**Josif Petrovski, Snezana Savoska, Niko Naka**
Faculty of administration and information systems management, Bitola
University "St. Kliment Ohridski", Bitola
josif.petrovski@yahoo.com, savoskasnezana@gmail.com, naka_niko@yahoo.com

# NEED FOR LEARNING MANAGEMENT SYSTEMS IN HIGHER EDUCATION IN SUBJECTS THAT INVOLVE PROGRAMMING LANGUGAES[161]

*Abstract*

Subjects that are teaching programming languages may contain different approaches to learning, depending on the level of preparedness of students and the methodology used by the teaching staff in the lectures and exercises. Because of the need for practical work in programming, the introduction of e-learning support system for students can be as useful as it is for them and for teachers. Attaching the materials to a local system (intranet) and the possibility of accessing them and the program codes of classes, lessons and ancillary materials for exercises can bring increased efficiency and increased degree of control of the organization and behavior of students in class.

With the ability to simultaneous usage of necessary materials from the system, explanations of the professor and the opportunity for practical work, students very quickly can recognize the effects of learning and become more motivated for learning more content during class. The professor, who had previously set the material to the system has a feedback of student achievements in class, the problems that occurred and the way they were solved, and the time they spent to solve the problem. Students themselves have the opportunity to see whether they learned and can evaluate their knowledge through questions that are posed at the end the lesson.

## INTRODUCTION

In recent years we have witnessed how new software technologies that manage large data bases are implemented in the process of teaching, learning materials and assessment instruments. The application of this technology in the learning process leads to Learning Management System or abbreviated LMS. This system has not only found benefit in education, but it's used in different organizations where it helps in the development of electronic courses, enabling fast and stable access to them and constantly upgrades them. LMS has moved into a powerful tool for organizations which have in their nature tendency to constant improving skills of their staff. The impact of such systems is mostly felt beyond traditional educational institutions, although this same technology is always changing today's classical classroom. In short LMS is a software application for administration, documentation, tracking, reporting and delivery of e-learning in education systems and training courses.

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[161] Specialized paper

The difference in the use of this learning system for the teaching and use of the computer in the classroom as a teaching tool or computer applications to aid in the educational process lies in the systematic nature of LMS. LMS is a system that connects all the elements in the learning process. This system provides and manages educational material, identify the needs of students, follows the acquisition of educational goals, collect data and returns information for the progress. As the System provides adequate learning materials, it also participates in the administration when registering new users, monitor their development and report on progress of the individual and the community.

Most of the systems for learning management are posted on the web, i.e. requires access to the Internet in order to access the necessary learning materials easier and faster, and access to the administration section (Szabo, Micheal, Flesher, 2002). This way the system delivers its educational content to a wider range of students. Newer systems are integrated with management systems for decision making, which are used in noneducational institutions to collect information for the staff and offer suggestions for additional training for professional staff development.

**LMS IN EDUCATION**

The use of ICT in the educational process leads to increased use of the Internet in all segments of the educational process. However, greater use of the Internet is seen in higher education. Teachers need a database that connects educational programs, learning materials, assessment strategies, data for students and teachers, as shown in the picture below. LMS can be the link for changes in modern education through the effective and creative use of technology.
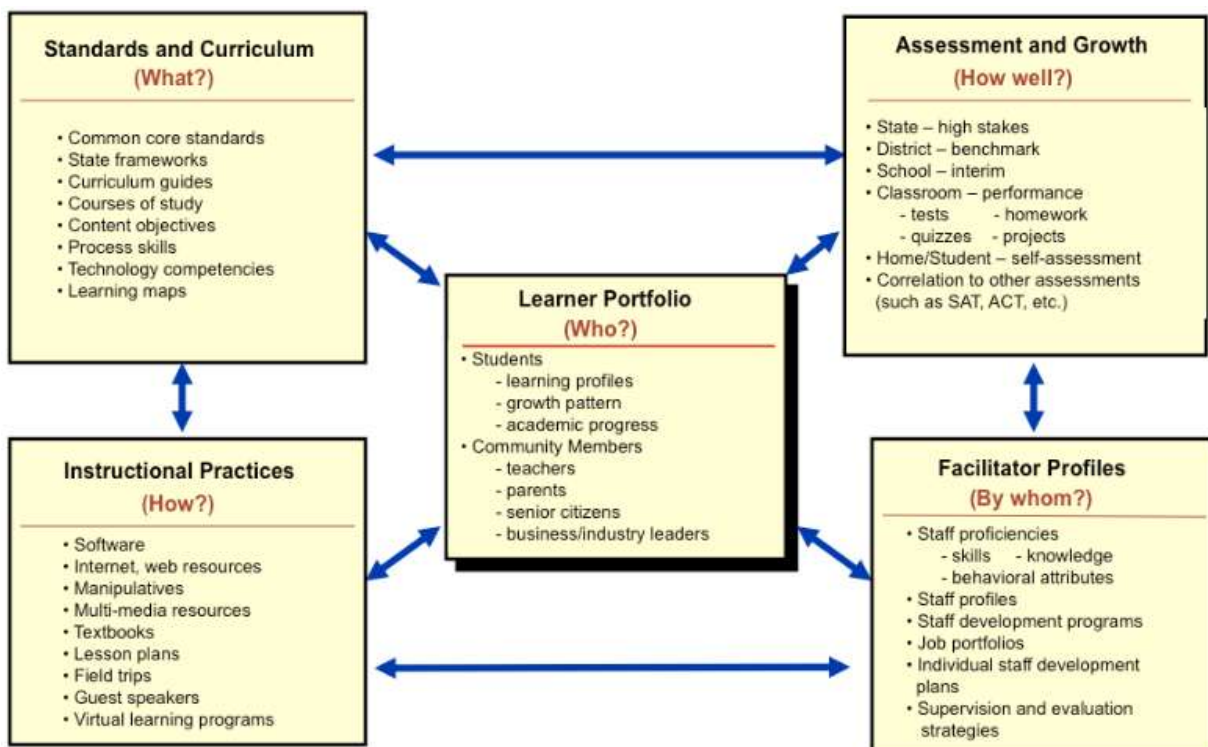


*Figure 1. Framework for Transporting Learning Into the 21$^{st}$ Centur. Retreived from "Center for Educational Leadership and Technology 2012" on 04.04.2013*

A number of researchers in this field argue that the challenge of universities is not whether to have ICT in the teaching process, but how they are created and implemented in the classroom. For many institutions, the adoption of these technologies means that teachers should not only become familiar with the new tools and systems, but also to understand and accept new concepts of teaching and learning in higher education (Phillipo & Krongard, 2012). This group of authors and researchers (Levy, 2003; Finley & Hartman, 2004) in their separate investigations give the following main points that universities are obliged to carefully check when planning to introduce Learning Management System:
- Vision and Planning
- The curriculum and possibilities of faculties
- Training of personnel and support
- Services for Students
- Copyright and ownership of learning materials

The proper understanding of LMS and its supplementary services is based on the role that LMS will play in future approaches to teaching because needs of today's students are not met by current approaches. Society has moved from industrial era to what many call information era. (Reigeluth, 1994). Today's educational system remains stuck in the industrial age, forcing students to be passive, and so weak students stay behind, and good students are prevented in their progress. This situation requires education to change in a new model, focused on meeting the needs of all involved in the educational process.

In the era of information model of education, LMS will evaluate the knowledge and skills of students, will work with teachers to identify the goals of the subjects, will offer support for collaboration and makes reports whose information would serve to increase the efficiency of the organization included in the studies. While LMS offers some of these features even now, there are still some limitations in order to achieve highest potential. One advantage is the availability of open source software, which greatly reduces the required knowledge of programming and design. This way, maintaining this type of system is easy and takes a few developers, not whole companies. Finally, one learning management system should:
• provide constructive teaching and focus on flexible learning objectives
• supports learning in school and outside of it, in order to extend the learning environment at home
• improve individual assessment and monitoring of progress, and to provide reports to adapt learning material to the student possibilities
• allow integration with other systems in a discreet way to improve collaboration between all stakeholders,
• enhance the professional development of teachers
• increase the effectiveness of available resources at a lower cost

Although there are significant challenges that currently impede the development of LMS to its full potential, perhaps the greatest opportunity for improvement of these technologies lies in the hands of students and teachers themselves, as well as other participants in the current educational system. By stating a desire to move into the information era will result with need for full implementation of a centralized system for learning management and only this way will reach its potential in a natural way.

## THE NEED OF LMS IN CLASSES WHERE PROGRAMMING LANGUAGES ARE TAUGHT

Programming languages are artificial language designed to communicate with machines, especially computers. These languages are used to create programs that control the behavior of the machine. Due to the different needs, thousands of different programming languages were created. Most of the languages work with a so-called command style, which sets out the orders to reach a desired goal. The process of programming includes logical part, which almost always has the same elements in most languages, and syntax part that is distinctive for all languages. Because of this second part, studying programming languages is a little difficult. Learning more languages means learning different words / commands that have the same goal. The study of programming language includes several aspects:
- Familiarize the student with the programming language
- Exercises for acquiring skills quickly detecting and correcting syntax errors
- Improvement of logical analysis
- Improving skills to solve problems

In subjects that involve learning programming language first thing to be learned is the language syntax and semantics of its instructions. Newer programming tools already contain elements which facilitate the process of making orders. It can be either audio - visual support, assembling blocks with orders, or offering assistance in correcting errors. Without these helpful tools the process of programming would be very difficult. If a student has little experience with programming, the number of errors in syntax would be larger. Even the more experienced developers need help in writing the commands. Not always we can remember all the instructions and the way they are used properly. This becomes more difficult if we know more than one programming languages. We often use commands from one language to another, and errors occur and the program does not work. So the benefit would be electronic learning system through which will assist the student in the preparation of orders. This system would offer assistance to students through a list of relevant commands to select and not waste time on searching the Internet, or written literature. Through a simple set of questions offered by the system, the student selects the answer by which the system offers a solution to the problem that the student has. The system can offer examples in which the student will learn and solve the problem. Through involvement in system forum students can discuss between themselves on a problem and offer their solutions, because in the process of development there are different ways to solve the same problem. It should be noted that the purpose of an LMS is not to replace the teacher but to serve as a valuable tool for assisting the process of learning a programming language. The system can offer the option of testing students and check their knowledge of the language studied. After observing the student results system will provide learning materials in the area where the student showed little knowledge. This way the student can check his knowledge and improve it.

## CONCLUSION

Students today are influenced by various forms of education, whether formal or informal, which are often found outside the school. These experiences are global, so the moderators are required to connect the student with the world, for easier sharing these experiences. Learning System can empower teachers, parents and students through access to certain information to change the shape of the student's life throughout the educational part of his life.

For most institutions LMS is the most important tool to aid the learning, educational instrument by which information can reach easily and fast to the students. The system has a primary role to assist in educational mission of the institution, and never seeks to replace the teacher. In terms of changing the concept of teaching and learning, LMS must be modified to meet the needs of educators and students. So each Learning Management System must be flexible. This brings the definition that LMS is not only an online course, but it contains tools through which it actively involves in teaching and administration, also in facilitating the cooperation of all parts involved in the learning process. Finally, this system must be cost-effective, simple and easy to operate on one side, while scalable and easy to maintain on the other side.

**REFERENCES**

B. Vesin, M. Ivanovic, Z. Budimac (2009) Learning management system for programming in java. Annales Univ. Sci. Budapest., Sect. Comp. 31 (2009) p75-92

Phillipo, J. & Krongard, C. (2012) Learning Management System (LMS): *The Missing Link and Great Enabler*

Macdonald, J., & Poniatowska, B. (2011). Designing the professional development of staff for teaching online: an OU (UK) case study. Distance Education, 32 (1), 119-134.

Levy, S. (2003). Six factors to consider when planning online distance learning programs in higher education. Online Journal of Distance Learning Administration, VI

Finley, L. & Hartman, D. (2004). Institutional change and resistance: Teacher preparatory faculty and technology integration, Journal of Technology and Teacher Education, 12(3), 319-337.

Kirkup, G & Kirkwood, A. (2005). Information and communications technologies (ICT) in Higher Education teaching – a tale of gradualism rather than revolution. Learning, Media and Technology, 30(2), 185–199.

Shauer, J., Rockwell, S., Fritz, S. & Marx, D. (2005). ImplementingDistance Education: Issues Impacting Administration.Online Journal of Distance Learning Administration, VIII.

Georgina, D. A., & Olson, M. R. (2010). Integration of technology inhigher education:A review of faculty self-perceptions. Internet andHigher Education 11, 1–8.

Sahin, I., & Thompson, A. (2006). Using Rogers's theory to interpretinstructional computer use by COE faculty. Journal of Research onTechnology in Education, 39(1), 81-104.

Long, P. D. (2001). Technology support trio. Syllabus: New Directionsin Education Technology, 14(11), 8.