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Педагошки факултет „Св. Климент Охридски“ – Скопје  
Република Македонија

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Ss. Cyril and Methodius University  
Faculty of Pedagogy “St. Kliment Ohridski” – Skopje  
Republic of Macedonia

**VI меѓународен балкански конгрес за образование и наука:  
СОВРЕМЕНОТО ОПШТЕСТВО И ОБРАЗОВАНИЕТО**

(Охрид, 29. IX - 1. X 2011г.)  
*Зборник на трудови*

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THE MODERN SOCIETY AND EDUCATION**

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## INTRODUCTION OF ICT IN THE TEACHING PROCESS - A SUCCESSFUL STORY OF THE HIGH SCHOOL "DOBRI DASKALOV" FROM KAVADARCI

### Abstract

When speaking about education, the High School "Dobri Daskalov" from Kavadarci has always been a holder and promoter of new technologies, thus generating the changes in the region. The process of introducing information and communication technology - ICT in the teaching process in the High School has started since 2000, through the installation of modern ICT equipment and training to use that equipment. This process is completed with the introduction of the e-learning in the High School, through training for using this system and its implementation in the teaching process. In the first year 250 students were engaged from the first, the second, the third and the fourth year or 7 out of 28 classes. This system is successfully accepted by the students and the teaching staff and gave remarkable results. The paper describes the process of implementation as well as lessons we learned during this process.

**Key words:** *LMS, Moodle, ICT in education.*

### Introduction

The technological development, globalization, information revolution, forceful competitions, promotion of knowledge as the most valuable resource, represent only a part of the new *economic order* and the creation of *e-society*. For each institution, organization or individual, the acceptance of this new *order* is a matter of survival. Those who are unprepared or simply ignore the changes, regardless that they refer to - states, institutions, organizations or individuals may remain as mute witnesses to all technological improvements and changes which are occurring with unattainable speed. The consequences of untimely acceptance of the changes may be seen in occurring new, hard solvable problems, improvisations, defensive approach to work, creating fear and conflict.

Taking into account these global changes, the Government of the Republic of Macedonia chose the introduction of ICT as one of the main priorities in education by implementing the Project "Computer for every child." With this project, all primary and secondary schools in the Republic of Macedonia in the first phase were equipped with a computer for every student and in the second phase is expected to be implemented a virtual e-library, development of educational contents

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in digital format and development of e- Learning. The aim of this project is to enable effective implementation of information technology in Macedonian education, to come close to the world and to reduce the digital division that occurs due to physical inaccessibility i.e. lack of resources or lack of skills.

According to the global trends and directions of the Government's program, one of the priorities referred to in the Annual Programme of the Secondary Municipal School "Dobri Daskalov" is "continuous computer education of the teachers for better quality teaching." This is due to the need for faster acceptance and introduction of ICT in teaching, and more efficient use of already installed computers in the school and during every day work in the implementation of teaching. Thus, the program provides ongoing training for basic and advanced use of ICT in teaching for the teachers in the High School. Our ultimate goal is teachers to implement computerized teaching where they will implement the acquired knowledge and skills of the trainings, and constantly will refresh the knowledge and skills with new training for active and computerized teaching. The permanent improvement i.e. Lifelong learning is imperative in today's education.

The experimental and optional introduction of the e-learning system, Moodle in the High School, by a group of teachers - enthusiasts is an act that we believe to move our school forward with a faster pace to realize higher quality teaching. Thus, students in their further professional development shall acquire the necessary knowledge, skills and competencies in a new, creative and an effective way.

The paper consists of six parts. The first part *"Introduction"* gives an introduction to the subject and describes the importance of ICT in the modern society and the efforts and commitments of our state as well as the reasons for initiating projects in the High school Dobri Daskalov. The second part, *"The State in the High School with the application of ICT in the teaching process before 2003"* describes the state of resources (equipment, space, people, attitudes) in this period.

The part *"Realized projects during the period 2003 – 2010"* describes all projects implemented so far in the field of ICT in the High School (equipment and training). In the fourth part of *"Project - Introduction of a system for e-Learning"* describes the procedure for implementation of this project, referring to the benefits and opportunities offered by this system, and organization of implementation of this project in the High school "Dobri Daskalov".

The fifth part, *"Results from the realization of the project (June 2011)"* describes some of the benefits of one-year using this system in the teaching process. The *"Conclusion"* summarizes the experiences of the project implementation and gives opinions and recommendations for further activity.

### **The State in the High School with the application of ICT in the teaching process before 2003**

When talking about the situation of ICT within the High School until 2003, we can freely say that it was not different from the general situation in all schools in the Republic of Macedonia. Until 2003 the High School had about 22 personal computers – only one classroom with 17 computers - computer lab for teaching informatics and additional 5 computers for administrative - technical activities.

There were three printers and no video screen (LCD projector) or laptop computer. Students had access to computers in the lab only during the classes planned, and only a few teachers-enthusiasts used it. The ratio of teachers to ICT was more negative than indifferent and with attitudes such as:

- ICT is a great thing, but cannot be applied in this way or that way,
- ICT is a great thing, but we are old, let the young learn it,
- ICT is a great thing, but I will retire earlier than I will learn it,

In teaching the subject informatics was represented by 2 hours in 1<sup>st</sup> year general course, 2 hours in 1<sup>st</sup> and 2<sup>nd</sup> and 4<sup>th</sup>, the mathematical course, 2 hours in 2<sup>nd</sup> year in the Law course. Only one teacher of Informatics was employed with a full number of lessons (20) in the school.

The general conclusion is that the use of ICT by 2003 in the High School and in the overall educational process in the Republic of Macedonia was on unsatisfactorily low level compared to the developed European states. This situation is due to insufficient equipment, lack of representation of information content - even with the appropriate level or with the appropriate form, but insufficient knowledge of ICT by teachers and their lack of motivation.

### **Realized projects during the period 2003 – 2010**

In the period 2003 - 2010 in the High School "Dobri Daskalov" several projects in the field of ICT, equipping the school with ICT and teacher trainings on the use of ICT were realized. Equipping the school with ICT project was made by the Project GOPA-VET II (2003) and the project "Computer for every child" (2008). Trainings for the teachers to use ICT were realized by the projects, "Be prepared", "E-school", the Project for Modernization of Education and the Project "Computer for every child."

- In 2003, by the Project GOPA-VET II, the school was donated computer equipment for another computer lab to be completed. Two cabinets in Informatics began to operate in the school. Mainly, they are used for carrying out the teaching of informatics, information technology and to realize the students practice for the subject Office working. Using computers in the process of teaching by the teachers who teach other subjects is insignificant. The main reason is insufficient knowledge of ICT by teachers and inadequate equipment of the school with ICT.
- In 2008, by the Project "Computer for every child," the school was donated a computer equipment for 17 classrooms and the school level has already been great concerning the ICT equipment. All teachers involved in this project attended the training to use the Edubuntu operating system and some teachers attended specialized training in relevant subjects (mathematics, physics, chemistry, biology, geography, Latin, music). Using computers in the process of teaching by this project began to increase. Most teachers use computers in teaching and there are tendencies that number to increase constantly.

Trainings for the teachers to use ICT were realized by the projects "Be prepared" (2003), "E-school" (2005), Project for Modernization of Education (2007) and project "Computer for every child" (2008). All training sessions were successfully realized by the teachers but it was identified the need for constant repetition and upgrading of training not only during the time they were realized.

In this period, with the realization of the above mentioned projects, in the school there are 18 classrooms fully equipped with ICT, 20 PCs, 10 printers, 5 LCD projectors, placed in administrative-technical section, the staff room, and all the classrooms of the different project groups in the school and full time internet connection. All the teachers are trained to use ICT. Their attitudes and approach towards the use of ICT in the teaching process have changed.

- ICT is a great thing and makes the paper work in the teaching process much easier.
- ICT is a great thing; although I'm older I can learn the techniques and apply them in the teaching process.
- Literacy criteria are no longer whether you can read and write but whether you can use IT.
- I won't be able to keep my job if I can't use ICT.

With the realization of these projects we have acquired a significant experience: if we want the use of computers in the teaching process in the school to be efficient, the school needs a system for constant maintenance of ICT, teachers should be constantly trained for advanced use of ICT, and the authorities should work continually to increase the funds of education software and educational contents.

### **Project "Introduction of system for E-learning"**

In the Annual school program for the school year 2010/2011 in one of the priorities - "Continual computer education for the teachers for better quality teaching" the project "*Introduction of system for E-learning*" was included. After the researches and consultations we decided to introduce the system for E-learning Moodle.

Moodle is a software application for creation and maintenance of online courses on the Internet and it can be used for personal studying or in addition to classical teaching process. Moodle is an acronym for Modular Object-Oriented Dynamic Learning Environment. It is very important that this project is open source, which means that all the users are allowed having insight in the original source, with possibilities to change or adjust the application to someone's personal needs.

In August 2010 we signed a collaboration contract with the E-learning Center at the "Goce Delcev" University in Stip about how to introduce the system for e-learning Moodle in our school. The E-learning Center at the "Goce Delcev" University in Stip conducted a professional and quality training for 15 teachers from the High School Dobri Daskalov. The training was in 5 different sessions each one with 5 active lessons, two of which were in the E-learning Center at the "Goce



Delcev” University in Stip and three were in one of the classrooms of the High School Dobri Daskalov equipped during the project Computer for every child.

After the training was conducted the E-learning Center at the “Goce Delcev” University in Stip carried out a test and awarded with certificates all the teachers who passed the training successfully and fulfilled all the assigned tasks. There was a formal awarding in the facilities of the Municipal High School “Dobri Daskalov”.

The E-learning Center at the “Goce Delcev” University in Stip also supplied installation and configuration of Moodle CMS, supplied literature and directions for the maintenance of Moodle CMS.

250 students were included in the project, one class form 1st year, four classes from 2nd year, two classes from 3rd year and all the students from 4th year. The access to the system for e-learning was enabled through the official website of the High School [www.dobridaskalov.edu.mk](http://www.dobridaskalov.edu.mk), or directly on [www.dobridaskalov.edu.mk/moodle](http://www.dobridaskalov.edu.mk/moodle), which is shown on Figure 1.

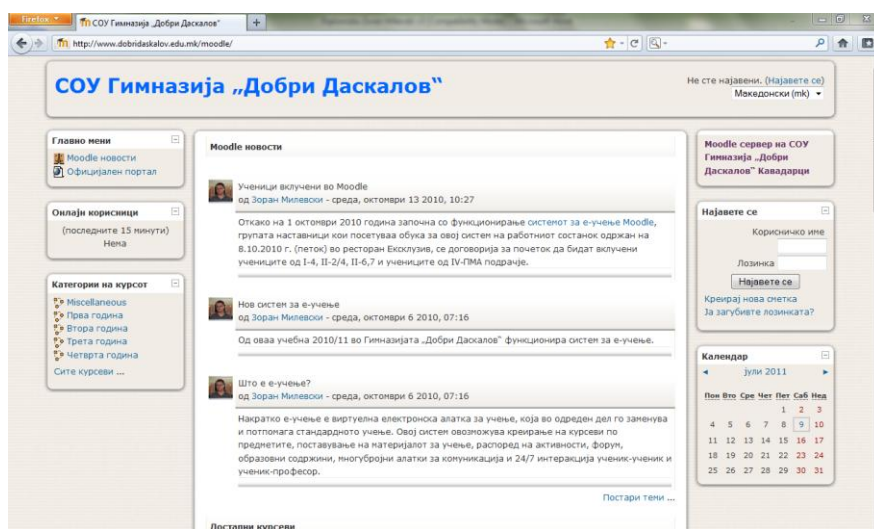


Figure 1 - Homepage of the Moodle system

Moodle offers several possibilities to create a course, to send assignments and those assignments to be marked by the teachers, to use chat, choice, database, forum, glossary, lesson, quiz etc.

With Moodle a space for learning is created – course. Every course has its own set of recourses and activities, called modules, which can be user and guest as far as the organization is concerned. The course can be protected with a key (password) so that only the enrolled students and teachers can have access to it. A deadline to enroll the course can also be created.

After the course is created it can be filled out with activities and text, including audio and video recordings. Students are free to use the texts whenever they find it suitable.

Students can send assignments for teachers to mark them. Teachers are notified when a new assignment has been sent. All the assignments are kept in the Moodle diary.

### **Results from the realization of the project (June 2011)**

The benefits from the realization of the project were multiple: improvement of the quality of the teaching process, increased motivation of the students, increased interest of the students in the teaching process and the treatment of the new teaching units and the revision sections, increased creativity of both teachers and students, and also the archiving of base of knowledge and data base and simplified managing of those.

Courses divided into categories for 1st, 2nd, 3rd and 4th year have been created.

The first year courses were Music, Biology, Science and ICT courses.

Second year courses were music, English language, Practical teaching – economic technician, Practical teaching – legal technician, ICT and informatics.

The third year course was the pedagogy course.

Forth year courses were Macedonian language and literature and programming languages.

Additional organizational Moodle course, the members of which are teachers and the Headmaster of the school, was organized.

The forum module supplied better communication between the teachers and the students, but furthermore better communication between the students themselves.

Uploading a file module, i.e. homework, motivated the students to send their homework and assignments in the anticipated schedule, for which suitable number of points were given.

This system offers an interesting possibility for the teachers to control the process of studying and to view their activity while taking the given studying materials.

The group of students from 4th year in the course of Programming languages asked their accounts not to be closed down so that they will be able to use later all the materials used during the school year, the examples and the solutions to all the problems which are, what is the most important, separated into categories according to different topics so that they can be found and approached at any time.

Both students and teachers accepted positively the quiz module. The teachers have started building data base of questions and answers, and in the end of the test the students were able to see the results and the marks immediately, which is additional motivation because they were able to see their prize for the work they had done before.

The parent-role, enabled the parents (those who wished) to follow the activities of their children (only the activities of their own child), to check their activity in the discussions and also view the marks. In the current versions of Moodle the activation of the parent-role requires a short procedure which should be done by the administrator to give the parent an access to Moodle as parent.

### **Conclusion**

The need to introduce ICT in the teaching process is described in the paper. The state of ICT (equipment and skills) till 2003 is given and the projects realized in the period from 2003 to 2010 are described. Finally, the project for introducing e-learning system “Moodle” is described and the achieved results are given. The paper identified the factors affecting the successful introduction of ICT in the teaching process and they are found crucial for overcome the unsatisfactory state of ICT in schools: ICT equipment, equipment maintenance, continuous training and motivating, raising funds for ICT.