

APPLICATION OF E-LEARNING SYSTEM IN LARGE BUSINESS SYSTEMS

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Abstract: *Permanent education and training of employees by using modern ICT technology is the basis for quality and successful growth of large business systems. Lack of education of employees is one of the important causes of inefficient use of implemented software solutions in the company.*

This paper presents one of the possible solutions to education and training of employees using the E-Learning system based on the MS SharePoint and Moodle software packages, one that enables permanent employee training and upgrading their skills. In this case, intranet portal, with a general interface to employees, integrates and unifies all corporate knowledge and intelligence. It allows for an autonomous work of employees with a goal of raising the level of personal knowledge and skills necessary to perform their daily tasks.

Keywords: *e-learning, Moodle, SharePoint portal, LMS, business system, training, adaptability, digital identity*

1. INTRODUCTION

In modern management conditions, education of the employees by using PC resources represents an important factor of valuation of the staff potential of large corporate systems. Due to its nature, education of employees must necessarily be permanently innovated and improved. Indispensable for a constant education and improvement of knowledge is a system of internal training of employees that provides systematized access to the training and establishment of a unique way of employee knowledge assessment.

The system of internal training of employees by using IT resources is meant to provide a systematized introduction of internal training that employs IT resources in its implementation. It is also supposed to establish a uniform way of evaluation of knowledge as well as an efficient use of IT resources of corporate systems for an efficient conduct of training and control of knowledge of the employees.

The paper will further highlight and point out the importance of knowledge, abilities and process of training for the development of large corporate systems. The process of training represents an answer to the changes in the environment and the company itself and is organized as a systemic activity for preservation and development of the potentials of employees.

2. DESCRIPTION OF BUSINESS PROBLEM

The level of knowledge acquired during one's education process is only part of the knowledge required for performing a certain work or pursuing a certain profession. In case that knowledge is not refreshed and amended, it gradually vanishes from memory – the once acquired knowledge gradually fades away. At the same time, the level of necessary knowledge in a certain field increases by geometric progression. Thus the gap between the necessary and the real knowledge becomes wider and wider. The level of knowledge acquired in the course of college education is considered to decrease up to 80% in the following 5 years, and the knowledge of IT technologies becomes obsolete in 2 years. The only solution to this problem is continuing innovation and refreshment of knowledge of the employees.

One of the biggest problems of the management of less successful business systems is their failure to recognize the need for permanent education of the employees and for investing in the process of employee training. Usually, the expenses regarding training and development of employees are clearly seen, whereas, on the other hand, there remains uncertainty and doubt regarding the possible benefit of that process.

Large business systems are faced with fierce market competition on a daily basis. The issue of adequate positioning and of obtaining a leadership position in an

area in which a certain business system operates is only possible by increasing the efficiency and the quality of its products and services. The key to accomplishing the above mentioned goal is the human factor, namely, knowledge, abilities, skills and competencies of the employees that directly affect the competitive positioning of the business system.

Generally, the problems regarding education of the employees in disorganized business systems can be reduced to the following facts:

- Education of the employees in the company is inadequate, insufficient and sporadic;
- The training of the employees is non-standardized and not uniformly organized;
- There is no planning, monitoring or evaluation of the effects of the training of the employees;
- The company has the need to achieve the planned level of the quality of knowledge of the employees, according to standard, uniform principles.

The basic customer request is to develop a system that will enable permanent education of the employees based on principles of adaptability and personalization in the complex business system in which a large number of employees work and where there are a large number of reports and documents, a result of autonomously developed applications, commercial applications as well as unstructured documents. The realization of this request implies a solution that is possible to apply to a large number of dispersed computers, by using web portals as a uniform access point to the various bodies of information, contents and services.

3. TECHNOLOGICAL PLATFORM AND REQUIRED RESOURCES

The analysis of technologies and platforms available for the creation of a System for internal training of the employees by using IT resources brings us to the conclusion that they are both numerous and varied. The choice of the platform for the creation of the System for internal training of the employees by using IT resources, which will be presented in this paper, is, on the one hand, a commercial, MS SharePoint solution and, on the other hand, the open source solution, the Moodle. By combining these two products it is possible to create and exploit the mentioned System in a quality manner.

MS SharePoint

The MS SharePoint is one of the mostly spread systems for cooperation, information sharing and document management, one that tracks the complete life cycle of the document, from the moment of its creation, to publishing, to the moment it is archived. The MS SharePoint will serve for the construction of the portal designed for posting teaching materials, additional documents, instructions, audio/video materials, for publishing news and for an access to information on the availability of education centres and equipment. Not only will the MS SharePoint be used for the realization of the portal as a platform, its

role will also be very important in enabling the team work, exchange of documents and team work on them [1].

Advanced functionalities of the MS SharePoint, such as a possibility to design work flow, enable the automatization of the process:

- Approval and publishing of the teaching materials;
- Scheduling trainings and testing;
- Notifying all participants of changes in individual documents;
- Tasking and reporting on the results of completed tasks and other.

Moodle LMS

The Moodle LMS is an open-source course management system (Course Management System - CMS) implemented by universities, schools, organizations and individuals, primarily for the purpose of improving the courses by using web technologies. According to the data of September 2011, there are currently over 5 million registered Moodle systems [2]. The Moodle is an acronym for the Modular Object Oriented Developmental Learning Environment.

It was developed by using open source technologies and libraries, made in PHP which in itself is a free solution and designed following pedagogical principles and meant to help teachers easily create courses as well as to achieve an effective and efficient community of e-learning system users and provide students with an easy access to the same contents regardless of time or location.

The core of the Moodle are courses that contain both activities and resources. There are more than 20 different types of activities (forums, dictionaries, wikis, tasks, tests, applications, SCORM players, bases) and each of them can be adjusted. Activities can be combined into lines and groups which allows for the students to be conducted along the paths of studying. In that way, every activity is a new process stemming from the result of the previous one. There is a large number of tools for organising students' communities, including blogs, systems for sending messages, texting, lists of participants, as well as tools for evaluation, reporting and integration with other systems.

Resources

In order that the realization of permanent education of the employees by using IT resources be possible and successful, it is necessary that an adequate space should be provided, equipped with computer communicational tools, intended for teaching. Hence it is necessary that a work space be defined which will function as an Education centre.

The Education centre is an already defined and equipped teaching space. To make teaching comfortable, it is recommended that the centre should host 13 work places equipped with computers. For each attendant of the course one work place should be provided and one place is for the teacher. Depending on the needs and conditions, it is possible to form a number of smaller Education Centres with fewer work places. Figure 1 presents a draft of one of

possible solutions for the equipment of the Education Centre.

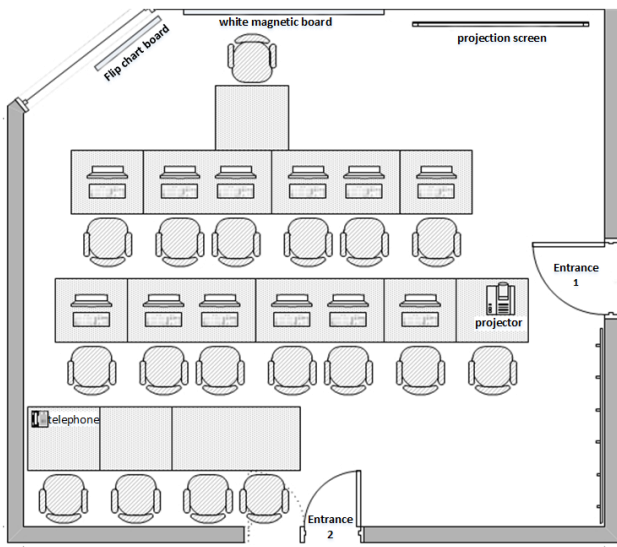


Figure 1: The interior and position of the computers in one of the training centres

Not only do the teacher and students have the mentioned IT equipment at their disposal, but they also have a projector, a printer, a canvas for projections, a white magnetic board, a flip chart board and other necessary equipment.

It is also recommended that a mobile Education centre be established instead of a standard workstation, a centre that will accommodate 7 laptop computers for 6 students and one lecturer. The purpose of mobile education centres is to enable training in cases training has to be held outside the Education centres, e.g., in a specialized area that does not belong to the company, hotel, the fair...

4. SOLUTION PROPOSAL

The basic idea for overcoming the above business problem is the implementation of the systems for internal training of employees based on the adjustment of the existing systems for electronic document management, thus overcoming the need to develop new software modules.

By using the platforms and providing the necessary resources listed in the previous chapter a System for internal training of employees can be created using already present IT resources in large business systems.

The main purpose of the system is to give the employees of the company, in an adaptable way, the opportunity for a permanent refreshment of the acquired knowledge and to raise the level of knowledge and skills in the areas that need to be mastered by the employees in order that they should perform their everyday tasks in a high quality manner.

The aim is to implement the adjustment in such a manner that the process of adjustment should be economically feasible, effective, and suitable to implement on the platform that is used. The proposed personalization in this model is implemented at the group level according to the following criteria: affiliation with the organizational unit,

the workplace, the ad hoc work, preferences, or on the basis of a combination of the above criteria.

The employees begin using the System for internal training logging into the network of the Company. Using the digital identity, the employee logs on to the Active Directory in the domain environment [3, 4]. Once the employee starts the browser, he accesses the home page of the portal of the System for internal training of employees, using IT resources. The portal identifies the employee on the basis of his user name and opens a personalized portal page, showing the employee's name, surname and photograph. Upon such authentication, the employee is entitled to use each and every of the functionalities on the home page of the portal. The portal contains numerous activities through which the user can access information, documents and services the web portal offers. Depending on the following criteria: affiliation with a particular organizational unit, his job specification, participation in a project, the role he is assigned in the project, participation in some of the jobs at the company level or depending on the combination of the above criteria, the employee is entitled to access the desired category on the portal within which he receives adaptive and personalized contents with documents and information optimized for his training and specialization [5, 6, 7].

The categories of the Web Portal of the System for internal training of employees by using IT resources that are available to the employees and that need to be singled out are as follows:

- The "News" category - the "News" category brings news about the trainings held in the Education Centres, material for self-education, published professional papers and topics on the forum, etc.;
- The "Library" category - contains all documents of different formats related to education of employees aimed for different target groups. The working material related to the process, such as preparation of education materials, lecturing, testing employees is accessed by specific categories of employees, e.g., lecturers and coordinators, whereas other education materials necessary to raise the level of knowledge of employees are available to all employees across the organisation. Access to training material is organized for each individual course;
- The "Training" category - This category contains the names of all the training courses in the Company, grouped by areas such as: Technology, Computer Science, Business skills, etc. The name of each training is linked and opens a new site that relates to a specific training. It contains all the information regarding the training of employees. Furthermore, it offers a service for the participants to apply for some of the planned courses;
- The "Knowledge testing" category - designed to access the Moodle LMS whereby tests are created to assess the participants' achievement at individual training courses. It enables launching individual tests where participants are invited to answer individually and test their knowledge;

- The "Support to organization" category - contains all the necessary information, documents and services that enable an adequate and effective organization of the training sessions;
- The "Calendar" category - This category shows important events regarding the training, the current date, state and religious holidays, important dates for the Company;
- The "Resources" category - this category displays information about school centres, enterprises, meeting rooms and equipment for presentations, with the following information: location of resources (city, address, floor, office), information about contact persons responsible for the functionality and resource maintenance (name, surname, e-mail address, phone number), availability of resources (in case resources are engaged, information about the period in which the resource is engaged, who uses it and for what purposes), equipment of resources (number of computers, projector, printer, screen ...). Figure 2 presents information related to one of the training centres. The authority to update data related to resource management is allowed only to employees responsible for those resources.

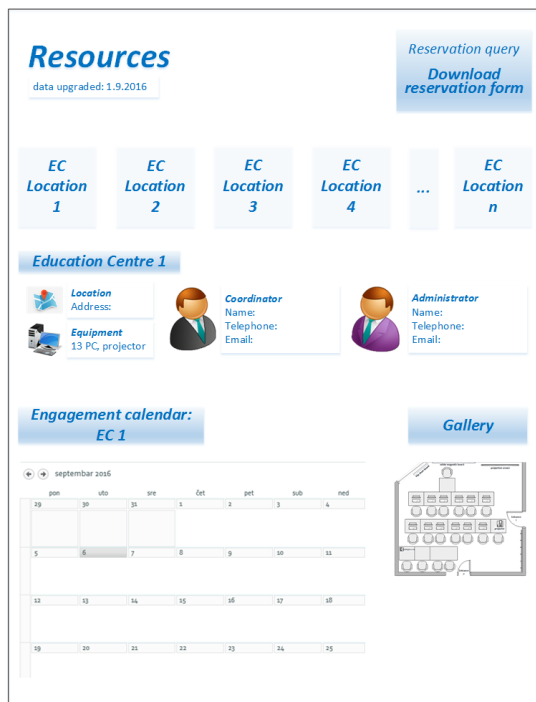


Figure 2: Presentation of the Resources category on the web portal

- The "Reports" category - serves for reporting to any interested participants in the process of employee education, from the trainees to the trainers, coordinators and finally to the top management who receive specific types of reports. Also, this is a category where, depending on the level of authority, reports on the results achieved by the participants can be found.

5. STAGES OF IMPLEMENTATION OF THE SOLUTION PROPOSED

The system of internal training of employees by using IT resources can be established and launched through the following activities and sub-activities:

1. The establishment of a uniform system of organization and coordination of training using IT resources through the following sub-activities:
 - 1.1. Analysis of the existing organization, coordination and implementation of internal training;
 - 1.2. Proposal to improve the organization, coordination and implementation of internal training by using IT resources;
 - 1.3. Design of the system of organization, coordination and implementation of training by using IT resources;
 - 1.4. Provision of infrastructure - the formation of the I and II category education centres and a mobile education centre.
2. Defining standards for the execution of e-training through the creation and verification of supporting documentation (instruction, decisions, etc.)
3. Development of an intranet web portal through the following sub-activities:
 - 3.1. Designing
 - 3.2. Creation, integration with the information system of the Company and testing
 - 3.3. Implementation in a real environment
4. Execution of the designed system of organization, coordination and implementation of internal training using IT resources

6. RESULTS ACHIEVED

Launching and implementation of the System for the internal training of employees by using IT resources resulted in the following:

- The platform for the continuing education of employees in the company and the basis for the development of on-line education of employees;
- An adequate level of knowledge of employees in the field of general computer literacy. This results into a higher employee efficiency at workplaces that require the use of computer technology in their daily work;
- More efficient work performance of computer users;
- Standardization of all internal training programmes by using IT resources (defining the minimum and the required knowledge of employees depending on their work engagement, formal definition of the types and contents of e-training programmes in all segments: courses, teaching materials, lecturers, responsible persons, the method of testing and evaluation of knowledge of employees upon completing their respective e-learning courses).

- Establishment of a uniform system of organization and coordination of internal training by using IT resources (establishment of education centres according to type, linking organizational units with education centres, selection of participants and defining their roles in the process of internal education, definition of responsibilities and accountability).
- Introducing the organization, conducting training courses and knowledge testing of employees by a more efficient use of the internal resources and the existing infrastructure of the Company and cost savings in comparison with possible outsourcing of training experts.
- Uniform management of IT resources used in training the employees in the Company.
- Defining the Education centre as a universal, multi-purpose work space, fully equipped for performing training with or without a computer, training sessions, knowledge testing, introducing employees into work, presentations and similar business activities.
- Teachers to get hold of material for standard training, evidence of the candidates, material for testing and methods of uniform evaluation;
- HR insight into the results of candidate achievement tests;
- Continuing organization and conducting of internal trainings in the Company.

The world's best and most successful companies become efficient by using all of their resources, especially the most valuable one – the human resource.

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7. CONCLUSION

A large number of companies still believe that the key to gaining and maintaining a competitive advantage in the market is the development of intellectual capital that includes cognitive knowledge (knowing what), advanced skills (knowing how), systemic understanding and creativity (knowing why) and individually motivated creativity (understanding the importance). The focus of training increasingly shifts from the first two elements - the acquisition of knowledge and skills - to creating conditions for the employees to understand the relations and the reasons why something works and to be motivated to think in an innovative manner and contribute to continuing quality improvement.

Companies around the world invest millions in the organization of various employee training programmes to achieve competitive advantage in the market. The growth of investments in education is a result of adopting the view that knowledge is a factor that makes a difference between the successful and the unsuccessful, whether it is companies or employees within a company.

The implementation of the System for internal training of employees by using IT resources, conducted on the MS SharePoint and Moodle LMS platforms and based on the principles of adaptability and personalization, enables:

- All the employees in the enterprise to access the information on available courses and terms of training, get an insight into the course contents, dynamics and access to instructions and tests for autonomous work;
- Constant on-line education and raising the level of knowledge;
- The opportunity for organizational units' candidates to apply for training and the possibility to track their achievement at training;
- Coordinators to organize and schedule the courses;