An Embedded Approach for Project Management Learning Process

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ABSTRACT

The project management discipline is expanding within many engineering activities. This discipline can facilitate strivings toward successful accomplishment of an engineering project. Therefore, many academic institutes teach the “project management” program. This study presents a novel approach that educates engineering students to become successful project managers based on contextual learning. This approach embeds a practical project within the project management program. The student has to implement the academic know-how into the embedded project. The study utilizes a quantitative tool to measure the students’ response to the approach. The results indicate that the students were satisfied with the approach.

Keywords: Active Learning, Contextual Learning, Engineering Education, Hands-On-Experience, Project Management

INTRODUCTION

A project” is defined by the PMBoK (PMBoK, 2008) as “a temporary endeavor undertaken, to create a unique product or service.” Temporary means that every project has a definite beginning and a definite end. Unique means that the product or service is different in some distinguishing way from all similar products or services. The business world is very dynamic, which creates a need for an on-going process of updating the methods, tools, and techniques of the way projects are managed. Therefore, the field of project management has been developing in recent years. In order to successful manage projects a training process is needed (Rozenes & Vitner, 2009). The purpose of this paper is to highlight the need of a methodological academic training frame work for project management team during undergraduate studies. This study reveals an embedded real life project that facilitates the students to gain both profound know-how and experience during their studies. The paper will introduce a literature review, followed by a description of the analytical methods. Further, the study will present supportive results of the training process.

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LITERATURE REVIEW

An interesting way of coping with the increasing demand for project management solutions was the development of Bodies of Knowledge (BoK), that summarized the main and important knowledge in the area of project management by two professional associations: the Association of Project Management (APM) and the Project Management Institute (PMI) (Meredith & Mantel, 2009). A review (Morris, 2001) was conducted regarding the existing project management bodies of knowledge. The author indicated the need for BoK and continually updating its content.

Successful performance of a project should depend on appropriate planning. The PMBoK defines the use of 21 processes that relate to planning, out of the 39 processes required for proper project management (Globerson et al., 2002). Executing the project according to the predefined project plan is achievable only if the project planning and execution know-how procedures are well known to the PMO personnel. Consequently, training is a significant issue facilitating successful performances during the entire project life cycle. A survey that was conducted in an aerospace organization (Eve, 2007) provides clear evidence that implementing a project management training methodology improves both individuals’ and organization’s performance.

The Institute of Electrical and Electronics Engineers (IEEE Std 1490-1998, 1999) adopted the PMBoK as a standard for managing projects within the electrical and electronics domain. This recognition means that project management know-how is essential for project success; therefore, to gain this knowledge is tremendously important. As a result, training is a crucial element for project success.

The American Department of Defense (DoD 5000.2-R, 2002) stated that one of four goals for government projects is to improve training and education.

A research (Shenhar, 2001) surveyed Israeli defense projects and challenged the BoK assumption that all projects are similar and “one size fits all”. It classified the surveyed projects into 4 categories. Each category had to be managed a little differently in order to be successful. Furthermore, a new concept was developed (Shenhar & Dvir, 2007) to emphasize the basic differences between projects. A similar attitude (Evaristo & van Fenema, 1999) had been taken to classify project management types based on the number of projects and sites involved. The existence of distributed projects, their importance, and expected future predominance was described.

Furthermore, it should be noted that projects are often very complex. This complexity supports the argument against the BoK concept of “one size fits all”.

The definition of project complexity (Williams, 1999) is needed in order to cope with the evolution of projects. On the other hand, researchers (Tatikonda & Rosenthal, 2000) supported the BoK assumption of project similarity. The authors investigated project management methods used during the execution phase of new product development. The findings were that companies can indeed balance firmness and flexibility in product development projects. Another result is that companies can manage a variety of projects using broadly similar project execution methods.

This paper presents an education methodology that combines the project management practice and theory in a novel approach in order to train the student to be a future project manager.

One of the theoretical anchors of the project management program teaching process is contextual learning. According to this theory, learning process occurs when students link new formal knowledge with real life experience. This approach, developed at the beginning of the 20th century by John Dewey (Dewey, 1916), adapts the learning process to the experiences and interests of the learner. Learning is understood to be more effective when learned material is tied to previous knowledge, while involving the learner in the learning process. The key to successful learning lies in the connectedness of the learned knowledge to what seems meaningful on the part of the learner (Caine & Caine, 1991). Klassen (2006) defines context in the following manner:
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