USAGE OF MOODLE E-LEARNING PORTAL IN THE RECRUITMENT PROCESS FOR NEWCOMERS - COMTRADE GROUP CASE STUDY

SRĐAN ATANASIJEVIĆ

ComTrade Solutions Engineering, srdjan.atanasijevic@comtrade.com

TANJA PERIĆ

ComTrade Group, tanja.peric@comtrade.com

IVANA BOŠKOVIĆ

ComTrade Solutions Engineering, ivana.boskovic@comtrade.com

1. ABSTRACT:

In this paper we show the application experience of Moodle portal in recruitment process. For five years, ComTrade Human Resources Department has successfully used the lessons that have been posted on the Moodle website, in order to better prepare candidates for taking the qualification exam for EdIT school and for professional practice. In this way, more than 1600 students readily took to the challenge of working with project teams of ComTrade. In this way, through further selection processes over 100 young engineers got the job.

2. RAISING QUALITY OF RECRUITMENT

Greater employment of software engineers in ComTrade began in 2005-2008. During this period, the recruitment process was not formalized. Preparation and introduction of new candidates to the project was the responsibility of the team leader. Each team had its own methodology employing young engineers. This period is characterized by high staff turnover as a result of lack of understanding of market needs, and of uneven quality and experience of new employees.

2.1 DIFFICULTY IN RECRUITING OF SOFTWARE ENGINEERS

In late 2008, an analysis was made, which was aimed at understanding the process of introducing new engineers in the process of software development, improving the quality of the recruitment process and create an environment conducive for work and promotion of employees. The analysis showed the following features that are essential for the implementation of the new process:

1. The quality of university education is not enough that students straight out of college to work on commercial projects. The time required for the additional training the engineers and up to 6 months to become productive engineers.
2. Mentors are not 100% of available to train new engineers. They work on commercial projects. In some cases, mentors help diminished the capacity of our most productive engineers and 30% of their time.
3. Quality of training is directly dependent on the supervisor.
4. The technologies are changing rapidly. Market requires technologies that do not have in the company.
5. Some mentors do not transfer knowledge in the most productive manner. Therefore, it should be continuously eLearning for the preparation and standardization of knowledge of graduates before they introduce the mentoring process.
6. There is a huge need for the knowledge sharing on an institutionalized way - internal knowledge share. Example: In the company is an engineer who is familiar with BigData, and the demand of the market is that for the 3 months we have a team of 5 + people. We need to spread knowledge quickly.

2.2 PRINCIPLES OF THE RECRUITMENT PROCESS

Based on the identified gaps and defining needs, we defined the objectives in the future that need to be reached. We need to develop a process that should be in the period between 2009 -2013 to reach the following criteria:

1. Shorter cycle of introducing new employees in commercial projects (to reduce the period of the introduction of new employees from 6 to 2 months),
2. Provide mass recruitment, expand the number of candidates who come to the selection process and guide them through the forms of targeted education before the employment,
3. Reduce the cost of training new employees,
4. Provide a system of preparation of candidates in the initial stages independent of the presence of a mentor,
5. Provide various parameters for monitoring the learning curve of candidates. The aim is that the personal results select the best candidates for the next cycle of training that require a higher degree of presence of a mentor,

6. To reconcile inconsistent prior knowledge of candidates coming from different faculties. The main reason is lack of harmony curricula faculty in the field of software engineering in Serbia.

2.3 THE ROLE OF E-LEARNING SYSTEM IN THE RECRUITMENT PROCESS

Recruitment and employment was redefined. This process is designed as a funneling process. It consists of three institutional forms of activities, see Figure 1.
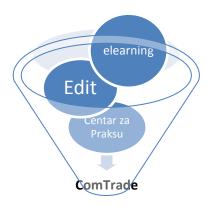

Figure 1 ComTrade recruitment funneling process

The first steps in the process funneling work with a number of candidates, with minimal interaction with mentors. The lowest form of the recruitment process, team work through the project at the Center for practice, requires a high level of commitment mentor. Characteristics of these three forms of student involvement in the ComTrade:

1. *ELearning portal* is designed as a mechanism for adaptation and consolidate students' knowledge acquired at the respective faculties and to prepare for participation in other forms of the ComTrade. Students register on the portal, choose courses, take exams, and so qualify to be included in the EDIT School and the Center for practice.
2. *Practice Center* (*Centar za praksu*) participation in which students, during the calendar year, spend 2 months to 6 hours a day working on their projects with the supervision of engineers ComTrade. The result of this form is to better prepare students for work in the commercial business, and work on problems that they form the subject of the final paper in college, in consultation with their lecturers and profesors.
3. *Edit* (*Summer school)* is intended for graduate students. In two weeks during the summer break, the 80 hours of work, the candidate finishes a software project. Attended two week intensive work as a programmer, knows all the steps of software development from analysis of requirements, contracting, planning, design, development, testing, configuration management to the delivery of the production environment. In the process of preparing students to be part of a team of software engineers ComTrade eLearning portal is the first step.

3. COMTRADE E-LEARNING PORTAL

In order to improve the knowledge and competences, ComTrade through E-Learning portal wishes to help and enable all interested students to gain the necessary knowledge with access to E-Learning material through ComTrade E-Learning portal. The portal is intended for candidates who are applying for a position in ComTrade ITSS, or in any of ComTrade workshops, such as EdIT summer school programming.

We welcome all those who want their knowledge to improve, learn more and improve their competence. E-Learning portal enables distance learning - through the internet from a computer trainee, material review prepared by competent experts in ComTrade ITSS, and then taking the tests within each course. Access to self-learning program provides an opportunity for participants to remind themselves of their already acquired knowledge, but also to focus on the things that need to be addressed.

3.1 LMS PLATFORM OF CHOICE - MOODLE

Moodle (*Learning Management System* - LMS) is free of charge, Open Source software package designed according to pedagogical principles. The aim of this program is to help educators to create effective online learning communities. It can be downloaded and used on any computer (including World Wide Web).

This Learning Management System can be used independently or for education on Universities [1] or companies. There are many possibilities within this platform. First we can install different languages by our choice from package (beside English who is the only one by default) and in that way we enable access to various consumers [2]. There is the possibility to adjust server time zone or user's personal time zone, as well as the state. Module activities are: databases, forum selection, lessons, label, chat, vocabulary, resources, test, questionnaire, tasks… In this platform has to exist specific rolls that are assigned, there is seven of them and they are: *Administrator, Course creator, Teacher, Non-editing teacher, Student, Guest, Authenticated user* and there is even a possibility for you to add new rolls.

Next important thing is that we can create courses. Each course has its own category, which includes a description of the course, and from that we can see in which category certain course is. These categories can be as much as we want and also we can add new ones. Moodle allows application to a large number of courses, access to topics in a course in which the student is registered, review of selected course materials, taking tests, and results review of tests performed. The idea is that students learn, establish and expand their knowledge and prepare for the test by using learning materials selected by the instructor. Students take tests, and a notice of the results of the exam /test arrives to instructor via e-mail. Test results are available at any time to students.
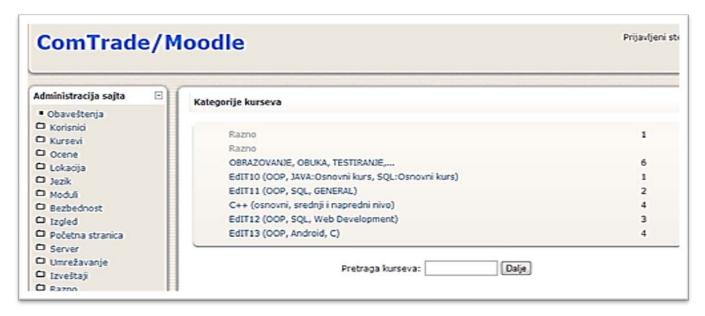
Moodle E-learning instructor can: create courses, define subjects, make a choice of materials, define questions, tests, review tests, entry information, send e-mail, search and do reports. This is done using the SCORM standard.
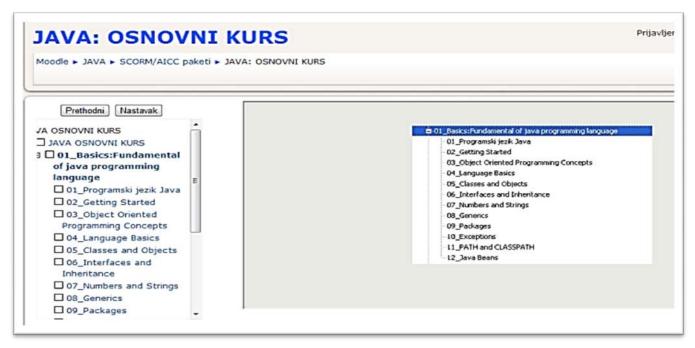
3.2 IMPLEMETATION OF MOODLE

When we create course, we first enter to that course and at the beginning there is nothing. Then we enter to editing course and we begin creating. There are many options for placing the material in the course. Some parts of the course can be made visible for some users but not for

Tests can be created using eXelearning, but also it can be created directly on the Moodle website. Tests for Edit E-learning portal are creating directly on Moodle.

Layout of the site is also very important. There are some schemes already established at website. It should be selected the one that best suits our needs. And at the end user registration is important too. The user can register himself or administrator can do that for him.

Figure 2: List of active courses

others, see Figure 2. On the right side you can see information about latest news, upcoming events, recent activities, update rate and the present users. You can add as many resources as you want such as: label, text, web pages, link to the file or link to the Web site, directory, IMS package etc.

Figure 3: ComTrade eLearnig platform - Java Basic Course

In ComTrade Moodle we have these course categories and courses:

Training, education and testing:
    ADOBE FLEX,
    JAVA: advanced level,
    MVC.NET,
    Selenium test tool and SoapUI
EdIT10:
    OOP,
    JAVA: basic course, see figure 3,
    SQL: basic course
EdIT11:
    OOP,
    SQL,
    General (MVC, jQuery, Entity framework, Selenium, SoupUI, Unit test and Linq)
C++ course:
    Basic level (Exceptions in C++);
    Intermediate level (OOP in C++, Pointers and references, Overloading and overriding function, Special functions of the members of the class, Namespaces and Exception Handling);
    Advanced level (Standardized classes and functions, IO in C++, Standard C++ Library- Vectors, Standard CPP Library- Maps, STL Iterators, Standard CPP Library- Strings);
EdIT12:
    OOP,
    SQL,
    Web development (HTML- what is it, what is his elements and his basic elements; CSS- what is it, basic structure and basic tehnics; Java Script- what is it, structure and how to use it; jQuery- what is it, what he can do and how to use it);
EdIT13:
    OOP,
    Android
    C programming

4. EDIT AND ELEARNING

ComTrade traditionally organize international programming summer school and it's called EdIT- **Education for Innovative Thinkers**. The goal of this summer school is to provide opportunity to young software engineers who possess the basic theoretical knowledge that through practical work develop their skills and prepare for a successful career.

While working on the project tasks under the supervision of experienced mentors, students are adapting to real condition which prevailing in a high-tech company and gain valuable experience that could then be applied to career advancement.

In the period of 2009 to 2013 eLerning portal extensively used for training of potential participants EDIT. Figures 4, 5 and 6 show the relationship between the successful completion of the training participants and EDIT.
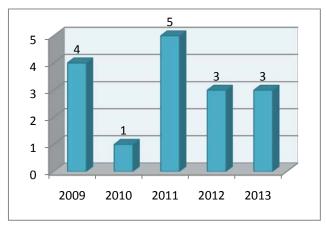

Figure 4: Distribution of successfully finished eLearning training per year
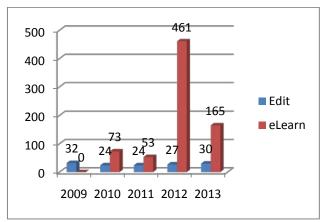

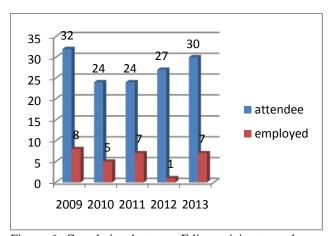Figure 5: Correlation between Course attendants and Edit participants

Figure 6: Correlation between Edit participants and new employed

4.1 STATISTICS

In tables below you can see Moodle statistics for the past 4 years, see Figure 7. The first year registered a large number of students in four courses offered. No one has successfully completed the course. The material posted on the website was not adjusted students. Next year we redesigned the course and offer new. In the coming years there is a trend of massive use eLearning portal in preparation for interviews.

In 2012, a record number of candidates who have completed one of three modes of training, 461. It was a year when the spread extensively overnight delivery center in Belgrade and Kragujevac and when employed over 60 new engineers.
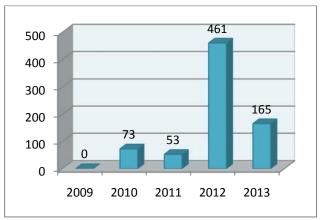

Figure 7: Number of courses per year

In 2013, still remains a trend for eLearning platform used to prepare students for the edit, as well as new graduates for job interviews in ComTrade. In the first 8 months, the training is successfully completed 165 participants, and we expect that their numbers exceed 220 by year-end.

In four years, the platform used by more than 4000 active participants in all courses: 752 candidates have successfully completed their training (20%). Of these, 137 attended EDIT (20%). It is directly across the EDIT employed 28 participants (22%). Through the Center for practice, in the last 5 years, it's been more than 60 candidates, previously prepared by working on eLearning portal. The use of Moodle as a platform to prepare candidates for work in COMTRADE is entirely fulfilling expectations.

7. CONCLUSION

The recruitment process for candidates who rely on the use of eLearning platform for mass approach students showed their strengths in practice. After five years of experience processes are fulfilled with the following objectives given in the strategy:

- Cycle of introducing new employees in commercial projects has been reduced from 6 to 2 months.
- Numbers of candidates is in the process of funnelling large and exceed 200 at any time.
- The costs of preparing candidates to work on commercial projects decreased. We invest in the most promising students are ready to learn and progress
- The system was established. Progression of candidates is monitored across multiple parameters through funnelling process.

In the period: 2012 - 2015 focus on collaboration with universities. The aim is to harmonize curricula, modernize studies computer science at the universities in the field of software engineering in Serbia.

ComTrade is part of INCOMING (Interdisciplinary Curricula in Computing to Meet Labour Market Needs). This is a 3-year project (2012-2015) funded by the TEMPUS IV programme of the European Union). It is a Joint Project / Curricular Reform (JPCR) project with the objective to initiate capacity building for interdisciplinary studies at universities in Serbia, to be offered both in English and in Serbian, at all three levels of study (BSc, MSc, PhD), and in at least one of the following three modes of study: face-to-face mode, distance learning, and blended mode.

To do that, the project will develop, accredit, implement and evaluate several interdisciplinary study programmes, at four different universities in Serbia. By developing and implementing these programmes, the project intends to enhance employment opportunities for graduates of the new programmes, targeting specifically Serbian labour market and ComTade Group needs in interdisciplinary computing.

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