

Chapter 29

The Value of Simulation for Learning Project Management

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ABSTRACT

This chapter will explore the value of using computerized simulation case studies to enhance learning in project management education at the undergraduate and graduate college levels. Traditional teaching methods of textbook reading and lectures provide students with a vast number of concepts, processes, tools, and procedures for managing projects. However, it is difficult for students to translate that learning into use in real-life project management situations. Simulations are filling that gap by offering a low-risk environment with lifelike scenarios where students must determine the appropriate project management concept to employ and how to execute it. Simulations allow students to use their newly learned concepts and critical thinking for decision making while receiving immediate feedback which allows the student to make adjustments. This chapter will also discuss the value of these simulations based on the timing of when to introduce them to students during the semester.

INTRODUCTION

Project Management courses in higher education seek to train students who aspire to manage projects or may already be performing the role of project manager in a professional capacity. These courses strive to teach the numerous tools, techniques, processes and procedures essential for a project manager to be successful. The main reference is the Project Management Body of Knowledge (PMBOK), which is well respected and published by the Project Management Institute (PMI), the largest project management professional association in the world (PMI, 2013). However, the PMBOK should be considered an atlas, i.e., a book of maps and not necessarily a guide. Unfortunately, in an attempt to be thorough, textbooks and course curriculum typically touch on the entire body of knowledge. They map the concepts to the PMBOK and often assume students will organically have the wherewithal to develop a utilization pathway on their own.

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The PMBOK is well-respected by project managers worldwide. Although authors organize the content differently, they all incorporate the 10 knowledge areas from the most current version of the PMBOK (Larson & Gray, 2014; Schwalbe, 2015; Schwalbe, 2014). The 10 knowledge areas are: 1) project integration management, 2) project scope management, 3) project time management, 4) project cost management, 5) project quality management, 6) project human resource management, 7) project communications management, 8) project risk management, 9) project procurement management and 10) project stakeholder management. Each of these knowledge areas has its own specific processes, tools, techniques and deliverables. It is rare that a project will use all processes in each knowledge area, but determining what to use is not easy. In addition to being a great reference, these knowledge areas contain the content for the project management certification exams, especially the Project Management Professional (PMP) and the Certified Associate Project Manager (CAPM). This chapter will address a problem with traditional teaching methods that lies in the sheer volume of concepts, which can be a threat to the effectiveness of learning outcomes.

The main objective of this chapter is to explore computer-based simulation as a method of facilitating the ability of students to absorb project management concepts, identify the correct subset of PMBOK tools and methods to apply, and engage in the collaborative process that project management requires. Using simulation in project management education allows us to take students on their first trip and help them navigate the path so they can grow and continue on their own in the future. Computerized simulation provides a low-risk environment where concepts can be tested, practiced, and reinforced by immediate feedback. Additionally, this chapter will present methods and benefits with respect to the time placement of utilizing a simulation within the course semester. Timing alternatives will differentiate between using a “deep end of the pool, start of semester” approach, a “slow-motion, semester long simulation” approach, and a more traditional “end of semester, capstone” approach.

BACKGROUND

Simulations have been used for years within academia and for professional development and training. Prior literature indicates business games such as simulations to be as effective, if not more so, as traditional teaching approaches in strategic management courses (Faria, 2001). Literature also indicates project management simulations are a means to provide students with a way to draw from their content knowledge for decision making (Hartman, Watts, & Treleven, 2013). Hartman, Watts, and Treleven (2013) found an important benefit to using simulations in that it allows students to experience managing projects firsthand in a low-risk environment. Additionally, they found the dynamic feedback students receive from their own decisions to be a benefit (Hartman, et al., 2013).

In the late 20th century, educational research by Brown, Collins, and Duguid (1989) with situated learning theory, i.e., situational cognition, used Collins’ (1988) definition of situated learning as gaining knowledge and skills in the context of their real-world use. Situation cognition theory also states that activities and understanding have a symbiotic relationship and that it is positively associated with higher levels of student engagement leading to better understanding (Léger, Charland, Feldstein, Robert, Babin, and Lyle, 2011). Researchers Brown, et al. (1989) proposed that the learning process is supported by social interaction, collective problem solving, displaying multiple roles, utilizing collaborative work skills, and confronting ineffective strategies and misconceptions. In their 1989 work, they posited that

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