

Chapter 12

Immersing Future Middle– Level Science Educators in a Blended Learning Environment

Christine Anne Royce

Shippensburg University, USA

ABSTRACT

Current pre-service teachers are considered digital natives in that they have grown up with the use of technology. However, these future teachers often need explicit and modeled experiences to become a digital educator as they will be the future teachers in what has become an increasingly technological world that utilizes digital tools and applications. This chapter delves into the literature related to blended learning and preparing these preservice teachers to utilize technological pedagogical content knowledge (TPACK) within a blended learning environment (BLE). Through immersion in a middle school science methods course that utilized a BLE, preservice teachers were provided with relative experiences for their future teaching career. Lessons learned and reflections from the preservice teachers provide foundational information for future planning.

INTRODUCTION

As K-12 schools move towards technology integration with either a one-to-one focus or classroom sets of tablets that either have students working independently or collaboratively for student interaction and engagement, there is an increasing need to prepare future educators to work with students within a blended learning environment. School districts are incorporating blended learning and online instruction into their regular course of offerings at a growing rate (Duhaney, 2012; Shand & Farrelly, 2017; Watson, 2008). Therefore, there is a growing need for educators who are prepared to teach in this type of environment as learning the process of technology integration and the incorporation of technological pedagogical content knowledge (TPACK) is necessary. Simply having been raised a “digital native” does not equate to being a “digital educator.” In order to take the digital native and turn them into a digital educator, there is a still need to utilize traditional and explicit instructional techniques of modeling and

DOI: 10.4018/978-1-7998-0242-6.ch012

scaffolding even though the instructional strategies may be around the incorporation of digital practices and a blended learning environment.

This chapter will focus on how immersing pre-service teachers in a blended learning environment science methods course provides authentic experiences for their future teaching career by:

- Providing an overview of the research and literature supporting the use of blended learning as a pedagogical strategy;
- Examining where and how technology is a key aspect within a middle level classroom and can be incorporated into a science methods course; and
- Describing strategies for designing and creating a middle school science methods course which utilizes a blended learning environment around digital practices.

Each topic area will draw from the available literature in the field to build a framework and describe example strategies that highlight research into practice.

BACKGROUND

What is Blended Learning

Blended learning is the use of “online tools to communicate, collaborate, and publish” (Pape, 2010, p. 22) and brings together “the best features of classroom interaction and live instruction to personalize learning” (Watson, 2008, p. 4). It also allows the teacher to design instruction so that it extends beyond the school day, adds flexibility into instructional planning, meets the needs of learners while at the same time assists students in the development of 21st century skills. While blended learning may be considered an instructional approach in some literature, some researchers also perceive it from a more detailed stance. According to Christensen, Horn, and Staker (2013), blended learning is defined as “a formal education program in which a student learns at least in part through online learning with some element of student control over time, place, path, and/or pace and at least in part at a supervised brick-and-mortar location away from home. The modalities along each student’s learning path within a course or subject are connected to provide an integrated learning experience” (p. 9). Whereas, according to Watson (2008), blended learning can be a learning experience, a pedagogical approach, and an instructional strategy.

This later view is something that merits consideration when utilizing technology within subject specific content areas to engage learners. According to Dziuban, Hartman, and Moskal (2004), “blended learning should be viewed as a pedagogical approach that combines the effectiveness and socialization opportunities of the classroom with the technologically enhanced active learning possibilities of the online environment, rather than a ratio of delivery modalities” (p.3). Their recommendations for shifting instruction included moving towards active, student centered instruction; increasing interaction among students to teachers, students to peers, and student to content; and finally, integrating assessments into the actual structure of the lesson (Dziuban, Hartman, & Moskal, 2004). The descriptors of student centered, active, and interactive between and among peers and teachers from a blended learning environment are also key aspects of developing a science classroom environment that promotes three-dimensional learning.

“Those who use blended approaches base their pedagogy on the assumption that there are inherent benefits in face-to-face interaction (both among learners and between learner and instructor) as well as

17 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/immersing-future-middle-level-science-educators-in-a-blended-learning-environment/242224

Related Content

Design of an Authentic E-Learning Environment

Theo J. Bastiaens (2012). *Professional Education Using E-Simulations: Benefits of Blended Learning Design* (pp. 57-69).

www.irma-international.org/chapter/design-authentic-learning-environment/59802

Measuring the Difficult to Measure: Teaching and Learning with an iPad

Jace Hargis, Cathy Cavanaugh, Tayeb Kamaliand Melissa Soto (2013). *International Journal of Mobile and Blended Learning* (pp. 60-77).

www.irma-international.org/article/measuring-difficult-measure/78335

The Teacher's Role in Personalized Learning

(2020). *Evaluation of Principles and Best Practices in Personalized Learning* (pp. 54-80).

www.irma-international.org/chapter/the-teachers-role-in-personalized-learning/255679

Emergency Remote Teaching of Technical Drawing During the COVID-19 Pandemic

Aysu Sagun Kentel (2022). *International Journal of Mobile and Blended Learning* (pp. 1-18).

www.irma-international.org/article/emergency-remote-teaching-of-technical-drawing-during-the-covid-19-pandemic/314580

Online Continued Learning for All Educators: Transforming Their TPACK

(2019). *Blended Online Learning and Instructional Design for TPACK: Emerging Research and Opportunities* (pp. 168-190).

www.irma-international.org/chapter/online-continued-learning-for-all-educators/230618