SIE 2015
6th International Symposium on Industrial Engineering
24th-25th September 2015
FACULTY OF MECHANICAL ENGINEERING
STEINBEIS ADVANCED RISK TECHNOLOGIES
INNOVATION CENTER FME

ONE SOLUTION OF TRAINING COURSE FOR IMPROVING EMPLOYEES SKILLS IN IT DEVELOPMENT COMPANY

Marko Arsenovic, Srdjan Sladojevic, Darko Stefanovic,
University of Novi Sad, Faculty of Technical Sciences, Novi Sad, Serbia

Abstract. *Training courses present an adequate way to broaden the knowledge base of all employees, which enhances the company's capability to embrace and use advances in technology, building a more effective, highly motivated and efficient working team. This paper describes the two approaches of designing the trainig course. The approaches were implemented and evaluated at the two groups of IT developers from the same company. The analytical results showed that the courses where participants are more engaged in, with assesments tasks and small projects, give significantly better results than traditional courses where participants act solely as listeners.*
Keywords*: IT employees, training, knowledge transfer*

I INTRODUCTION

Training and career development play a significant role in any company or organization that aims at progressing[1]. Training refers to the process of acquiring the fundamental skills necessary for a certain work position. It targets specific goals, for instance understanding a process and operating a certain machine or system. Career development through training and courses improves employees performance in a way that they could make better decisions, manage people and think creatively.

Constantly changing business environment is pushing the organizations and companies to train and develop their employees to stay ahead of the competition.

Being an employee in an IT industry is a challenging task, often being overwhelmed by large projects, lack of time due to constant deadlines [2]. As a result of that, many employees have some shortcomings in their working skills. A training course allows them to improve skills so that every day working tasks could be accomplished successfully. A development program through courses and trainings brings all employees to a higher level so they all have similar abilities, expertise and knowledge. Such a program can benefit a company by increasing productivity in a way that each individual does not have to rely heavily on others to complete basic work tasks. Providing the required development program to their employees, companies are getting overall well-informed and effective staff who are able substitue one another should the need arise. They are prepared to work on teams or work independently without constant help and supervision from others in their workplace.

The employees who receive the necessary training are able to perform the job better and become more aware of proper procedures for basic work assignments. The training may also build the employee's self-reliance because of the fact that they comprehending the industry and the responsibilities of the job. This confidence may push them to perform even better and think of new ideas that help them excel. Continuous training also keeps the employees on the cutting edge of industry developments, which is of great importance in the IT sector, where technology grows exponentially. Employees who are efficient and capable to keep up with new industry standards help their company hold a position as a leader and strong competitor within that industry.

This paper describes approaches and educational methodologies of training courses held in one IT company. The rest of this paper is organized as follows: related work in the field is presented in Section III. Methodology is described in section IV while Section V contains the results and comparison of the training courses.

I RELATED WORK

In relation to IT training, there are various methodologies and approaches that can be used to

deliver a training course. The closest related work is a research paper by Thomas Acton & Willie Golden [3]. Job-related training increases an employee's competence to perform job-related tasks. This research was conducted on IT sector employees, because of their level of proficiency with technology they are able to adopt to new training methods that incorporate computer and communications technology. The research found that technology driven methods such as CBT (computer-based training) and web-based training were not that common. The preferred training method is the one where the instructor leads formal training and where organizations derive direct and indirect benefits from that training. Organizations and companies that are devoted to training and professional development have employees who display better performance, have reduced level of work related stress and have overall working enviroment satisfaction. Due to this research result, instructor led training was chosen to be the basic course design, with two aproches which are described further in this paper. Many companies' training programs use a combination of methods to capitalize on each method's strengths for learning and transfer [4]. The traditional training methods discussed in this book are organized into three broad categories: presentation methods, hands-on methods, and group building methods. Presentation methods are methods in which trainees are passive recipients of information. This information may include facts, processes, and problem-solving methods. Lectures and audiovisual techniques are presentation methods. The lecture method has several disadvantages. Lectures tend to lack participant involvement, feedback, and meaningful connection to the work environment—all of which inhibit learning and transfer of knowledge. Based on this research we made a comparison of basic lecture training without involvment and training where participants are more engaged during the course.

III METHODOLOGY

This section describes the general ideas, concepts of courses templates approach methodology, and a description software engineering courses design.

Two courses were held at the same period of time in one IT company. Each course had 15 participants, all of them were the IT developers from the same company. The both groups had the equal number of senior and junior developers, because of the course evaluation, the rest of developers from that company did not participate in the courses.

Setting goals helps to evaluate the training program and also to motivate employees. Both courses were held every working day, in the period of four weeks. The daily topics were designed to cover the technologies used in this company. First course was designed as a review of new technologies, displayed through verbal presentations and examples. The main purpose was to introduce the developers with the material so that they can be able to consume the cutting edge technology in their future projects. Each of that presentations was held during the work time and lasted 90 minutes. Figure 1 shows the task order in workflow for both aproaches of the training courses [5].

Figure 1 : Workflow of training course approaches

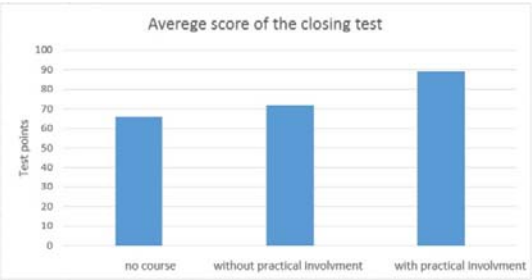
The second course was devided into various themes examined in daily lectures (90 minutes). The lecture contained basics of daily objectives and also up-to-date information as well as methods related to the topic. After every lecture the course material was provided. Assessment tasks were given to the participants of the second course after every lecture. The assessment tasks were used for evaluating the performance of the intended learning outcomes. The main focus of evaluation was to demonstrate how employees solved their problems using new introduced technologies. The result of daily tasks, graded in points from 0-10 were displayed on a monitor in the company's hallways. Every task was designed in a way to cover the important things from daily topic. All the participants had the chance to retake any assessment at any moment, in order to create a supportive workplace, reduce stress and motivate them to give their best to successfully complete all the tasks given. When the course had finished, there was a summary comprising of all main course objectives and discussions of tasks solutions.

IV RESULTS

This section discusses the results of the closing tests given to all the develeopers from the company were the courses were held. The closing test was consisted of multiple choice questions, small programming tasks and standard questions. Possible scores on the test range from 0 to 100 points, combining test results from this three sections.

Employees that were involved in the training and development programs had the advantage and better overall results over employees who didn't participate in any of these two courses. The average score of developers who didn't participate in any of these two courses was 66. Comparing the results of only the developers who attended the courses, the average score value from participants from the second course was grater than from participants

from the first course, particularly in the task part of the test, which was valued the most, which is an indicator of good practical knowledge gained. The average score of developers who attended the courses are 72 and 89 points respectively as shown on graph 1.



Graph 1: Average score of closing test

Putting the employees through regular training course where they had exposure to the information but not a practical involvment proved to be less effective.

V CONCLUSION

A well prepared training and development program provides the employees with needed knowledge and experience. Courses where participants are more engaged give better results. A properly trained employee is more informed about procedures and tasks related to his/her work. The confidence which is built up by training courses and development programs comes from the fact that the employee is completely aware of his/her roles and obligations. It helps the employee to carry out the tasks in better ways and even find new methods and approaches to complete the daily duties. Training and proffessional development through courses makes the employees pleased with the thought of being the part of the company or organization. The employees are able to execute their working duties on their own using knowledge and skills gained through the development program. They feel they are an important component of the company or the organization that they work for and that they are motivated to perform better.

VI REFERENCES

1. D.N.; "Role of Training & Development in an Organizational Development", International Journal of Management and International Business Studies. ISSN 2277-3177 Volume 4, Number 2 (2014), pp. 213-220

2. Bresnahan, T.; Brynjolfsson, E., and Hitt, L. "Information Technology, Workplace Organization, and the Demand for Skilled Labor: Firm-level Evidence," *Quarterly Journal of Economics* (117:1), 2002, pp. 339-376.

3. Acton, T.; Willie Golden. (2002, June). Training: The way to retain valuable IT employees. Retrieved March 28, 2012, from Informing Science

4. Noe, Raymond A.; *Employee training and development*. Boston, MA: McGraw-Hill/Irwin, 2002.

5. Tran, Son Thai, Nguyen Quoc Binh Le Ngoc Thanh, and Dang Binh Phuong.; "Introduction to information and technology".