Chapter 20
Middle and High School Implementations of Moodle-Facilitated Blended Instructional Designs

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ABSTRACT

Web-based technologies such as Moodle (modular object-oriented dynamic learning environment) are regularly used in classrooms and present an effective way to reinforce blended learning of different curricula. Nontraditional learning methodologies such as the i²Flex model provide teachers with a range of options with regards to how to employ a constructivism-based instructional design and facilitate their shift from traditional instructors to effective learning facilitators. Consequently, students become inquirers and discover knowledge in a positive environment where flexibility and blendedness of learning styles optimize the learning outcome. The chapter discusses implementations of Moodle features and the support types with regards to the authors engagement in i²Flex methodology in order to update their practices in relation to enhancing the Community of Inquiry (CoI) Framework presences in Middle School and Academy Classes of Science, Physics, and Modern Language Arts.

DOI: 10.4018/978-1-7998-7760-8.ch020

INTRODUCTION

i²Flex is an instructional methodology developed organically by the American Community Schools (ACS) Athens. "The i²Flex methodology integrates student independent, inquiry-based learning that is guided and monitored by faculty with face-to-face, technology-supported learning" (Avgerinou & Gialamas, 2016, p. 139). The strength of the i²Flex methodology is that in itself it is flexible and adaptable for a variety of age groups, settings, course subjects, instructional design and technology integration. Through ongoing professional development opportunities and support offered by ACS Athens, monitoring of Moodle courses using the Quality Matters® K-12 rubric standards (Quality Matters, 2016) and teacher action research on integrating effective web-supported instructional design for their specific courses, the i²Flex methodology was displayed in their subjective course and age group. In this process, the Moodle platform offered the web-based technology to support the process. The three elements of the Community of Inquiry (CoI) framework, namely the cognitive, social, and teaching presence, allowed for the discourse in the online learning environment to be grounded on the constructivist and collaborative learning experience.

In this chapter, the reader is presented with specific applications of the i²Flex design in the middle and high school classes of Science, Physics and Modern Language Arts at the American Community Schools of Athens. The teaching context is clearly defined while the Moodle features used to implement this design are explained in the context of specific lessons. As the lesson design is presented, the Community of Inquiry (CoI) framework focus is made explicit in order to highlight the importance of a constructivist online learning community in a blended learning environment.

THEORETICAL FRAMEWORK

The i²Flex instructional methodology is a student-centered methodology, firmly grounded on constructivism, and blends independent and inquiry-based learning that is guided by face-to-face and flexible technology-supported learning (Avgerinou & Gialamas, 2016). "In an i²Flex context, such learning experiences are dependent on instructional design decisions that consider specific criteria (e.g. student degree of readiness, nature of content, learning goals, other class logistics), and are conducted under the close monitoring of faculty face-to-face, and/or online" (Avgerinou & Gialamas, 2016, p. 139). Other unique elements of i²Flex are the notion of *Blendedness*, as well as that of educational technology and media. The goal of the i²Flex methodology is to keep students at the center of learning both in and out of the classroom. The school mission statement clearly states that "ACS Athens challenges all students to realize their unique potential: academically, intellectually, socially and ethically — to thrive as responsible global citizens" (School Website). These personalized learning opportunities reach out to all students and learning styles and technology is present to aid in the process (Avgerinou, Gialamas, & Tsoukia, 2014). The i²Flex methodology is thus manifested in all areas, resources and designs used in the instruction and is not limited to technological integration. It is evident in the instructional design of the physical classroom, the delivery of the lesson, the process of investigation and discovery in the learning process, the developed printed material to name a few of the parameters (Avgerinou & Gialamas, 2016).

In summary, the learner-centered i²Flex instructional methodology, grounded on social constructivism, and reflecting a more inclusive conceptualization of the K-12 blended learning landscape, facilitates and