

# The using of games in education of project management

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**Abstract** Project management is a key subject for graduates of industrial engineering and management at universities because project management and project are not used only in large enterprises, but also in medium-sized and small industrial enterprises. These enterprises accept project manager and project team members as people who have sufficient knowledge, skills and abilities in project management. If the students want to court for these positions, it is necessary to teach them the subject – project management at universities effectively, but especially creative. Therefore, it is necessary to focus project management not only on theory but in particular on the practical exercises using didactic games. Nearly 97 % of students who passed the subject - project management on the base of the game, they consider the knowledge, skills and abilities from project management as useful and understandable. The aim of this paper is to analyze the teaching of the subject - project management.

**Key words** Project management, didactic games, method, education

## 1. INTRODUCTION

Projects and project management are daily using not only in large enterprises as well as in small and medium-sized industrial enterprises. Projects in these days have huge dimensions. They need a lot of time and resources for implementation. Projects require a lot of capital and therefore it is unrealistic to manage each employee by himself. Therefore the projects are managed by project managers. A good project manager must be able to organize resources, to plan and prepare workflows and manage everything: project scope, cost, schedule, quality, team performance and risks.

Project management is defined as the application of skills, tools, knowledge and techniques to project work activities to meet project requirement. Project management is accomplished through the use of processes such as initiating, planning, executing, controlling and closing. A project is a temporarily effort undertaken to attain a unique goal under the constraints of time, resources and costs [5]. Planning of projects uses the estimators of the duration of project

activities, their sequence, amount of required resources, etc. [10]. Project management a company can use to develop new products [8]. Project success or failure depends on many critical factors, such as the kind of project, access to resources, methods of project management, and environment [9].

From the definitions it is follow, that project management is difficult but very important area. Therefore it is necessary that future project managers but also project team members have sufficient knowledge, skills and abilities in the field of project management. Teaching of project management only through the lectures or interpretation is not effective. To the teaching of project management should be involved also the didactic game.

A gap exists between the skills taught in a project management at university and the skills that are actually desired of a project manager. This problem seems to stem from the way project management is typically introduced to students. Theory and concept are presented in lectures with examples drawn from case studies. There is little opportunity for students to apply the concepts in a classroom setting. Although lectures and case studies are essential in knowledge transfer, they lack a practical, in-depth treatment of the overall process of project management. Lectures usually limit the amount of interaction – teacher to students – allowing only passive learning. The size and scope of cases are often too constrained to exhibit many of the fundamental characteristics of real-world project management issues [7].

Therefore, during the teaching of project management it is necessary to use also the game as a teaching method.

Games are becoming increasingly popular for teaching. They are considered to result in a wide range of learning benefits like, increase of learning effectiveness, increased interest and motivation, and reduction of training time and instructor load [13].

### 1.1 Game as a teaching method – didactic game

To designate the game as teaching method is used the name - didactic game. Didactic game objectively contributes to the

development of student's personality, his knowledge and skills. The game has an impact on several areas. Several authors describe its main functions as follows [4]:

- motivation and activation,
- fixation of knowledge and skills,
- relaxation,
- socialization of students,
- communication,
- development of creativity,
- establishment and development of knowledge and skills,
- integration of knowledge into the system,
- feedback and so on.

### 1.2 The role of games in learnign

Gaming has replaced case study method as a pedagogical tool, due to the fact that individual behaviour differs from group behaviour, and games stimulate emotional components of people. Gaming is considered a modern pedagogical tool, but its origins can be traced to the mammal "education" of brood by means of games.

Some definitions of games, from the pedagogical point of view, are [13]:

- A game is a closed formal system that subjectively represents a subset of reality. Every time a game is played, a new version of the history is completed. The final result of the game depends on the global conditions of the game, the features other participants, and the relationships among them;
- A game is a learning rule-guided format, and it fosters competition against competitors, machines, or previously stated standards;
- A game as an interactive activity for simulating real-world conditions in order to stimulate decision making learning. Games are competitions where people agree with certain rules of behaviour, and where people make decisions for changing self and each other states.

### 1.3 Research questions and aim of the paper

The aim of this paper is to analyze the teaching of the subject - project management and to highlight the importance of linking the theory with practical exercises using didactic games. This article is aimed at determining whether students consider didactic games as effective for acquisition of knowledge, skills and abilities of project management. The aim of the paper was also to find, how many industrial enterprises in Slovakia use project management. This quantitative research was chosen in order to determine whether enterprises in Slovakia utilize project management, and therefore they need employees who have the knowledge, skills and abilities from project management.

In this contribution were chosen three research questions, which will be pursued in the following, practical part of the article:

1. Do the students consider the knowledge, skills and abilities from project management, gained through the teaching with didactic games as useful and understandable?
2. Which teaching methods the students consider for to acquisition of knowledge of the subject - project management as effective and beneficial?
3. Do the industrial enterprise in Slovakia use project management for management of project?

Empirical methods as quantitative researches, which are processed in the Materials and Methods section, were used in the paper.

## 2. MATERIALS, METHODS AND RESULTS

The analytical part of this paper is focused on the analysis of the teaching of project management and to highlight the importance of linking theory with practical exercises using didactic games. The analysis was realized through quantitative researches.

### 2.1 Quantitative research - teaching of project management

The first quantitative research was focused on teaching of project management. The quantitative research was chosen because it is very good and easily quantifiable. Information about teaching of project management was surveyed by questionnaire. On the research participated 68 students (96 respondents) who passed the subject - project management which was taught not only on the base of lectures and exercises, but also on the base of didactic game. Data were collected in February 2015.

The aim of the questionnaire was to analyse, whether the students consider the knowledge, skills and abilities from project management, gained through the teaching with didactic games as useful and understandable. The aim of questionnaire was also analyse, which teaching methods the students consider for to acquisition of knowledge of the subject - project management as effective and beneficial.

One of the most important questions of the questionnaire was: do the students consider the knowledge, skills and abilities from project management, gained through the teaching with didactic games as useful and understandable? As show Figure 1, 75 % of respondents "strongly agree", 22 % "agree" and only 3 % of respondents "disagree" with this statement.

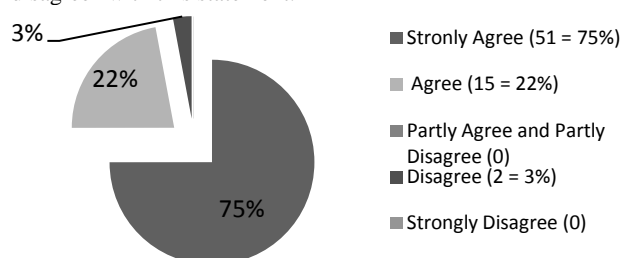


Fig. 1: Knowledge, skills and abilities from project management are useful and understandable (own processing)

The aim of the questionnaire was to determine, which teaching methods the students consider for to acquisition of knowledge of the subject - project management as effective and beneficial. On the base of the survey (Fig. 2) can be concluded, that the best method is teaching with didactic games (82 % students) and teaching with software support (81 % students).

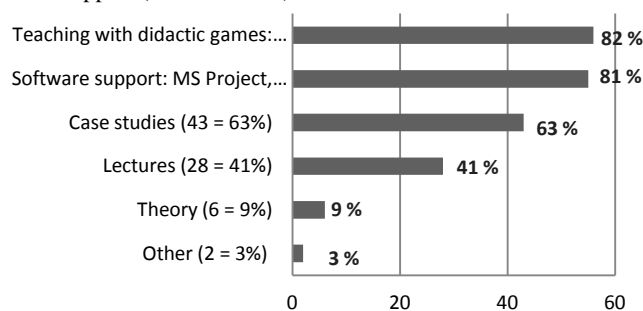


Fig. 2: Teaching methods (own processing)

Basis formulated on the base of first quantitative research – teaching of project management:

- Nearly 75 % of students strongly agree and 22 % agree that teaching of subject – project management on the base of didactic games can be regarded as useful and understandable.
- Only 3 % of students disagree with this statement.
- As effective and useful teaching methods of project management respondents - students considered: teaching with didactic games (lego, simulation), software support (MS Project, Superproject, SAP...), case studies and lectures.

## 2.2 Quantitative research - using of project management in industrial enterprises

The second quantitative research was focused on analysing whether industrial enterprises use the project management to management the projects. This quantitative research was chosen in order to determine whether enterprises in Slovakia utilize project management and therefore they need employees who have the knowledge, skills and abilities from project management. Data were collected in January 2012. The aim of questionnaire was to analyse how many small (number of employees from 1 to 49), medium-sized (number of employees from 50 to 249) and large industrial enterprises (over 250 employees) use the project management. On the research participated 653 small, medium and large industrial enterprises from 1763 contacted enterprises (Tab. 1).

**Tab. 1: Processing of data form quantitative research (own processing)**

<b>Contacted enterprises:</b>		<b>1 763</b>					
<b>Enterprises participated on research:</b>		<b>653</b>					
<b>Percentage of responses:</b>		<b>37 %</b>					
	<b>Small enterprises</b>	<b>Medium-sized enterprises</b>		<b>Large enterprises</b>			
	<b>321</b>	<b>281</b>		<b>51</b>			
<b>Use of PM (Y)</b>	<b>N</b>	<b>Y</b>	<b>N</b>	<b>Y</b>	<b>N</b>	<b>Y</b>	
<b>Do not use of PM (N)</b>	<b>273</b>	<b>48</b>	<b>220</b>	<b>61</b>	<b>32</b>	<b>19</b>	
<b>Confidence interval:</b>	<82; 88>	<12; 18>	<75; 81>	<19; 25>	<60; 66>	<34; 40>	

Basis formulated on the base of the second quantitative research – using of project management in industrial enterprises:

- Project management is used by 20 % of industrial enterprises in Slovakia.
- In year 2013 it was 24 % and in year 2014 it was 28 % of industrial enterprises.
- Not only large enterprises use project management, but also medium-sized enterprises and positive finding is that small enterprises as well.

## 2.3 Proposal for teaching the subject - project management

On the base of the researches, we can state, that students consider the knowledge, skills and abilities from project management, gained through the teaching with didactic games as useful and understandable. Therefore, we propose that it is necessary to use different methods of teaching during education process of subject – project management.

On the lectures we propose to use mainly the theory, case studies and various practical videos and presentations from enterprises, which are dealing with project management and projects. The

exercises we propose to teach through didactic games and simulations. With the game students understand the process groups of project management: initiating, planning, executing, monitoring and control of the project and also the closing of project. During the process of teaching each process group, teacher can complement the knowledge of students by funny way - the didactic games.

## 3. CONCLUSION

The present economy is full of turbulent changes, both social and technological, which create completely new conditions for a company's activity [2, 3,11]. Company need a new way for management and it is project management. Therefore it is important to have a good strategy for teaching of project management. Strategy is a high-level plan to achieve one or more goals under conditions of uncertainty [6]. On the base of the results from the empirical research can be concluded that enterprises in Slovakia, but also worldwide, use the project management for management of projects. According to a survey in Slovakia 20 % of industrial enterprises use the project management. However, in Slovakia, and also around the world, there are many enterprises and organization which have to start to use the project management if they want to be successful. Therefore it is necessary to teach the subject - project management at universities effectively and creatively. To the education process it is necessary to include not only theory but also creativity, for example - didactic games. Nearly 97 % of students consider the knowledge, skills and abilities from project management, gained through the teaching with didactic games as useful and understandable. Didactic games can we use during lessons by explaining, proving, fixating of knowledge as well as to enrich the lessons and motivate students.

*This article follows to the articles: 'The Project Management Education in the Slovak Republic' [1] and 'Project management certification approaches in Slovak industry enterprises' [12].*

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