

Chapter 8

Use of Dynamic Web Technologies in Collaborative Problem–Solving Method at Community Colleges

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ABSTRACT

The purpose of this chapter is to explain the design and development process of online collaborative learning environments for community college courses. Within this purpose, design issues of the learning environment are based on a collaborative problem-solving method. In other words, this learning environment is designed according to constructivist learning principles. In this chapter, constructivism, constructivism and technology, collaborative problem-solving method, and dynamic web technologies will be explained. Following that, research findings about the effect of collaborative problem-solving method and dynamic web technologies on educational output of students will be discussed. Next, the design and development of this learning environment will be presented. Finally, implementation issues and recommendations about this environment will be explained.

1. INTRODUCTION

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Community colleges have taken an active role in equipping individuals with the necessary skills for a job or career and the qualifications and cognitive abilities needed to fulfill the requirements in a fast-changing business sector (Organisation for Economic Co-operation and Development [OECD], 2010). In this respect two-year colleges have to provide individuals with the skills for a career and 21st century skills as problem solving, decision making, critical thinking, communicating and collaborating. Therefore community colleges train individuals to meet business sector's qualified human resource needs.

Curriculum and pedagogy in community colleges are revised according to changing workforce requirements but there are many problems with the education process in community colleges, as expressed by reports, employers, governmental institutions, academicians. For example, American Association of Community Colleges (2012) published a report about problems and solutions to improve the quality of teaching and learning in community colleges. According to the document, low completion rates, levels of student readiness for college, and differences between curricula and business sector needs (American Association of Community Colleges, 2012) have been issues facing faculty and administrators in two-year colleges. Similarly, OECD (2015) prepared a report on 17 country reviews of vocational education and training systems. Based on the findings, strengths and challenges in vocational education and training systems of 17 countries are reviewed and recommendations are presented:

- **Students' Low Level of Readiness:** Most students have low level of motivation and course attendance hence low level of success rate in the courses. Therefore, students do not participate the learning process actively. This leads students to unsuccessful in both vocational and general studies areas. As a result, these students are incompetent after graduation (Alkan, Suiçmez, Aydınkal, & Şahin, 2014; American Association of Community Colleges, 2012; Cisneros, 1996; Çetin, 2010; Kaya, 2014; Kayır & Kılıç, 2008; Külekçi, 2010; Şahin & Fındık, 2008; Tierney & Rodriguez, 2014).
- **Use of Traditional Methods in the Learning Environments:** Traditional methods are generally used for teacher-centered instruction. These methods such as lecturing, demonstration, question-and-answer are insufficient to provide students with the necessary skills required for any given job. While using these methods in the learning environments, students are passive in the learning process. In this regard, students do not engage in learning activities sufficiently in order to gain the necessary knowledge and skills. Consequently, students have problems transferring theoretical knowledge to the real world when traditional instructional methods are used in the learning environments (Şahin & Fındık, 2008).

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