Chapter 55
Mobile Learning Applications and Differentiated Instruction

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ABSTRACT

Mobile learning devices allow for learning anytime anywhere (Kinshuk, et al 2009). Currently instructors are attempting to keep up to date on the new developments in technology so that instruction is on the leading edge. Many instructors desire to be at the forefront of creating meaningful opportunities to use mobile devices rather than being passive recipients of developed curriculum and plans related to the use of these tools; plans that possibly address a "one size fits all" approach. For example, rather than technology being a tool to administer the same exams technology can be used to develop the exam so that it is student centered and responds in real time as the student completes the exam, perhaps modifying questions based on the student's incorrect and correct answers. It is important for instructors to participate fully in the emerging technology of mobile learning applications (apps) and to create opportunities for differentiated instruction. Mobile learning apps hold the promise to be able to adapt to various learning styles of different instructors and different students to provide personalized learning experiences.

INTRODUCTION

Technology is advancing rapidly in education, compelling instructors to be familiar with various mobile learning devices and to formulate strategies to incorporate technology into curriculum in order to meet the changing needs of their students (Corlett & Sharples, 2005). Immediate accessibility to information, ubiquitous ownership and multiple uses of mobile devices have blurred the boundaries between personal, professional, and educational facets of life. Recent technological innovations that serve as educational tools are among the strongest arguments for mobile learning (Shuler, 2009). In the wake of 2.0 technologies offering information at your fingertips, and a growing generation of digital natives, the culture of education is shifting in a way that challenges traditional modes of teaching and learning. This chapter will discuss the promise of utilizing mobile learning devices

and their associated applications to enhance differentiated instruction. We will present a case study to present how a Higher Education faculty used mobile learning applications to enhance differentiated instruction.

In this chapter we will describe a brief history of differentiated instruction, specifically in higher education. Careful attention to the issues of training higher education instructors and the use of innovative technologies will be discussed. We will then discuss the relationship between mobile learning applications and differentiated instruction, paying particular attention to the promise of using these applications to support differentiated instruction in higher education. A case study will be presented in which the implementation of mobile learning applications to use to differentiate instruction will be presented. We will conclude with a discussion of the promise of using mobile learning applications based on student and instructor learning style.

BACKGROUND

Differentiated instruction is a teaching philosophy based on the premise that teachers should adapt instruction to student differences (Cobb, 2010, p. 38).

Differentiated instruction, also termed individualized and responsive instruction, is a teaching method that is quickly developing in the higher education setting (Tulbure, C., 2011). This "inclusive individual support model" asks instructors to take inventory of student's learning styles including, but not limited to, individual strengths, weaknesses, interests, and goals, to design lessons or make arrangements that support their unique compilation of characteristics to promote success (Hart, Grigal, Sax, Martinez, & Will, 2006, p. 1). Differentiated instruction is grounded in Piaget's Constructivism theory positing that knowledge

is more readily obtained if based upon previous knowledge and experiences (Gash, 2009). As with the myriad of abilities and interests amongst all people, differentiated instruction must be flexible and accommodating to environmental change and student maturation.

Originally, differentiated instruction was designed on behalf of children who qualified to receive assistance under the Individuals with Disabilities Education Act (IDEA) in 2004, and its predecessor, Education for All Handicapped Children Act, enacted in 1975 (U.S. Department of Education, 2010). As part of the intervention, an individualized education plan (IEP) is developed based upon children's strengths and weaknesses in various areas with the goal of preparing children for furthering their education, gaining employment, and living independently (U.S. Department of Education, 2010). The collaborative effort made to optimize children's potential proved to be very successful and led instructors and educational researchers to believe this strategy could be beneficial to students of all ages and abilities. Learners who are advanced and learners who struggle are among the populations served by differentiated instruction (Tomlinson & McTighe, 2006).

Within the sphere of higher education, Kleinert, Jones, Sheppard-Jones, Harp, and Harrison (2012) explored the use of differentiated instruction with students suffering from intellectual disabilities (ID). This initiative, called the Supported Higher Education Project of Kentucky (SHEP) was a 5-year grant funded by the U.S. Office of Postsecondary Education. This interagency program provided differentiated instruction for students with ID based on the students' abilities and professional goals. As with young children and the IEP, higher education students involved in the SHEP pilot project had a collaborative team working on their behalf (Kleinert et al., 2012; Carter, Cushing, & Kennedy, 2009) to identify and provide appropriate differentiated instruction. Through efforts such as these, students with ID

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