500000	1.000000	5.000000	0.870988
Interactivity	88	3.204545	1.000000	5.000000	0.996074

It is evident from Table 5 that the navigation system for e-learning is assessed at an average grade of 3.5 and the interactivity of the system with 3.2.

Table 6. T-test results for navigation and interactivity of Cognita's LMS system.

VARIABLE	Test of means against reference constant (value) (Spreadsheet 7)							
	Mean	Std. Dev.	N	Std. Err.	Reference constant	t-value	df	p
Interactivity	3.204545	0.996074	88	0.106182	0.00	30.17979	87	0.00
Navigation	3.500000	0.870988	88	0.092848	0.00	37.69615	87	0.00

It is evident from Table 6 that there are significant differences in the assessment of navigation and interactivity of Cognita's LMS system. (t-test, df = 87)

Conclusion

The respondents included in this study used a new way of education i.e. distance learning by using Cognita company's LMS system. We have found that they have not used such methods of education, but have a positive attitude about future education and in their future lifelong learning they are willing to use some parts of the system for e-learning. Graphic design of the e-learning system and the design of teaching contents have an important role in the perception of the system for distance learning. A good system for e-learning, beside a good graphic design, is characterized by good quality, clear, timely and simple contents and loading speed. Graphic design, loading speed and quality, clarity, topicality and simplicity of contents are interrelated and affect the quality of the system for e-learning. The research results suggest the need for greater interactivity of teaching contents and the improvement of the navigation system within the e-learning system. These research results can be useful to all the designers of teaching contents for distance learning. It is a guideline on what needs to be paid attention to when creating high-quality instructional contents within the system for e-learning.

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