Chapter 61
Gamified – Blended Learning Professional Development:
A Descriptive Case Study

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ABSTRACT

This descriptive case aimed to examine a new model of job-embedded and on-going professional development using both blended learning and gamification approach as a delivery method. Qualitative and quantitative data collected for the study were from different sources to ensure the validity and reliability of the findings. The quantitative data findings indicated that participating in the PD first module impacted both the teachers learning of effective mathematics teaching, as well as their mathematical content knowledge. Furthermore, they planned to implement what they learned from the PD into their classroom teaching. Qualitative data findings identified three common themes emerging from the data analysis including awareness of high quality resources, students' engagement through the use of games and technology, and tasks to promote students' mathematical thinking.

INTRODUCTION

With schools today facing numerous complex challenges – from working with an increasingly diverse population of students, to meeting rigorous academic standards and goals, to integrating new technology in the classroom – policymakers continue to stress the need for teachers to be able to enhance and build on their instructional knowledge. Under these circumstances, professional development (PD) has

been adopted as a policy solution for improving the number of highly qualified teachers, consequently helping all students achieve high academic standards (Colbert, Brown, Choi, & Thomas, 2008). However, contrary to the PD emphasis and expectation of administrators, the latest findings released by the New Teacher Project- TNTP- (2015) discouraged PD advocates. TNTP's study with 10,000 teachers from three large districts found that there was no evidence that any particular approach or amount of PD consistently helped teachers improve in their classrooms. In other words, the study posited that PD programs, which cost taxpayers billions of dollars each year, were mainly a waste.

Research in PD specifically shows that "one-shot", "drive-by" training workshops with eight hours or less show no statistically significant effect on student learning outcomes (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009). Aware of what has been reported in the literature, especially the TNTP's study findings, four university faculty created a new model of PD to promote Technology, Pedagogy and Content Knowledge (TPACK) for math teachers in third, fourth and fifth grade levels through a partnership between a university and school district. The model incorporates elements of PD that have been found effective, including being on-going (Yoon, Duncan, Lee, Scarloss, & Shapley, 2007), job-embedded (Darling-Hammond et al., 2009), and connected to the teacher's classroom instruction (American Educational Research Association, 2005; Loucks-Horsley, Stiles, Love, Mundry, & Hewson, 2010), while simultaneously incorporating research-approved instructional methods.

When designing the PD program, the PD team took into consideration that the participants would be adult learners who had different learning needs and motivation than traditional P-16 learners. Merriam (2001) found that adult learners:

1. Had an independent self-concept and who can direct his or her own learning,
2. Accumulated a reservoir of life experiences that is a rich resource for learning,
3. Had learning needs closely related to changing social roles,
4. Were problem-centered and interested in immediate application of knowledge, and
5. Were motivated to learn by internal rather than external factors. (Merriam, p.5)

Since participants in the PD program were practicing teachers with numerous commitments in schools and at home, blended-learning was chosen as the method of delivery. Based on perspectives of more than 80 organizations and 100 instructors engaged in blended learning, Christensen, Horn, and Staker (2013) defined blended learning as a formal education program in which a student learns:

1. At least in part through online learning, with some element of student control over time, place, path, and/or pace;
2. At least in part in a supervised brick-and-mortar location away from home;
3. And the modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience.

The blended learning approach allowed busy teacher participants to break up the assigned online work into shorter blocks of time, versus spending hours in a one shot lengthy PD workshop. While there was some in-person training required, other on-the-go tutorials were available online, which participants could fit into their busy schedule. In a report released by the U.S Department of Education (2010), it was shown that learners in blended learning outperformed their peers in either a face-to-face learning set-

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