An open – source Learning Management System (ASDL) using ICT for High Schools

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Abstract

This paper presents the specifications of an open – source Learning Management System using ICT, which was implemented on a Greek High School. This effort began because of our interest to see the impact of the use of Multimedia and Internet resources having e-learning content, in a classroom. Greece lags far behind in use of Internet towards other European Countries. This paper also presents how pupils evaluated the use of this innovative pedagogical framework. Our research was extended to the new role that teachers called to adapt in teaching.

1. Introduction

Personal use of Internet increases significantly in Europe even though the level of progress varies among the member countries (42% in 2000 towards 53% in 2003). Greece lags far behind in use of Internet and in infrastructure. Only one to five Greek people used Internet in 2004. 55% were students and Lyceum pupils towards the 85% of E.U other countries. A significant detail is that 40% of Greeks users search in Internet for educational purposes [1], [2].

Anyone can understand that even though Greece lacks Internet infrastructure, there is a great willing from students and pupils to use Internet for educational purposes. Greece has the biggest access percentage through schools and universities in comparison to other European countries.

European and Greek experience shows that it is not very easy to apply ICT - based educational methods. There are many factors that contribute to this such as infrastructure hardware, educational software, teachers' education, and national central planning.

All the above difficulties create the need to put all the individual efforts of teachers under a single platform, which in no case could substitute the school and the traditional role of teacher. It is the use of the tool that will transform the educational process and not the tool itself [3].

2. Characteristics of the Educational Platform

This platform for distance learning should have the following characteristics:

- Knowledge management
- Interaction between teachers and pupils
- Self-assessment of students
- Adaptation to the needs of any user

A lot of new ideas that use the significance of proximity, concerning ICT, make their appearance, "proximity digital spaces", "proximity distance education" etc. The ICT can decrease distance of exchange of all kind of information. Before the integration of ICT in the educational process, the proximity had powerful bonds with geographic distance, size absolutely measurable. We easily can conclude the differentiation from the direction of geographic distance to that of points of presence in the World Wide Web, and the hyperlinks that connect them. In other words, even if the schoolteacher and the pupil are not found in the same place, they feel very close to each other. Consequently for "digital spaces" or better for "digital worlds", the idea of geographic distance does not exist any more if there is a common objective or framework [4], [5].

3. ASDL Asynchronous and Synchronous Distance Learning

ASDL is a platform that integrates the functionality of a dynamic database and the ability to store and project educational multimedia information. Since it offers remote management only by using an Internet

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browser. no technical knowledge is required, in order to publish and manage data. Links between the platform and the educational process are multi-dimensional based on the need of teachers and pupils to communicate in a virtual classroom [6].

ASDL, an extension of an existing system named DOKEOS, meets synchronous communication requirements such as videoconferencing, streaming video and SCORM (Sharable Content Object Reference Model) lessons [7] in Greek language. It is implemented by Multimedia and Graphics Lab of the Department of Applied Informatics of University of Macedonia, Greece [8], [9]. After an extended research, we found that familiar platforms do exist in other universities but they do not meet all the specifications of ASDL. Therefore we examined if this platform can be applied in High Schools and Lyceums and tried to evaluate its use. Briefly ASDL:

- Supports storage and projection of educational multimedia files. In addition SCORM lessons can be supported
- Offers easy distance administration only by an Internet browser so there is no demand for technical knowledge.
- Supports different kinds of users in order to provide personalization, protect the files and the parameters of the platform.
- Supports videoconferencing and streaming video giving the feasibility for synchronous education.

All these features show that ASDL create proximity links between teachers and pupils or even better between pupils and the lesson. Therefore a virtual educational community is created.

4. The application of ASDL in education

According to statistics concerning the use of Internet and the technical infrastructure in Greece, the ASDL exceeds all the mentioned difficulties because:

1 It suppresses the distance as an obstacle of communication because it is based on the technology of Internet

2 It offers easy access to knowledge as it is just a web page and there is no need for expensive equipment usually required by ICT. Therefore students are not separated in privileged and not.

3 It exceeds the problem of low connection speeds in the Internet. The solution that was adopted concerns creation of pages that do not require significant transferring times from servers to clients. Moreover the publication of educational material is achieved with very low speeds of 33, 6 Kbps.

4 The platform is based on a simple installation in a central computer, unique for a lot of schools. Thus, the user of ASDL needs only an operating system, an Internet browser and office applications.

5 The system can function even with computers with low resources.

6 The high economic demands often prohibit the financing and the creation of such applications in schools. The ASDL is an open source platform.

7 ASDL resolves the problem of distance when it concerns Greek islands and inaccessible mountainous villages. The world is flat as Bill Gates said.

8 The level of required knowledge concerning the use of ASDL is as minimal as possible. Greek teachers have been trained in use of computers during the seminars organized by Information Society. Pupils have just to recall the knowledge that they acquire from the course of Informatics in the High school.

5. ASDL and Evaluation

In order to obtain an integrated perception about the use and the operability of ASDL, questionnaires were given to pupils. Some indicative questions are now presented.

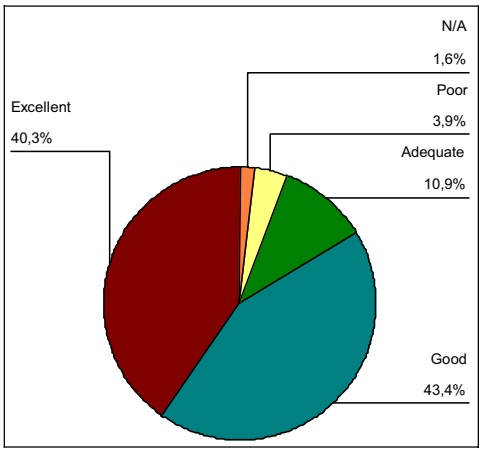

Figure 1. What is your opinion about ASDL?

The first question is about how pupils estimate ASDL. It is obvious from the above graph that a great percentage of pupils strongly accepted the concept of ASDL.

The following graph shows that ASDL helps pupils to obtain the same level of knowledge either in case of absence or not. On the other hand there are a significant percentage of pupils that consider ASDL did not actually help them. An explanation for this lies in the fact that some pupils did not have Internet access from their home. There is also the possibility that some pupils are used to the traditional way of teaching and they cannot adapt themselves to ICT based training

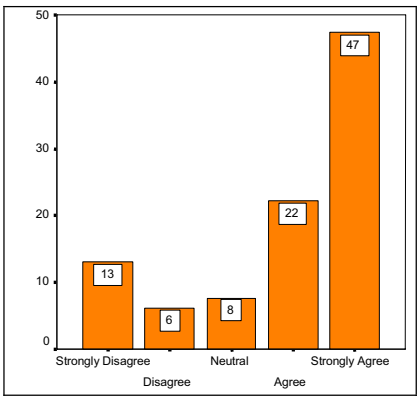

Figure 2. Does ASDL help in case of absence?

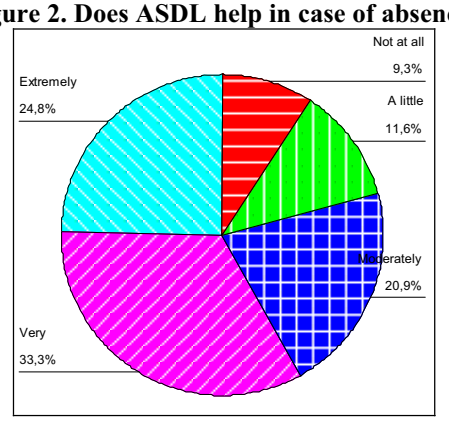

Figure 3. Does ASDL give a motive for study?

Another indicative question that shows how ASDL brings new standards in education is shown in Figure 3. The fact that pupils find a motive to study more is not only proved by the above diagram but also from the grades they achieved. This fact was observed by us during the teaching process and was confirmed by the pupils through the questionnaire.

6 Conclusion and Future Work

After the analysis of the questionnaire and the experience that we obtained through the teaching process we came in the following conclusions

1 If a pupil loses a tutorial because of case of illness or participation in school activities, he/she has the ability to have access to the presentations, the examples and all the teaching material.

2. The pupils have better assimilation of the course concepts in comparison with to the ones of previous years, since they can do exercises and tests from their home and evaluate their knowledge.

3. The pupils recognize that computers do not exist only for playing games but also as a mean to gain knowledge. Since they are familiar with ICT, they will probably correspond very easily later, in the requirements of their academic studies.

For more than 6 months ASDL supports two courses of secondary education that have very high acceptance from pupils. This encourages us to create courses based on SCORM lessons, which will be available next school year. We also intend to create videos lectures and use ASDL's videoconference feature more, in order to share knowledge in various ways.

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