A Spotlight on Lack of Evidence Supporting the Integration of Blended Learning in K-12 Education: A Systematic Review

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ABSTRACT

In an effort to highlight the need for, and lack of, quality empirical research in K-12 blended learning environments, this systematic narrative review investigated and reported on the quantity and quality of recent empirical research in K-12 blended learning, published between 2009 and February 2017. In addition to assessing the quality and scope of these studies, the effectiveness of blended learning environments on learning outcomes and potential contributing variables were discussed. Eleven articles were identified and found to meet the inclusionary criteria and measures of quality set by this review, extending the corpus of 5 articles identified by a previous 2009 meta-analysis commissioned by the U.S. Department of Education to 16. Mixed findings regarding the benefit of blended learning in a K-12 setting were reported across the literature, thereby highlighting the need for more extensive research in this domain.

KEYWORDS

Blended Learning, Effectiveness, Hybrid Learning, K-12, Review

1. INTRODUCTION

Modernity inspires innovation. Nowhere is this more evident than in an educational context. One such innovation is distance education (Bonk & Graham, 2006). For decades, distance education has offered an opportunity for isolated or busy individuals to learn without the expense and ongoing commitment of attending permanent, brick and mortar schools. Over the years, the practice of correspondence education has evolved to become more interactively streamlined through the use of web-based technologies (Garrison & Kanuka, 2004). As accessibility and content of various web-based platforms and resources have grown, so too have their integration and blending with traditional face-to-face instruction.

The term ‘blended’ or ‘blended learning’ has been applied quite broadly throughout literature and educational practice. Graham (2006) noted that early models exploring blended learning attempted to address the question of “what is blended?” and resulted in 3 distinct conclusions: 1) a combination of online and face-to-face instruction (Young, 2002; Friesen, 2012); 2) a combination of instructional
modalities or delivery media (Thomson, 2002); 3) a combination of different instructional methods (Driscoll, 2005).

The most prominent definition adopted within recent educational research has associated the term ‘blended’ with both learning and learning environments in situations where technology and/or online resources are combined in some form with traditional in-class instruction. In an effort to refine this definition and establish essential characteristics of blended learning Bernard, Borokhovski, Schmid, Tamim, and Abrami (2014) argued that no less than 25% of time should be spent in online environments with 50% or more time spent face-to-face. Others, conversely, have argued for the use of more discrete categorisation where: 1) traditional instruction was defined as having 0% of online content delivery; 2) 1%-29% of online delivery was defined as ‘web facilitated’ instruction; 3) ‘blended’ was defined as 30%-79% online; and iv) the use of 80% or greater online content delivery, defined as ‘online’ (Allen & Seeman, 2007).

Due to the lack of location-based restrictions inherent in online learning, some blended learning environments and designs may result in the use of a flipped classroom pedagogical model where students receive and engage with lecture material at home at their own pace while completing assignments and discussions in class (Lage, Platt, & Treglia, 2000).

In the current systematic review, blended learning will be defined as the deliberate integration and combination of online, computer-based learning and instruction with face-to-face methods of learning and instruction, regardless of the application of a flipped or traditional pedagogical structure. As empirical studies examining blended learning in primary and secondary educational (K-12) settings are scarce, a wide-ranging online to face-to-face time allotment criteria is applied to increase the likelihood of inclusion similar to the meta-analysis of Means, Toyoma, Murphy and Baki (2013). Within this review, ‘deliberate combination’ is considered as a more important criteria than that of the amount of time spent in either online or in-class environments.

1.1. The Increasing Popularity of Blended Learning Environments

Over the past decade, online and blended learning environments have become a sweeping trend throughout the world (Werth, Werth, & Kellerer, 2013). Rudestam and Schoenholtz-Read (2010) noted that this trend has been primarily driven by the belief in its potential for greater flexibility and cost-effectiveness in accessing content and quality instruction, as well as providing new levels of interactivity, social networking, collaboration and reflection.

Many post-secondary institutions have aggressively adopted this revolution in instructional approach. For instance, the University of Ottawa is aiming to classify at least 20% of offered courses as blended by 2020 (Smith, 2014), and 57.5% of undergraduate classes taken nationwide have been reported to involve some blending by the Canadian Higher Education Strategy Association (2011). Additionally, over 4.6 million students in US higher education institutions were taking at least one online course in 2008 (Allen and Seeman, 2010).

Similarly, primary and secondary schools have begun to move towards greater integration of online learning with traditional educational environments. For instance, the United States saw an increase of K–12 students participating in some form of online/blended course instruction from roughly 45,000 in 2000, to over 4 million students in 2010 with a projected estimate of 5 million K-12 students engaged in blended learning courses by 2016 (Staker, 2011; Picciano, Seaman, Shea, & Swan 2011). Likewise, in Canada the Ontario Ministry of Education (2016) has published a commitment to make blended learning available for all Ontario students from kindergarten to grade 12 (ages 4-18).

1.2. Existing Evidence on the Effects of Blended Learning

Previous research involving post-secondary and professional training programs has demonstrated the benefits of blended learning with regards to motivation, flexibility, student engagement and academic achievement when compared to purely online or traditional face-to-face didactics (Bonk & Graham, 2006; Means, Toyama, Murphy, Bakia & Jones, 2009).
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