Relationship Between the Use of Online Courseware and Achievement in a Developmental Writing Course

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ABSTRACT
A consistent challenge of implementing blended learning is the support that students should receive when using online courseware outside of class time. For blended learning to be successful in terms of student learning, the online courseware would need to be able to support the learning of students outside of class time. An interactive, digital courseware was used for a developmental writing course at California State University - Bakersfield. The main goal of this study was to gather evidence to determine if the use of this online courseware was associated with higher student achievement within a blended learning environment. After controlling for confounding factors, a multi-level regression was used to determine the contribution of courseware usage to student achievement, which was measured by a final writing exam. The number of writing topics completed by students in the courseware was found to be positively related to their exam scores. This provides preliminary evidence that the online courseware with certain interactive features can be supportive of learning outside of class.

KEYWORDS
Adaptive, Blended Learning, Developmental Writing Course, Higher Education, Interactive, MyLab Writing, Online Courseware

INTRODUCTION
Increasingly, instructors in higher education have been integrating online courseware and tools into their courses to create a blended learning environment that mixes face-to-face instruction with these online tools (Bonk & Graham, 2012; Ross & Gage, 2006). This increased use of blended learning coincides with evidence showing that the combination of face-to-face with online learning activities has the potential to optimize learning (Means, Toyama, Murphy, & Baki, 2013; Spanjers et al., 2015). However, while there is increasing acceptance of the potential of blended learning, instructors embrace this method of instruction to varying degrees. For instance, it was found that some instructors chose to integrate the online technology to create transformative blends while others chose to have minimally impactful blends (Torrisi-Steele & Drew, 2013). One reason for such variation in the ways blended learning is carried out might be the implementation challenges associated with this approach. One of the implementation challenges consistently found in literature reviews of blended learning is insufficient support for students to engage in the online courseware outside of the face-to-face class time. For example, some students struggled with self-discipline and time management issues where

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they had to hold themselves accountable for their own learning outside of class (Boelens, De Wever, & Voet, 2017; Maarop & Embi, 2016). This challenge of students learning independently outside of class would likely be exacerbated for students who were enrolled in developmental, large classes where they were struggling academically. For blended learning to be successful in terms of student learning, the online courseware should support students learning on their own outside of class time.

As such, this study investigated whether the use of interactive and digital courseware would support students’ academic achievement in a developmental writing course by allowing students to independently engage with the courseware outside of class time. This developmental writing course can be considered a gateway course in college writing for students who were newly enrolled in a higher education institution. In this study, the students were identified to enroll in the course, via an English Placement Test administered by the institution, as struggling students who needed help with building their foundational skills in writing.

The online courseware in question, MyLab Writing (MLW), is an interactive and digital learning tool used for teaching students skills that would help them improve their reasoning, reading, and writing in order for them to build a strong foundation for successful performance in subsequent higher education courses. MLW is an adaptive tutoring system featuring instructional texts and videos, writing exercises and other forms of practice, scaffolding, and immediate feedback on performance. As a component of their coursework, students independently completed a series of online topics on basic grammar so that class time could be devoted to higher-order writing skills. Students had access to various learning modalities that would allow them to learn and complete their online topics outside of class time. Overall, the purpose of the online courseware was to provide a personalized learning experience to students outside of class time that would help them learn. The goal of this study is to investigate how the design of blended learning by incorporating an adaptive and interactive online courseware might be related to student learning. That is, this study specifically examined the relationship between students’ engagement with the online courseware topics assigned by course instructors and their writing performance, as measured through an independently administered final essay.

**Background**

**Implementation Challenges of Blended Learning**

Innovations in technology have brought about a different type of instruction that integrates online courseware with traditional face-to-face instruction. As mentioned earlier, one of the consistent challenges of implementing blended learning is the support that students should receive when engaging in the online courseware outside of class time. This is because students’ time management skills and their ability to be responsible for their own learning were found to be an issue in blended learning (Kenny & Newcombe, 2010; McDonald, 2012). Similarly, other studies have identified students’ self-regulation and self-discipline as being important in a blended learning environment (Alebaikan & Troudi, 2010; Heaney & Walker, 2012; So & Brush, 2008). Yet, while this has been a consistent challenge, there appears to be a research gap on the types of learning supports appropriate for blended learning (Wang, Han, & Yang, 2015). Thus, this study set out to investigate the effect of a particular adaptive and interactive online courseware that could provide support for students in a blended learning course. In addition, this study focused on students who were struggling academically and were enrolled in a large class, that is, a group of students who were most in need of learning support.

**Adaptive and Interactive Characteristics of the Online Courseware**

MLW includes interactive and adaptive features that are based on learning science research and are intended to address the challenge of supporting students as they engage with the courseware on their own outside of class. The English department at the institution in this study introduced MLW to their writing program because the learning science based features found in the courseware provide an