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GAMIFICATION APPLIED TO FACULTY PROFESSIONAL DEVELOPMENT: A CASE STUDY

by

Scott W. Vann

A Dissertation Submitted in Partial Fulfillment of the

Requirements for the Degree of

Doctor of Education

Major: Instruction and Curriculum Leadership

The University of Memphis

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Dedication

This dissertation is dedicated to my two sons, Jacob and Jonah. You can do anything that you set your mind to, stay determined and focused on your goals. You both mean more to me than words can express.

Acknowledgement

First, I would like to acknowledge my wife, Yanhua who encouraged me to pursue my doctorate and complete the ultimate goal of this educational journey. Thank you for all your patience and encouragement along the way. I love you!

To my mother, thank you for distilling in me a love for education. You raised us to always pursue our goals and never doubt yourself. I was reminded of the verse you quoted many times growing up and applied it to this dissertation, Ecclesiastes 9:10 – "Whatever your hand finds to do, do it with all your might...".

To my colleagues at The University of Memphis, thank you all for your unwavering encouragement and inspiration. Exceptionally grateful to my leadership, Roy Bowery and Dr. Richard Irwin, for your support and flexibility with my education. To Dr. Katie Sharpe, we finally did it! Where do I even start to express my gratitude for the role you have played during this entire experience? Thank you for being the best classmate, colleague, co-researcher, editor, and most importantly…the best friend anyone could ask for during this journey. You kept me sane the last three years and I look forward to many years of collaborative projects together.

Last, but definitely not least, thank you to my committee members. To Dr. Andrew Tawfik, for your leadership as my advisor and committee chair. I am extremely grateful for your expertise and support completing this manuscript. To Dr. Amanda Rockinson-Szapkiw, thank you for patience and encouragement. You challenged me to become a better student and researcher, which allowed me to meet the demand of this dissertation. Thank you to Dr. Craig Shepherd and Dr. Vicki

Murrell for agreeing to serve on my committee, and sharing your knowledge of gamification and faculty professional development.

Abstract

The purpose of this qualitative case study was to examine online faculty perceptions of engagement within a gamified professional development course at a large urban research university. Over the last decade, gamification has been a trending topic in education because it allows learners an opportunity for contextualized and engaged learning by applying game-thinking to solve problems. Research has shown a direct link between increased levels of engagement when gamification elements such as badging, leaderboards, leveling, etc. are introduced into online learning environments. Currently, literature on the use of gamification is focused on learners in secondary and post-secondary learning institutions and private corporations. As a result, a research gap exists on gamified professional development and its potential to increase engagement in online faculty professional development. While previous research is promising, faculty have unique considerations related to effective teaching, student engagement, and research development; therefore, it is unclear the degree to which this literature can be applied. The case study was conducted with ten online faculty members with diverse backgrounds. This study examined the perceptions of online faculty who had participated in a gamified online professional development course. One-on-one interviews were conducted to learn more about the participants' perceptions of engagement and gamification within the professional development. This study revealed online faculty perceptions related to the following four themes: increased perceived engagement through self-directed learning, gamification features activate external motivation to engage, competition and the role of flow, and the role of effective segmentation and cognitive load in flow. Although the six participants that were interviewed all had unique

perspectives of the course, all shared positive perceptions of increased engagement related to the gamification design of the professional development. Findings indicated that gamification may increase online faculty's engagement within professional development courses. The engagement of online faculty with professional development is imperative for institutions to optimally prepare online faculty for instruction and contribute to the overall educational goals of the institution. The results of this study will be used to inform faculty professional development design practices at the researcher's institution, as well as faculty professional development at large.

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List of Abbreviations

Hypertext Markup Language (HTML)

Institutional Review Board (IRB)

Learning Management System (LMS)

Professional Development (PD)

Research Question (RQ)

Self-directed Learning (SDL)

Universal Design for Learning (UDL)

Web Content Accessibility Guidelines (WCAG)

CHAPTER ONE: INTRODUCTION

Introduction

Over the last decade within United States, online learning has vastly increased within higher education. The volume of online students taking at least one online course in 2006 was at 570,000 students, totaling 6.7 million in 2016 (Allen., Seaman, Poulin, & Straut, 2016). While at the same time, investments made to educational technology companies increased from $1.64 billion in 2013 to $9.52 billion in 2018 (Morrison, Ross, & Cheung, 2019). Furthermore, as online enrollments and educational technology advances increase, online faculty are being held responsible for developing and teaching more online courses. For example, institutions require faculty to develop courses that meet accessibility standards and engage learners in a manner to improve retention, course completion, and degree achievement. Though faculty are competent in discipline specific knowledge within their associated colleges, research shows faculty struggle to develop accessible and engaging courses (Hahn & Lester, 2012). Therefore, many universities have various departments and centers responsible for providing professional development.

While professional development is offered to meet the demands of increased enrollment in online learning, faculty attendance rates and persistence rates are low (Meyer, 2014); the reasons for low attendance and attrition within professional development opportunities are often varied. The literature documents the following: synchronous only professional development offerings (Alanazy, 2018), lack of innovative and engaging professional development course design (Elliott, Rhoades, Jackson, &

Mandernach, 2015), the nonexistence of a virtual environment where faculty can explore the institutions learning management system (Meyer & Murrell, 2014), and faculty with perceptions of outdated technology (Holyoke & Larson, 2009). These factors collectively contribute to an overall engagement challenge within faculty professional development. Indeed, professional development is a critical method of learning new technology skills and important part of developing new knowledge within an organization (Rosalice, 2016).

One way to understand the lack of engagement within professional development is through flow theory (Choi, Kim, & Kim, 2007). According to flow theory, users experience flow in the constructs of engagement and intense focus. Flow theory is referenced frequently by gamification theory. Gamification is defined as "the application of game elements to non-game settings" (Hanus & Fox, 2015, p. 153). In response, research studies sought to explore the degree to which gamification can improve learning outcomes within higher education (Breur & Bente, 2010 & Rawendy, Ying, Arifin & Rosalin, 2017). One of the core purposes of gamification is to use design principles from games to make learning a more positive and enjoyable experience (Baxter, Holderness, & Wood, 2016). Gamification has been a subject of increased discussion within the educational literature because it provides learners an opportunity to apply game design elements to learning. Research has shown a direct link between gamification elements being introduced to learners in online courses and increased levels of engagement (Buckley & Doyle, 2014; Hanus & Fox, 2015). Collectively, these studies serve as evidence to address the issue of engagement documented with faculty in online professional development.

One of the core purposes of gamification is to use design principles from games to make learning a more positive and enjoyable experience (Baxter, Holderness, & Wood, 2016). While some individuals often view professional development opportunities within organizations dull and non-engaging, gamification can provide learners with appealing content and increase professional development attendance (Oprescu, Jones, & Katsikitis, 2014). As noted earlier, researchers of flow theory argue gamification can provide learners with similar elements of flow theory through clear goals and immediate feedback (Bressler & Bodzin, 2013). Additionally, games are already an ideal learning environment with inherent permission to fail, by encouraging out-of-the box thinking, and bestowing players with a sense of control (Brigham, 2015). Studies suggest gamification can thus support learning in professional development environments through immediate or delayed feedback (Barata, Gama, Fonseca, Gonçalves, & Jorge, 2013; Bringham, 2015) resulting in increased self-efficacy (Erenli, 2013; Mekler et al., 2015) and engagement within the instructional content (Kuo & Chuang, 2016; Looyestyn et al., 2017; Sabourin & Lester, 2014).

Problem of Practice Statement

The problem of practice results when online faculty are not engaged in professional development (Elliott, Rhoades, Jackson, & Mandernach, 2015). Many higher-education institutions are not providing adequate professional development opportunities for faculty (Meyer, 2014). The institutions that do provide training to faculty struggle with faculty attendance (Steinert, McLeod, Boillat, Meterissian, Elizov, & Macdonald, 2012). Lack of online faculty engagement in professional development

can directly impact student success in their online and student degree completion (Willett, Iverson, Rutz & Manduca, 2014).

Through gamification, flow theory provides the necessary building blocks to design and deliver engaging professional development. Despite the documented benefits of gamification found in the literature, a gap exists as it relates to how gamification can address the challenge of faculty engagement in professional development (Joseph, Oh, & Ackerman, 2018). One persistent gap is the absence of literature regarding the creation of a positive learner engagement experience when applying gamification elements to instructional content (da Rocha Seixas, Gomes, & de Melo, 2015; Hwang & Chen, 2012; Giannetto, Chao & Fontana, 2013).

The focus of the case study is to understand the design principles that influence faculty engagement and gamification-based professional development. While there is a research gap in gamification within faculty professional development, related research has shown that gamified experiences enhance student engagement in higher education, which in turn improves knowledge acquisition and increases concentration on the learning goal (Brigham, 2015; Buckley & Doyle, 2014; Kuo & Chuang, 2016; Mekler et al., 2015). Given the success in learning engagement for secondary and higher education students, it is possible that gamification based on flow constructs can have a positive impact on faculty engagement within professional development.

Purpose Statement

The purpose of this case study is to understand design principles of engagement in professional development for online faculty at a large southeastern urban research university. At this stage in the research, engagement will be generally defined as degree

of attention, interest, optimism, and passion in the activity (Fitzgerald, Bruns, Sonka, Furco, & Swanson, 2012). The theory guiding this study is flow theory (Csikszentmihalyi, 1990) which argues that, while in the "flow state", learners perceive their performance to be enjoyable and remain engaged. According to flow theory, engagement, interest and enjoyment in an activity must be experienced simultaneously in order for flow to occur (Csikszentmihalyi, 1996). The experiences described by the state of flow, such as clear objective and immediate feedback, challenge encounter and acceptable skill, combination of action and consciousness, sense of control, curiosity, loss of self- consciousness, purposeful experience, and inner interests are the same states which can be experienced and accomplished within gamification-based learning (Wan & Chiou, 2006). Flow theory further posits that learners perceive their performance to be enjoyable and engaged while in this state. Another component of flow theory is that concentration, interest, and enjoyment in an activity must be experienced simultaneously in order for the flow state to occur (Csikszentmihalyi, 1996). Flow begins with recognizing and expounding one's goals, creating actionable objectives to attain those goals, and achieving mastery of the activity at hand. As noted earlier, flow theory aligns well with gamification because learners perceive enjoyment while performing an activity, experience a sense of control within the learning experience, and maintain a mental state of concentration. By exploring the design principles that produce flow and embedding them in professional development course, the field of education can gain new insight about how to better engage online faculty and ultimately benefit students.

Research Questions

The case study will be focused around the following primary and secondary research questions.

Research Question: How does gamification-based professional development, if at all, engage online faculty within higher education?

The following sub-questions were derived from the central research question to provide more detailed understanding of the phenomenon (Creswell, 2013):

1. What are the perceptions of faculty engagement in gamified faculty professional development?
2. How, if at all, do online faculty perceive flow during participation in gamification-based professional development?
3. What are the perceptions of online faculty regarding the application of gamification in professional development?

Definitions

The study will use the following definitions to provide a context for understanding the literature reviewed.

Engagement

Engagement is the physiological investment in and effort directed towards learning, understanding and mastery of the knowledge being presented (Newmann, 1996).

Flow

Flow is a state of deep absorption in an activity that is intrinsically enjoyable, as when artists or athletes are focused on their play or performance (Csikszentmihalyi, 1990).

Gamification

Gamification is the use of game design elements and game mechanics in non-game contexts (Domínguez, Saenz-De-Navarrete, De-Marcos, Fernández-Sanz, Pagés, & Martínez-Herráiz, 2013).

Learning Management System (LMS)

A learning management system can be defined as "a self-contained webpage with embedded instructional tools that permit faculty to organize academic content and engage students in their learning" (Gautreau, 2011, p.2).

Online Courses

A course that is typically managed within a learning management system and where students meet virtually with the instructor. Online courses have eighty percent or more of the content delivered online, requiring no face-to-face meetings. (Blau, Jarrell, Seeton, Young, Grace, & Hughes, 2018).

Universal Design for Learning

Universal Design for Learning (UDL) are instructional design guidelines that considers the learning needs of all learners, including students who, according to the Center for Applied Special Technology (CAST), were once considered in "the margins of our educational systems, but are now recognized as part of the predictable spectrum of variation" (CAST, 2015).

CHAPTER TWO: REVIEW OF THE LITERATURE

Introduction

The purpose of this literature review is to examine theories, trends, and research related to the application of gamification within faculty professional development. Indeed, these studies speak to the impact gamification has on promoting engagement and on the flow theory's construct of gamification within faculty professional development in higher education. Studies show that gamification is beneficial in terms of increasing learners' engagement within higher education courses (Dicheva., Dichev, Agre, & Angelova 2015, & Hanus & Fox, 2015, & Rawendy, Ying, Arifin, & Rosalin, 2017). However, some contend the current research is lacking sufficient evidence of gamification's effect on faculty's professional development, and additional research is needed regarding faculty's engagement within gamified professional development.

Numerous peer reviewed databases were used to ensure a comprehensive review of the literature. The most frequently used databases were Encore, JSTOR, and ProQuest digital catalogs via the University of Memphis library and Google Scholar which queried many databases synchronously. As needed, journal information was gleaned from citations listed in articles examined for the literature review. The researcher used the following keywords when searching for literature: faculty engagement, flow theory, gamification, gamified learning, leaderboards, and professional development.

Growth in Online Learning and Challenges of Professional Development

Higher education institutions continue to expand their online programs and course offerings to meet the student demand (Brinkley-Etzkorn, 2018). Online education in web-based format is the fastest growing segment of higher education in the United States, with

two thirds of higher educational institutions offering online courses and, increasingly, fully-online degree programs (Allen & Seaman, 2017). As a result of this rapid expansion of online course offerings, faculty are now encouraged to design and teach more online offerings. There is a vast amount of literature on the importance of providing adequate professional development to faculty to enhance their online instructive capability (Elliott, Rhoades, Jackson & Mandernach, 2015; Weschke & Canipe, 2010 & Wingo, Ivankova, & Moss, 2017). Professional development within higher education is often defined as organized opportunities designed to enhance faculty practice (Knapp, 2012).

Regarding faculty approval of professional development opportunities, research studies show that online faculty members are dissatisfied with the current level of institutional support and professional development opportunities for online instruction within higher education (Gibson & Blackwell, 2011; Herman, 2012; & Moore & Kearsley, 2011). Professional development within higher education is often defined as organized opportunities designed to enhance faculty practice (Knapp, 2012 Professional development's importance to online faculty is the opportunity to generate efficient learning and information sharing through working together, sharing ideas, and reflecting on various teaching strategies and methodologies (Zygouris-Coe & Swan, 2010). Online educational effectiveness is often measured by comparing student outcomes, attitudes, and retention rates between traditional classroom instruction and online course delivery (Bernard et al., 2004; Legon & Garrett, 2017; Russell, 1999). A recent study by Hollowell, Brooks, and Anderson (2017) found that student grades significantly increased in online courses after the faculty completed professional development on proper course design and delivery. However, if faculty are not engaged within the professional

development opportunities provided the potential for improvement to student success and retention will not be realized (Ragan & Schroeder, 2014). As stated previously, research has shown that gamification elements enhanced student engagement within online courses in higher education (Kuo & Chuang, 2016). To increase faculty engagement and participation, gamification principles can also be applied to online faculty professional development.

Theoretical Context

One of the early and principal theories associated with engagement and gamification is flow theory or optimal experience theory (Guo, Xiao, Toorn, Lai & Seo, 2016). First introduced by Csikszentmihalyi in 1975, flow theory argues that "flow" is the optimal learning experience (Csikszentmihalyi, 1975). Csikszentmihalyi began his research by interviewing approximately 100 participants with avid hobby interest in activities such as dance, music, and other art mediums. Csikszentmihalyi was intrigued why these individuals would expend so much energy and time on activities that would not likely yield rewards such as money and status. From the interviews he discovered a state of mind he called the *flow experience* through which concentration, interest, and enjoyment are experienced simultaneously (Csikszentmihalyi, 1975).

Based on his findings, Csikszentmihalyi (1990) concluded that, "When culture succeeds in evolving a set of goals and rules so compelling and so well matched to the skills of the population that its members are able to experience flow with unusual frequency and intensity, the analogy between games and cultures is even closer. In such a case we can say that the culture as a whole becomes a 'great game'" (Csikszentmihalyi, 1990, p. 81). Csikzentmihalyi described this experience of "flow" as the state in which

individuals become singularly focused on an activity and lose sense of time. While in this mental state of flow, "Self-consciousness disappears, and the sense of time becomes distorted" (Csikszentmihalyi, 1991, p.71). During this state of flow, a learner is highly engaged and has an intense concentration on their task. Csikszentmihalyi (1991) provides the following eight dimensions of flow that comprise the definition of optimal flow performance:

- Clear goals and immediate feedback
- Equilibrium between the level of challenge and personal skill
- Merging of action and awareness
- Focused concentration
- Sense of potential control
- Loss of self-consciousness
- Time distortion
- Autotelic or self-rewarding experience

Flow begins with recognizing and expounding one's goals and creating actionable objectives to attain those goals. Flow continues through optimization and mastery of the activity at hand and is often experienced when playing games or participating in gamification (Liu, Santhanam, & Webster, 2017; Antonaci, Klemke, Kreijns, & Specht, 2018). For example, a well-developed game often causes individuals to experience flow due to the game experience providing a challenging activity that requires skill and an attainable, objective goal (Moneta & Csikzentmihalyi, 1996). The game experience often provides the individual with autonomy and control over the learning experience.

According to the literature, individuals participate in an activity with a fuller sense of self-initiation when finding the activity to be interesting and engaging (Choi, Kim, J., Kim, & S., 2007; Guo, Xiao, Toom, Lai, & Seo, 2016; Holyoke & Larson, 2009). When this occurs, the individuals are likely to experience an optimal learning experience. Because the trigger conditions between self-initiation and flow state overlap, Csikszentmihalyi's (1990) flow theory provides practical guidance to those responsible for creating and delivering learning experiences within higher education such as faculty development opportunities. By incorporating gamification elements within professional development opportunities, faculty can be engaged and have control over their learning experience. As a result, faculty become invested in efforts directed towards learning, understanding, and mastery of the content being presented (Newmann, 1996).

Review of the Literature

What is Gamification?

Proponents of flow theory point to gamification as one way to increase learner engagement. Gamification and flow theory share similar constructs related to increasing learner engagement. Hoffman and Novak (1996) summarized the flow theory constructs proposed by Csikszentmihalyi into five dimensions: (1) enjoyment; (2) telepresence; (3) focused attention; (4) engagement; and (5) time distortion. Gamification is the use of game design elements and game mechanics in non-game contexts (Domínguez, Saenz-De-Navarrete, De-Marcos, Fernández-Sanz, Pagés, & Martínez-Herráiz, 2013). In recent years, gamification has become an attractive means of increasing learner engagement because it provides an ideal learning environment with inherent permission to fail,

encouraging out-of-the box thinking, and sense of control by the player (Pesare, Roselli, & Rossano, 2016).

A video game is an immersive, voluntary, and enjoyable activity in which a challenging goal is pursued according to agreed-upon rules (Kinzie & Joseph, 2008). Due to the rapid advancement and popularity of computer and communication technologies, researchers have predicted that more technology-based learning will occur and educational computer games could play an important role in education (Chen & Hwang, 2014). As will be discussed later, these same gamification elements can be applied to address the challenges of engagement and peer collaboration within online professional.

Benefits of Gamification-based Learning

Researchers have identified fundamental elements of games that make them appealing to learners in a learning environment. According to Dominquez et al (2016), there are "many potential advantages of video games in education like immediate feedback, information on demand, productive learning, motivating cycles of expertise, self-regulated learning or team collaboration" (p. 380). This allows for the instructional content to take the same approach that the learner would take playing a video game such as moving through various levels to master the content. Because research shows that individuals are more likely to remain engaged in an activity if they find it enjoyable and of value (Kuo & Chuang, 2016), applying gamification design principles has the potential to increase a learner's interaction and engagement with the learning materials (da Rocha Seixas, Gomes, & de Melo Filho, 2016). Collectively, research trends indicate that a gamification approach assists students in improving their deep learning status in terms of in-depth thinking, creativity, and engagement (Chen & Hwang, 2014).

Competitive mechanisms of gaming, such point systems, “levels” to indicate progress, and leaderboards , are often applied through gamification within educational settings. This allows for learners to compete with their fellow counterparts. According to Mekler et al. (2015) these competitive features, “function as positive, informational performance feedback and thus form an important part of digital games' motivational appeal since they afford opportunities for players to satisfy their need for competence” (p. 527). As learners progress through various levels and complete objectives, their engagement and performance on the learning materials increases (Barata, Gama, Fonseca, Goncalves, & Jorge, 2013).

Within the last four years, many studies investigated the effectiveness of educational computer games for various higher education courses such as Business (Jakubowski, 2014), Communication (Hanus & Fox, 2015), Education (Landers, Bauer & Callan, 2017), English as a foreign language (Chen & Hwang, 2014), Mathematics (Attali & Arieli-Attali, 2015), and Nursing (Brigham, 2015). In one example, Chen and Hwang (2014) examined how digital game-based learning could improve students’ learning performance within an English as a Foreign Language course. The authors explained that digital-gamified learning provides a more interesting and challenging learning environment for acquiring knowledge, in comparison with traditional instructions or conventional technology-enhanced learning. Collectively, research trends indicate that a gamification approach assists students improve their deep learning status in terms of in-depth thinking, creativity, and engagement (Chen & Hwang, 2014; Hanus & Fox, 2015 & Looyestyn et al., 2017).

Origin of Gamification-based Learning

Some of the earliest uses of gamification-based learning date back to the 1980s with the release of games such as Oregon Trail and Where in the World is Carmen San Diego. These early gamified-learning experiences provided students with missions and quests that provided experiences of flow and engagement within the game. Carmen SanDiego, released by Broderbund Software in 1985, was a massive success receiving over 70 awards (Robson, Plangger, Mccarthy, Pitt, 2014). This game taught participants geography and history, as the player acts like a detective trying to locate Carmen SanDiego. Educational gamification expanded in the 1990s to include games like SimCity, Civilization, and Active Worlds 3D. While these examples utilized gamified learning in terms of actual computer-based games, services like Khan Academy and Youtopia were built to apply game elements to existing learning environments.

Furthermore, the online platforms allow educators to implement plug-n-play game elements, such as points, badges, and leaderboards into their classrooms. Students earn points and badges that they can redeem in the platforms' stores. Studies consistently describe how these type of gamification-based learning games would consume hours of time while the player was engaged in completing missions and performing interactive quests (Gerber, 2014; Grey, 2016; & Buckley & Doyle, 2016). This type of engagement within the gamified-learning platforms allows the player to experience flow and be engaged in the activity.

As educational video games have improved, so have the different gamification strategies. For instance, various learning management systems have use badging and leaderboards to engage learners within the courses hosted within the LMS. Gamification-

based learning has been used in the corporate environment for adult learning and training purposes (Kapp, 2012). It has gained popularity within business, marketing, and corporate management to train employees and promote user engagement within the workforce because it provides employees the real-time feedback, measurable goals, and goal-oriented tasks (Suh, Cheung, Ahuja, & Wagner, 2017 & Perryer, Celestine, Scott-Ladd, & Leighton, 2016). Within education, gamification is still an emerging trend. Gartner's Hype Cycle (Gartner, 2013) is a research methodology that outlines an emerging technology's viability for commercial success. Gartner theorizes gamification will reach expansive adoption in the near future as other organizations look to adopt this strategy.

While the private business market has embraced gamification for some time (Rosalice, 2016), it is still being developed and implemented in the education sector. Online education sites such as codeacademy.com and khanacademy.org have incorporated game elements to better engage their users (Dicheva et al, 2014). To better engage users on these platforms, gamification elements such as badging and awards are used as learners complete various courses and lessons. Various learning management systems, such as Canvas, Desire2Learn, Moodle and Blackboard, have implemented gamification elements within their LMS. These elements include virtual social collaboration, badging, leaderboard points systems, and certificates of completion. Research shows that the gamification elements within an LMS motivate learners to have a positive attitude towards learning and increased engagement within the instructional content within the online courses (Gibson, Ostashewski, Flintoff, Grant, & Knight, 2015; & Dicheva, 2015).

The Design and Facilitation of Gamification

While gamification has been recognized to promote learning performance and enhance learners' interest in the materials, it is still essential to have well-designed learning materials. For gamification to be rewarding and promote the flow constructs of engagement, the gamification elements should relate to the competencies within the course (Hanus & Fox, 2015). To provide an effective digital game-based learning environment, it is important to design effective learning strategies or tools in a game-based learning environment. The learning objectives and content need to be well-integrated into the gaming goals and scenarios (Attali & Arieli-Attali, 2015). da Rocha Seixas, Gomes, and de Melo Filho (2016) evaluated the effectiveness of gamification strategies for the engagement of students within a Brazilian school. The researchers evaluated two virtual badging platforms, Class Dojo and Class Badges, for their research. Their study's main objectives were to generate involvement among individuals and their classes by increasing their interest, engagement and efficiency while performing a specific task. Additionally, implementation/facilitation is vital to effective gamification strategy. The research showed that students who received more rewards from their teachers within the badging platforms also received significantly better than average performances. However, other researchers argue that teacher participation is vital in creating a positive student engagement experience (Hwang, Wu, & Chen, 2012).

Table 1

Summary of Gamification Design Elements (Dicheva, Dichey, Arge, & Angelova, 2015).

Level	Description	Example
Game interface Design patterns	Common, successful interaction design components and design solutions for a known problem in a context, including prototypical implementation	Badge, leaderboard, level
Game design patterns and mechanics	Commonly recurring parts of the design of a game that concern gameplay	Time constraint, limited resources, turns
Game design principles and heuristics	Evaluative guidelines to approach a design problem or analyze a given design solution	Enduring play, clear goals, variety of game styles
Game design models	Game design-specific practices and processes	Play-testing, play-centric design, value conscious game design

Application of Gamification to Professional Development

Gamification isn't limited in application to student learning experiences, but can also facilitate flow and engagement within professional development. Given the lack of gamification research in the faculty professional development domain, organizational gamification experiences can provide a framework by which to understand gamification effects on engagement. Indeed, researchers have argued that within the organizational framework, "gamification is a promising avenue by which to increase employee task performance (i.e., in-role behavior), one dimension of individual work performance"

(Landers, Bauer, & Callan, 2017, p. 508). However, studies have yet to empirically validate this assertion.

As indicated previously, professional development is a critical method of learning new technology skills and an important part of developing new knowledge within an organization. One of the core purposes of gamification is to use design principles from games to make work a more positive and fun experience (Baxter, Holderness, & Wood, 2016). Though some individuals often view professional development opportunities within organizations dull and non-engaging, gamification can provide learners with appealing content and increase professional development attendance (Stranach, Koroluk, & Atkins 2016). In contrast to prior approaches to professional development, gamification has been shown to support learning in professional development environments through immediate or delayed feedback (Barata et al., 2013; Bringham, 2015) and resulted in increased self-efficacy (Erenli, 2013; Mekler et al., 2015; Mitchell, Schuster, & Jin, 2018) and engagement within the instructional content (Kuo & Chuang, 2016; Looyestyn, Kernot., Boshoff, Ryan, Edney, & Maher, 2017; Sabourin & Lester, 2012).

Achievement awards and leaderboards are some of the most popular mechanics of gamification-based learning which support engagement and flow theory and can also be applied to professional development within organizations. “Achievement based rewards could also help build relationships between employees and stronger loyalty to the company if gamified systems and programs are perceived by employees as well-being-oriented perks” (Oprescu, Jones, & Katsikitis, 2014 p. 4). Some companies have

experienced success in implementing gamified professional development within their organizations.

According to a study conducted by the University of Colorado on the impact of simulations and games in adult learners, participants in gamified eLearning experiences scored the following (Sitzmann, 2011):

- 14% higher in skill-based-knowledge assessments,
- 11% higher in terms of factual-knowledge
- 9% increase in retention rate.

Sitzmann's study shows that gamification helps learners acquire knowledge and skills more effectively and allows them to retain information and commit it to long term memory for future use.

Summary

Based on the research listed within the literature review, a large portion of the research on gamification-based learning is grounded in the theoretical framework of flow theory that includes the principle of learner engagement (Csikszentmihalyi, 2014; Dicheca et al., 2015; Kuo & Chuang, 2016, Zarnekow et al., 2016). Gamified elements place the student at the center of learning and promoting engagement. The literature suggests that gamified learning elements may increase student engagement and enhance learning in various programs where applied (Landers & Armstrong, 2014).

The use of gamification in learning contexts is a viable means to increase engagement for a wider array of learners including students and teaching faculty. Prior studies show that gamification specifically increases learners' engagement within online settings. However, no study has identified how to apply the benefits of gamification to

increase faculty's engagement in online professional development. While a vast amount of research exists on student engagement through gamification in online courses, this study expanded the current research to online faculty professional development within a large urban research institution in the southeast United States. Instead of using gamification for instructional content with students, this research seeks to build on the literature to incorporate gamification design elements within an online professional development course.

This research study focuses on the relationship of gamification to flow theory and examines the relationship between faculty engagement to gamification-based learning. While a research gap exists regarding gamification within faculty professional development, research has shown that gamified experiences enhance student engagement in higher education, improve knowledge acquisition, and increase concentration on the learning goal (Brigham, 2015; Buckley & Doyle, 2014; Kuo & Chuang, 2016; Mekler et al., 2015). Researchers argue that effective design is critical in creating a positive learner engagement experience when applying gamification elements to instructional content (da Rocha Seixas, Gomes, & de Melo, 2015; Hwang & Chen, 2012; Giannetto, Chao & Fontana, 2013). The elements of effective design have yet to be analyzed within professional development settings of higher education. Not addressing this vital issue will perpetuate faculty's low on-line engagement in professional development and could ultimately impact student success in online courses.

CHAPTER THREE: METHODOLOGY

Introduction

The primary purpose of this qualitative case study is to investigate how and why gamification influences faculty engagement and flow experiences in an online professional development course on University Design for Learning (UDL) at a large urban research university setting. The case study examined faculty's observations to the gamified online professional development through one-on-one interviews.

The central research question is stated below, along with the secondary questions, which allows for further exploration of the case and helps answer the central question:
Central Research Question: How does gamification-based professional development, if at all, engage faculty within higher education?

The following research questions were derived from the central research question to provide a more detailed understanding of the activity (Creswell, 2013):

RQ1. What are the perceptions of online faculty regarding the application of gamification in professional development?

RQ2. How, if at all, do online faculty experience flow during participation in gamification-based professional development?

The literature review provided in chapter two presented a comprehensive background on flow theory constructs, movements, and research related to the application of gamified learning within faculty professional development. Chapter three defines the case study's design, participant characteristics, and setting for the research. Following the discussion of these elements is a description of the instrumentation, procedures, and data analysis of the study. The chapter concludes with a discussion of the researcher's subjectivities.

Methodology and Design

The research design used to address the research questions is a qualitative, instrumental case study. According to Yin (2003), "A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between a phenomenology and context are not clearly evident" (p. 13). In a case study, the researcher explores an in-depth case or bounded system (i.e., one online professional development course at a single urban research institution) with the intent to present a new understanding about a phenomenon. Cases are bounded by time and activity and focus on a single individual, organization, event, program, or process (Creswell, 2013; Stake, 2010). Furthermore, case studies are typically structured around a small number of research questions (Stake, 2003). An instrumental case study is predominantly beneficial for this study because it offers the opportunity to explore a particular group (i.e., online faculty) in a bounded system (i.e., large urban research institution) and will provide an overall understanding of faculty engagement within gamified professional development. For this case study, the particular group of interest is online faculty participating in an online professional development course, the specific phenomenon is engagement within faculty professional development, and the specific location is a large southeastern urban research university.

A case study provides a way of examining gamification with an overlooked group of individuals. As it relates to this study, exploring online faculty's perceptions of engagement with gamification can provide valuable insight to the professional development and gamification literature. Understanding how gamification influences online faculty's professional development will help inform instructional designers if

gamification and flow constructs can increase engagement within professional development offerings.

Participants Characteristics

Participants were selected based on convenience sampling from the available pool of online faculty who were enrolled within a UDL professional development course. From the convenience sample, purposeful sampling (Patton, 2002) was employed to select participants for the study. The following criteria was used for purposeful sampling of the participants: (1) employed full-time or part-time at The University, (2) enrolled in the Universal Design for Learning PD course, (3) currently teaching online courses within the university's learning management system, and (4) hold a master's degree or higher, which is the educational requirement to teach courses at the university for the various roles that will be invited to participate in the study.

Invitation to participate in the study was extended to the online faculty enrolled within the university's Universal Design for Learning professional development course (Appendix B). Online faculty were invited from various departments and colleges within the university to participate in the study. The email invitation described the study and asked those interested in participating to complete an online demographics questionnaire via Qualtrics, the university's enterprise survey application (Appendix C). A reminder email followed the invitation after five days. The faculty demographics questionnaire results were used to select participants which provided a diverse group of online faculty to participate in the study. The selection was based on years of online teaching experience, age, gender, and ethnic background. A total of ten participants were selected to partake in the study, from a pool of 38 online faculty. The sample group of online

faculty are of various age, gender, ethnic backgrounds, colleges/departments, and years of teaching experience. All participants hold a master's degree or higher, which is the educational requirement for faculty to teach online within the various colleges and departments invited to participate in the study.

Setting

The research was conducted at a large public urban research university in the southeast United States, with approximately 23,000 students and 1,400 faculty within 13 colleges and schools. The university offers over 250 areas of study and over 120 different degree programs. The university is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC). The university offers over 70 different fully online programs, many which are nationally ranked in their disciplines.

The focus of this study is on professional development. One of the departments that handles professional development at the university is the Center for Innovative Teaching and Learning. The center provides instructional design support that focuses on the three d's (design, development, and delivery) of technology-enhanced instruction and professional development opportunities related to effective teaching and course design. The university currently does not mandate that faculty attend professional development opportunities regularly but only when first hired to teach online and the university does not currently track who has completed professional development.

Intervention

A gamified online professional development course on University Design for Learning (UDL) was developed at the university of interest by their Center for Innovative Teaching and Learning (CITL). Before enrolling in the UDL course by CITL,

participants were required to have a basic understanding of internet navigation (ability to operate a web browser) and the university's learning management system (ability to login to the platform and access a course). Participants were also required to have at least a 10mb data connection in order to access the multimedia content within the course. After completing a detailed orientation on how to navigate the professional development course, faculty were given access to the course by the Center for Innovating Teaching and Learning (Figure 1). The introduction video to the gamified professional development explained the various gamification elements added to the course (badging, leaderboards, content leveling, etc.) and how they applied to the course learning objectives. For the participants who agreed to participate in the study and completed informed consent forms, data collection took place once the gamified online professional development course was initiated.

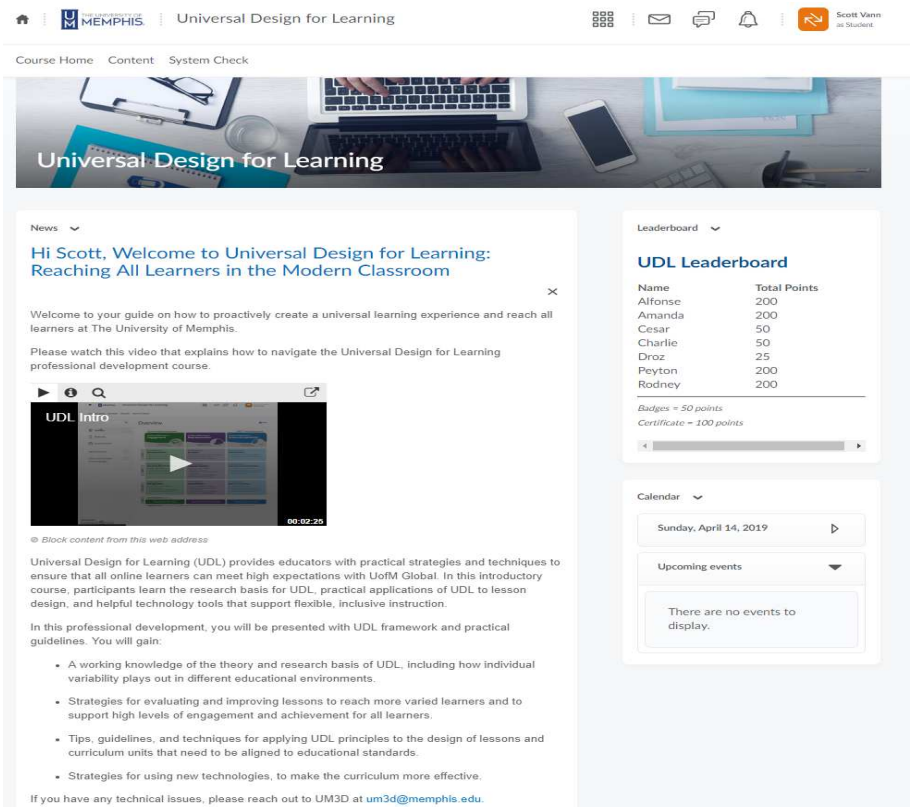

Figure 1. Screenshot of the welcome page from the gamified PD course, "Universal Design for Learning".

As part of the invention, participants completed an estimated one hour of instruction on universal design for learning (UDL). The professional development on UDL was originally offered by the university in a traditional face-to-face professional development setting. The content was recently digitized and incorporated within the university's LMS into an online synchronous, self-paced professional development course for online faculty by the CITL department. The Universal Design for Learning (UDL) PD provides online faculty with practical strategies and techniques to ensure that all online courses at the university can meet the high expectations of online learning at the institution. In the introductory course, participants learn the research basis for UDL, practical applications of UDL to lesson design, and helpful technology tools that support flexible, inclusive instruction. Within the online PD course, faculty are presented with UDL framework and practical guidelines. Participants gain:

- A working knowledge of the theory and research basis of UDL, including how individual variability plays out in different educational environments.
- Strategies for evaluating and improving lessons to reach more varied learners and to support high levels of engagement and achievement for all learners.
- Tips, guidelines, and techniques for applying UDL principles to the design of lessons and curriculum units that need to be aligned to educational standards.
- Strategies for using new technologies to make the curriculum more effective.

The course, titled "Reaching All Learners", consists of four instructional modules (Figure 2): Introduction to Universal Design for Learning; Engagement – The Why of Learning,

Representation – The What of Learning, and Action & Expression – The How of Learning. Each instructional module is self-paced but should take participants an estimated 10-15 minutes to complete.

Once the participants login to the course, they encountered a welcome video that provided a walk-through of the course structure and explanation how the gamification elements were incorporated. Each instructional module contained content in HTML, a short video (3-5 minutes) on the UDL guideline being presented within the module, a PDF of best practices from CAST on the UDL topic, and a knowledge check with unlimited attempts that covers all concepts introduced within the module.

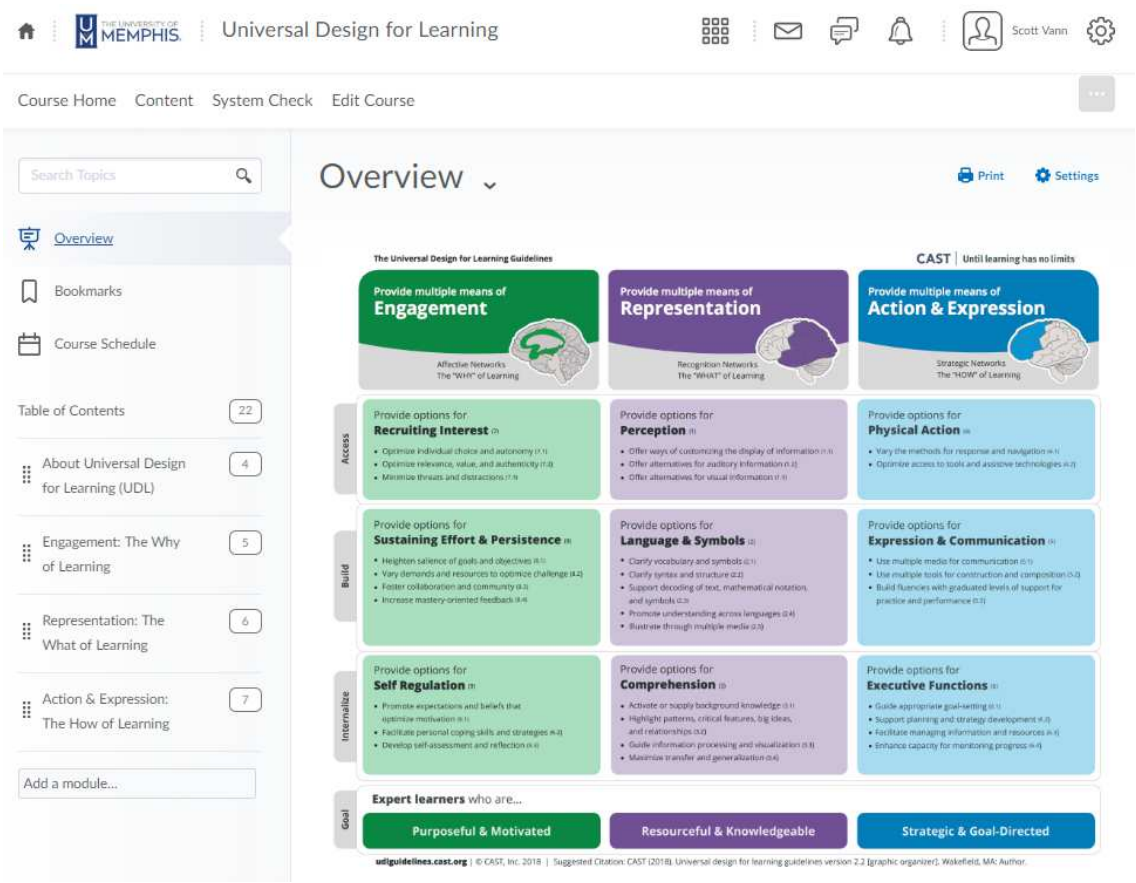

Figure 2. Screenshot of the instructional modules within the "Universal Design for Learning" PD course.

Gamification Elements

Gamification elements (badging, leaderboard, content leveling, and certificate) were applied throughout the entire course to promote engagement within the instructional content (Hamari, 2017; Kuo & Chuang, 2016; Sabourin, & Lester, 2014). Badging was used within the PD to provide participants with a badge once a learning competency was achieved. Each instructional module had an associated badge and each badge contained a set amount of points that could be earned once the module was successfully completed (Figure 3). As stated previously in Chapter Two, previous research has shown that badges increase learners' engagement within online learning environments (Brigham, 2015; Hamari, 2017; Ricardo et al., 2015).

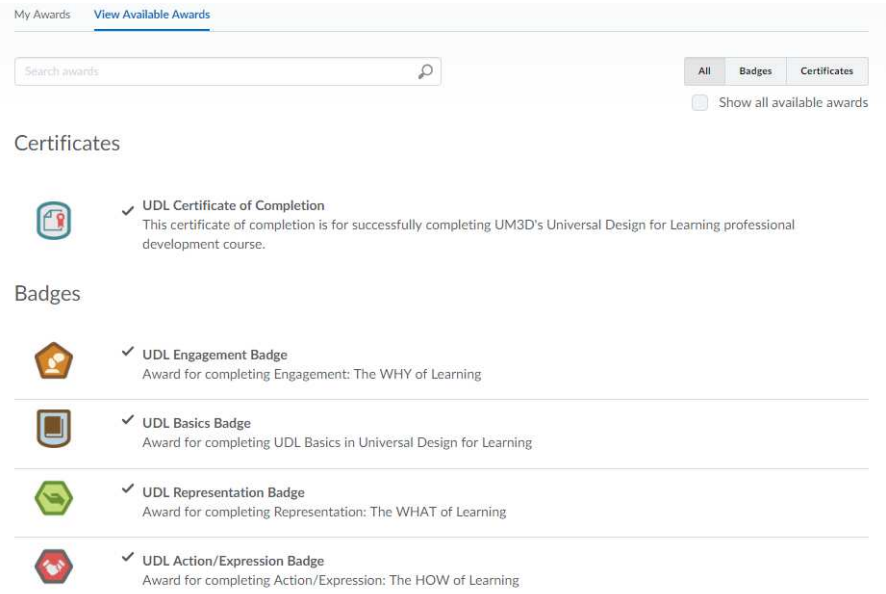

Figure 3. The badges available to a participant within the "Universal Design for Learning" gamified PD

A leaderboard was applied to PD and was displayed as a widget on the homepage of the course. For confidentially, participants' pseudonyms were used to awarded points on the leaderboard. Each badge earned within the course and certificate awarded at course completion contained a set point value. After a badge was awarded to the participant, the leaderboard was updated to reflect the points obtained. The leaderboard was used to examine if the competitive aspect of gamification increased engagement within the PD course. According to the literature, leaderboards have had varied results on increasing engagement in online learning (Kuo & Chuang, 2016; Ozhan & Kocadere, 2019).

Content leveling was used to assist with cognitive load within the PD and provide segmentation of the PD content (Mayer & Moreno, 2003; Sue, 2015). Content leveling was achieved by applying release conditions to the modules which were linked to learning competencies within the PD. For example, the module on "Representation: The What of Learning" will not be unlocked until the competency is completed for "Engagement: The Way Learning" (Figure 5). A competency is achieved by scoring an 80% or better on the knowledge check assessment within the module. The knowledge checks have multiple attempts allowing participants to retake the assessments as many times as needed to complete the module and move on to the next level.

Figure 4. An example of a release condition linked to the achievement of a competency.

As participants progressed within the PD, instant feedback mechanisms were used in the course. Once a participant completed a knowledge check they were immediately provided the results, along with information on the questions that were missed. The missed questions provided information on where participants could locate where the content was provided within the course. Knowledge checks were configured for unlimited attempts and participants passed the assessment once they scored an 80% or better. Successfully completing the knowledge check in the module awarded the participant the corresponding badge for the corresponding UDL competency. Additionally, the participant was also awarded points for each badge obtained and the point values were added to the course leaderboard.

Once a participant successfully obtains all the badges within the course by achieving the required learning competencies and completing each instructional module, a certificate of completion is automatically generated and awarded to the participant. The certificate is customized to the participant and contains their full name, the university logo, and signature from the Director of Distance Learning (Figure 5). The learning

management system provides the ability to add replace strings on the award certificate, which allows for the automation of the award information (ex. name, date, issuing department, and the name of the PD). The certificate is presented to the participant automatically within the LMS and an option is provided to generate a PDF of the award.

Figure 5. An example of a certificate of completion that was generated to a participant within the "Universal Design for Learning" PD. Personal and identifiable information was redacted for confidentiality .

The professional development was created and offered within Brightspace - Desire2Learn (D2L), the university's learning management system. D2L is a popular learning management system professional development and training platform that is used by several leading universities and organizations to deliver engaging and gamified online learning content.

Data Collection Methods

Before participating in the intervention, participants from the sample group of online faculty provided consent to participate in the study (Appendix D). Research data was collected post-intervention using a semi-structured interview process. All interview responses were digitally recorded for analysis using BlueJeans video conferencing software. This type of data collection allowed the researcher to gain a holistic understanding of online faculty's perception of engagement and flow experiences within the gamification-based professional development. Obtaining data from these various sources also allowed for triangulation of data and thereby increased the reliability of the study's findings (Yin, 2003) Triangulation is the process of bringing together evidence from different individuals, data types, or methods of data collection to identify themes gathered in analysis (Creswell, 2008).

Table 2

Research Questions – Instrument Alignment

Primary Research Question	**One-on-One Interview**
1. How does gamification-based professional development, if at all, engage faculty within higher education?	Appendix E: Questions 1, 2,, 8
Secondary Research Question	**One-on-One Interview**
1. What are the perceptions of online faculty regarding the application of gamification in professional development?	Appendix E: Questions 5, 6, 7
2. How, if at all, do online faculty experience flow during participation in gamification-based professional development?	Appendix E: Question 3

Data Collection

Before conducting research, I obtained approval from the Instructional Review Board (IRB) at my institution (Appendix A). After IRB approval was obtained, I sent an e-mail inviting all online faculty enrolled in the Universal Design for Learning gamified PD to participate in the study (Appendix B). The email contained a link to a survey within Qualtrics requesting demographic data from faculty willing to participate (Appendix C). After informing participants of their selection as a partner in the study, each participant was asked to sign an electronic (DocuSign) IRB approved consent form (Appendix D) and provide a pseudonym to help maintain his or her confidentiality within the online PD course and the study. (I provided a pseudonym for those who did not respond with the pseudonym of their choice.)

Participants were invited to attend a virtual webinar (BlueJeans) where they could learn more about the study and ask questions regarding the consent form. None of the participants attended the virtual webinar that was offered. Once signed consent forms were received from the participants, I digitally signed the forms as well acknowledging my role as the researcher and principal investigator in the study. The signed digital consent forms were stored on a secure university file storage system (OneDrive). The participants also received an email confirmation of the signatures and a copy of the completed form automatically from DocuSign. Only participants who returned a completed and signed consent form were included within the study.

The participants were added to the self-paced professional development course by the Center for Innovative Teaching and Learning, the center that manages online faculty PD. Before completing the instructional modules within the UDL PD course, participants

were asked to watch a short welcome video on the course homepage explaining how to navigate the course, summarizing various gamification elements that had been added (badges, certificate content leveling, and leaderboard), and explanation how those elements could help them track their progress. Due to the course being a self-paced and independent virtual course, participants were provided with an estimated time of completion for each instructional unit (fifteen minutes). Participants were informed in the consent form and within the welcome video that I had exclusive access to their user progress data and the leaderboard tracking points obtained during the course.

Memos were kept of what was observed within the online PD course, via the learner progress data hub. Memoing, which is defined as the process of taking detailed notes on the obtained qualitative data, assisted the researcher with the development of a holistic analysis and categorization of data into meaningful codes and categorical aggregations (Creswell, 2013; Stake, 1994). The learning progress hub within the LMS provided information on how often the participants logged into the course, how many badges were issued to participants, and the average amount of time spent within the course. After successfully completing the self-paced UDL professional development course, contact was made via email to schedule one-on-one interviews with the participants. A semi-structured interview protocol (Appendix E) was utilized during the one-on-one interviews which allowed me and the participants to dialogue about their perceptions of the PD. The interviews were recorded and transcribed for analysis immediately following the interview. All data from the study was stored in a secure OneDrive folder (university file storage) and offline (located in an office), and only the researcher had access to both data sources.

One-on-One Interviews

Interviews were conducted via BlueJeans video conference sessions, the university's enterprise virtual meeting software, using a semi-structured interview protocol focused around the primary and secondary research questions of the study (see Appendix E). The interview protocol asked the online faculty to respond to several questions pertaining to their perception of engagement within the gamified UDL professional development course. One-on-one interviews also allowed for the researcher to gather participants' individual perspectives, which they might not have felt comfortable sharing in a group setting. Participants' interview responses helped to identify the presence or absence of flow components within the professional development. Interviews lasted from thirty to forty-five minutes. All interviews were recorded and transcribed for review and analysis. The data from the interviews were triangulated with the data from the memos recorded during the study, for the purpose of discovering emergent themes.

Data Analysis

The memo and interview data were analyzed using the analytical approaches of two well established case study experts, Robert Stake (1995) and Robert Yin (2009). Stake and Yin's work addressed how to conduct an in-depth and thorough analysis, with the goal of providing clear understandings surrounding the complexity of case studies. Before the memoing and interviews were conducted, the researcher's data analysis started with expectations, predictions, and personal connections. The researcher's interactions with various literature and popular media influenced how he understood engagement within professional development and saw the potential benefits afforded by gamified-

learning, before the researcher had ever engaged with an online faculty member for the study. The researcher's professional relationship with this study also impacted how they interpreted the data collected. Throughout the study, the researcher kept track of the analysis of the data, in all its various forms, within a researcher journal. This allowed the researcher to see how his initial perspective may have influenced the analyses that took place after the data collection with the study's participants.

While conducting one-on-one interviews and memoing their observations from within the UDL PD course, the researcher coded the data from detailed field notes to create a holistic interpretation of the case. Following the holistic interpretation of the data, the data was analyzed according to the three forms of case study analysis outlined by Stake (1995): categorical aggregations, identification of patterns, and naturalistic generalizations. An analysis of themes was conducted by reading and sifting through the transcribed data line by line within NVivio Plus 12 data analysis software to get a sense of categories and themes or categorical aggregations (Stake, 1995; Yin, 2009). By fully immersing myself in the data, reading interview transcripts, and reviewing memos, the researcher developed an overall sense of the case study data. Keeping detailed memos during this research contributed to the researcher's ability to categorize data into themes (Creswell, 2013). Pre-established codes, based on my extensive review of the literature, also allowed the researcher to funnel the significant data into meaningful themes (Yin, 2003). The researcher examined the consistencies and patterns between the codes which led to the identification of patterns and inconsistencies among categories throughout the data.

The analyses outlined above informed the naturalistic generalizations or understandings that resulted in the study's recommendations and conclusions. The researcher used In-vivo and pattern coding for the data analysis. For the coding of the data, the researcher use NVivo Plus 12 software to create detailed nodes for the codes and themes found within the data. All study data was uploaded and stored on a secure, virtual university platform (OneDrive) from within NVivo. The Nvivo software also allowed for detailed reporting and visual code maps to explore the connections between the different data collection methods (Appendix F). Through NVivo, interview participants could access the data collected and check for accuracy of the transcriptions and themes that emerged.

Trustworthiness and Ethics

A number of strategies were used to ensure that the validity of qualitative research demands were met. Data was collected using a semi-structured interview protocol. Additionally, an electronic research journal was maintained throughout the data collection and analysis process. The researcher ensured quality of the research by using member checking (Creswell, 2013). All participants that participated in the one-on-one interviews for this study were invited to proof their transcripts for accuracy and were given the opportunity to correct any misinterpretations, in turn, allowing the research to be more credible and not contain any misinterpreted notes.

Each participant was made aware that they would be participating in a research study and that their participation was completely voluntary. Additionally, participants were informed that their participation would not influence their standing within the university and that he/she could withdraw from the study at any time without

consequence. Confidentiality was preserved, and each participant signed an informed consent statement prior to participating in the study. The researcher's personal and professional experiences in distance education and online learning have contributed to the perceived need for faculty engagement in professional development and the proposed study, hence a description of subjectivities concludes Chapter Three.

Subjectivity Statement

The researcher strongly believes, based on ten years of professional experience in higher education, that institutions should provide engaging professional development opportunities to faculty. Faculty are required to meet numerous university, federal, and state accreditation standards regarding program retention, student learning outcomes, and provision of accessible learning paths. Yet, many institutions do not provide engaging professional development to prepare faculty to meet these standards. Efforts have been made to ease potential researcher biases through the design of this case study and its methodology.

As a researcher and a practicing instructional designer, the researcher is fascinated by the relationship between faculty experience and engagement in professional development in higher education. Gamification has played a large role in primary and secondary education, by engaging students in instructional content. The researcher believes that theoretical evidence supports the idea that gamification can also be used to engage faculty in professional development opportunities. Through engagement with professional development, faculty can develop their own engaging course content and instructional strategies which can directly impact student success. The researcher's motivation for this study is to explore gamification in professional development and to

understand the influence it can have on faculty engagement. Additionally, the researcher believes this information would provide great value to himself as a researcher and instructional designer but also to the institution's professional development initiatives.

The researcher did their best to minimize the position of power within this study. The researcher had previous professional relationships with many of the participants in the study. During the initial onboarding and informational session of the study with the participants, the researcher acknowledged his role within the study and recognized his role within the university as an instructional designer. The researcher explained the importance of the participants' role within the study and how the results could potentially influence future professional development at the university and within higher education. The researcher shared his positionality on the study, but also explained that he was not an expert on gamification or on effective online faculty professional development. Additionally, the researcher explained the reasoning behind conducting this research and how, by examining their perceptions of engagement within professional development, they could impact future research.

Summary

Chapter Three provided an overview of the methodology and design behind the study, by elaborating on the research questions, data collection methods, and data analyses procedures. A qualitative case study approach will be used to conduct the study (Gerring, 2007). Participants will be recruited within the university from various colleges and departments. Furthermore, participants will include faculty, instructional designers, and university administrators. This chapter also discussed the site of the research and the

participant recruitment decisions. Additionally, researcher biases and ethical considerations were identified and a subjectivity statement was provided.

CHAPTER FOUR: RESULTS

Introduction

As stated in previous chapters, research consistently finds that online faculty are not adequately engaged in professional development (Brinkley-Etzkorn, 2018; Elliott et al., 2015; & Wingo et al., 2017). Previous studies in other contexts have shown that the use of gamification in virtual learning contexts can be a valuable solution to increase the flow construct of engagement (Brigham, 2015; Buckley & Doyle, 2014; Kuo & Chuang, 2016; Mekler et al., 2015). However, a gap exists because gamification has yet to be applied to online faculty professional development to examine if it influences the flow construct of engagement. The purpose of this qualitative case study was to examine online faculty's perception of flow and engagement after participation in a gamified professional development course on Universal Design for Learning (UDL). The following primary and secondary research questions informed this study:

RQ1: How does gamification-based professional development, if at all, engage faculty within higher education?

1. What are the perceptions of online faculty regarding the application of gamification in professional development?
2. How, if at all, do online faculty experience flow during participation in gamification-based professional development?

The literature review that was provided previously in Chapter Two presented the necessary background on flow theory and gamification, as well as research on what is known about the relationship between gamification elements and increased engagement related to online learning. Chapter Three provided the framework of the study's design,

participants, settings, methodology, data analysis, and the researcher's positionality. Furthermore, Chapter Four will describe the results of the data analysis by providing a holistic analysis and overview of the themes that emerged from the case study data.

The selection criteria for participants in this case study was delimited to online faculty who were enrolled in the UDL gamified professional development and who were currently teaching online courses (part-time or full-time) at the university; this led to the selection of ten study participants. Upon completion of the UDL gamified PD course, participants were asked to share their overall perceptions of engagement within the gamified PD by participating in one-on-one interviews. Six of the ten study participants agreed to be interviewed by the researcher. During the interviews, participants were encouraged to share and discuss perceptions of their engagement within the course, their perception of flow while completing the PD, and their overall perceptions of gamification and engagement strategies. The interview questions were designed to elicit responses aligned to the research questions and were then used to categorize emerging themes among perceptions shared by the participants (Appendix E). The table below shows the participants' pseudonyms and demographic data of the online faculty that agreed to be interviewed for the study.

Table 3

Interview Participant Demographics

Pseudonym	**Gender**	**Age Range**	**Race/Ethnicity**	**Yrs Online Teaching**	**College**
Alfonse	Male	35-44	White, non-Hispanic	3-5 years	University College

Table 3 Continued

Amanda	Female	25-34	Pacific Islander	6-10 years	College of Arts & Sciences
Cesar	Female	55-64	Hispanic/Latino	10+ years	College of Arts & Sciences
Emma	Female	25-34	Asian	3-5 years	College of Arts & Sciences
Rodney	Male	25-34	White, non-Hispanic	1-2 years	University College
Peyton	Male	35-44	White, non-Hispanic	3-5 years	College of Business

Results

This chapter is divided into four sections, each corresponding with the four major themes that emerged during the analysis as they relate to flow theory: (a) increased perceived engagement through self-directed learning, (b) gamification features activate external motivation to engage, (c) competition and the role of flow, and (d) the role of effective segmentation and cognitive load in flow. Essential to these findings are excerpts from the one-on-one interviews, as they provide rich perceptions to support this case study's findings (Yin, 2003). Due to faculty's perception of engagement and gamification elements being impacted by numerous variables, each theme contains responses that vary and are based on the personal experiences of each participant. As such, it is not the intent of this case study to examine the similarities and differences between the participants;

rather, this study offers an overview of the case by including supporting evidence for each emerging theme (Stake, 2010). By examining the emergent themes, a better understanding may be gained regarding: (a) online faculty's preceding and current perceptions of engagement in professional development, and (b) how online faculty's perceptions may have been influenced by gamification elements.

Increased perceived engagement through self-directed learning.

The semi-structured interview process was purposely designed to capture online faculty's perceptions of the flow construct of engagement within a self-paced, gamified professional development course. While each participant provided unique responses to the interview questions, a pattern did occur in the way the participants explained their perceptions during the interview process. Specifically, participants discussed how the gamification elements within the course kept them engaged in the PD.

When asked to describe their perception of engagement within the gamified UDL course, the participants seemed to be strongly focused on the design and self-directed learning aspects of the PD course. Every participant provided a positive reaction to their perception of engagement within the course and their perceptions of autonomy in the interaction. For example, Amanda discussed how the progression of the modules maintained her engagement while also allowing her to have a sense of flow from the construct of concentration on the tasks at hand. The interface of the course was designed so participants had to complete a small number of activities before progressing to the next module. The release condition for each module was configured so all activities had to be reviewed and the knowledge check had to be completed with a passing score (80% or

higher). The use of release conditions allowed for participants to have a custom learning path that provided a logical progression of the PD.

> "*There was something about…like wanting to get through those modules to progress to the next one. That was the first time I probably took some kind of online class like this…or where I did not multitask on the side. Every time I was interrupted I pause right…like I'm disengaged…but I easily got back into it. I was surprised to find that it increased my engagement because once I started getting through things I felt sort of compelled to keep getting through things and especially because I couldn't move on to the next thing without completing all the parts."*

This quote details how Amanda quickly re-engaged with the content and was able to re-enter a state of flow when interrupted, due to a sense of control and logical progression of the PD. In the context of this case study, the modular layout of content within the PD was designed to provide participants with a coherent path of progression and an impression of control over the content from the perspective of flow.

Furthermore, Alfonse also explained how the PD progression appeared "seamless" and allowed for an optimal state of flow by providing an opportunity for immersion within the PD.

> "*Moving from one piece to the next was very seamless and it was integrated in a very like logical way…that it didn't really feel like I can feel myself moving forward without feeling the like individual pieces*".

In the context of this interface, the modules within the course were clearly labeled by what area of UDL was being discussed (Figure 2), along with a "How to Get Started and

a “To-Do List” provided in the overview of each modules. Participants were provided badges as each module was completed displaying mastery of the UDL framework. As demonstrated by the above quote from Alfonse, the interface design elements immersed participants within the PD and provided an optimal channel for flow to occur.

Participants' descriptions of their experience with the gamified design elements of the PD, such as content leveling, clearly defined goals, and obtainable awards, correlated with documented attributes of the flow state and resulting levels of heightened engagement. Peyton alluded to experiencing a flow state and losing track of time while completing the PD: “Yeah, there definitely were times where I would get lost into the content”. When Amanda was questioned about her perspective of flow, she stated, “I would say so this is probably where being interrupted so much didn't help...that probably didn't happen for me”. However, later in the interview, she stated when not being interrupted, “I did not want to take my focus away from it”. The following quotes show that by experiencing flow elements such as losing track of time and having increased focus, participants were able to have an increased level of engagement due to the interface’s gamified features.

Additionally, Cesar’s perspective of flow was related to intense focus on completing the tasks and also briefly losing track of time. She stated the following:

> “*I was so focused on the tasks…I was like ‘okay let’s see what’s next’. I wanted to learn about the content because it is related to what I do. I would think ‘Oh this is what I’m doing’ or ‘this is what I should be doing’. While completing the course…I didn’t realize how much time passed. I was so involved in completing the materials…trying to unlock the next module*.”

The above quote explains how Cesar experienced a flow state by losing track of time while attempting to progress to the next module within the course. Within the interface, Cesar was able to advance within the course due to the release conditions that were established at each module. As explained earlier, content leveling and progression requirements were clearly defined within each module. The clearly defined goals within each module allowed Cesar to stay focused on the required activities within the module, in order be awarded a badge and unlock the next module in the PD. Similarly, Cesar discussed engagement as it relates to the various multimedia content that was presented within the self-directed learning.

> *"I was extremely engaged because it was clear…not a lot of pictures and a lot of things was right there where I want to be and the videos were very nice, that they explained very well they broke the routine. Very good organization in a way that I know what is expected, I just need to go from this to the next one and read the next one...very informative in a way that I was not demotivated at all…I was always engaged…I wanted to continue."*

The above quote explains how the self-directed design and choice of multimedia within the course increased Cesar's engagement by providing organization where an optimal state of flow could occur.

While some participants found the course's content or progression engaging, a few identified the PD's self-directed design as the basis of their engagement. Rodney stated,

> "*My engagement in this course was probably a lot more…since I was the one who was having to move through it and it wasn't just a lecture given to me by*

somebody. Previous online trainings I've taken… it feels like something that you have to…just a hurdle to jump over, but in this case it felt a little bit more like I was actually doing something that that at least made me feel good. I felt a lot more in control and also just…a lot more buy-in to complete it, even watching the videos to see how they showed examples of this kind of design in action. I felt more in control of it and more connected to it".

The above quote details how the flow aspect of sense of control allowed the participant to experience a higher level of engagement compared to previous experience with PD offerings. As demonstrated by the quote below, Amanda felt control over her progression within the PD as a result of the locking and unlocking of content via release conditions. By being presented with a short module at a time, she was able to progress at her own pace and have an obtainable award that was presented (badge) after the module was completed.

Furthermore, Amanda also expounded on the self-direction aspect of the PD.

"I thought this professional development experience was incredibly efficient. Everything was incredibly clear and because I was doing it by myself. I was able to stop and think through how I would apply it specifically to the content that I teach...and I really appreciated that like because I could go through it at my own pace. I was able to really go through examples without taking up time without getting so lost in thought."

As shown by the quotes above, some participants provided rich and detailed responses when asked about their perception of engagement within the gamified PD course as it related to self-directed learning. Specifically, they noted the self-paced design and logical

progression of the PD allowed them to experience flow by staying focused and present with the content. Their perception of the flow construct of engagement was influenced by their sense of autonomy over the content and clearly defined goals. Once more, none of the participants mentioned any negative or challenging perceptions of engagement. Several participants drew a comparison to previous PD offerings and indicated that the self-paced design of the PD allowed for them to be more engaged with the content.

Gamification features activate external motivation to engage. During the interviews, participants frequently associated the various gamification features (ex. badges, certificate, content leveling, and leaderboard) with sustained engagement within the PD. While many of the participants were not familiar with gamification, they did have a positive perception of gamification as it related to their engagement within the course. Participants shared how the badges sustained their engagement to continue to the next module and the ability to receive an "reward" kept them engaged in the course content. Cesar stated, "*when I received the first award just after I finished my first module, I wanted to continue the work…I said to myself, 'oh okay let's see what's next'."* As participants completed modules within the course, they were instantly provided with an award (badge) for completion of that milestone in the PD. Additionally, Emma described the perceived impact of earning a badge:

> "*You know the little time that I feel bored is really short…gets shorter and shorter, because like I want to earn my badge. I do a good job on the quiz and for doing a good job…I get my points and my badge. It is really refreshing and different than a previous course…aside to just the badges, you have a certificate. It gives me a little prize when I finish a module."*

Participants were provided an overview before starting the course that explained all the badges and award certificate that could be obtained within the course. The interface was purposely designed to unlock modules as they progressed. By providing instant feedback in terms of badges, participants were encouraged to continue to the next module and thus sustain their engagement in the PD.

Additionally, one participant explained how the gamification elements provided a "carrot" to drive engagement within the PD. Peyton expanded on this when he said:

> "*So it was it was interesting to learn about…you know the different interactions and really to…I guess have that nugget placed in front of you, kind of like the carrot dangling in front of somebody, just say you know if you learn about this you complete this objective or this learning goal then you know you get this little token if you will…it does drive engagement*."

Peyton provides some evidence that the interface's logical progression towards learning objectives and the award achieved through module completion allowed him to experience flow and maintain his engagement with the course content.

One participant also stated he was a little "skeptical" at first regarding gamification in a PD environment but later reflected that,

> *"I'm someone that was maybe a little initially skeptical about like what would this actually do for engagement…but getting those notifications seeing what things you have to look forward to in terms of completing the course a lot more fun."*

By providing participants with a list of obtainable awards in the PD before starting the course, participants like Rodney were provided with motivation to complete the course.

The notifications on the interface informed participants they had achieved an award in the PD and provided them instant feedback to continue to the next milestone.

Another participant also commented on the multiple assessment attempts that were designed into the course. To obtain a badge, the participants had to successfully complete a knowledge check with an 80% score or better. A participant earning a badge showed they mastered the learning competency for that module and received instant feedback on the achievement. Cesar highlighted the benefits of having multiple assessments and instant feedback within the PD:

> "*What I liked the most is the multiple attempts, because in the course there was nothing to say…'oh you didn't pass this section and I'm going to send you back and retake'. It automatically takes you back without telling you failed…that was a very positive way of doing that I like that very, very much."*

The interface was explicitly designed to not focus the participants' attention on their failure at knowledge checks. Instead, the interface was designed with permission to fail and would immediately provide content that could be used when re-taking the assessment. As a result, flow state potential is heightened by participants perceiving the activity and award as achievable.

When asked about their perceptions of the gamification elements, participants frequently described how badges increased their motivation to complete the PD. Emma described the motivation to continue and engagement within the course content as:

> "*…if I earn a badge, it like gives me another motivation to move to then to the next level. It's definitely different than what I took earlier, and it also helped me to learn more of the course content and not want to log out. It gave me the*

motivation to drive me…like I want to really study the details and also study the content, so I will answer all the questions for the quiz.

In terms of the interface design, the above quotes suggest that gamification increases both engagement with the content and self-determination to progress through the PD course. Like Emma, Peyton also explained that the badges motivated him to get through the course and become more engaged with the content:

"*The badges motivated me more to get through…maybe not more quickly but it at least gave you like a finish line something to reach for as opposed to just complete this course. I didn't want to…you know miss any and any of the questions on the quiz and so I forced myself to read through some of that lengthy text."*

Additionally, Peyton described how badges granted visibility to his progression within the course: "*in this gamified course you can see your progress, you know that you're accomplishing something…you have something there you can earn*". The logical progression of the interface design assisted with keeping participants on track with their learning progress. The release conditions on the modules allowed for content to be released once learning competencies had been completed. As such, the badges helped to catalyze engagement by providing a sense of progression and control over the modules.

Some participants, unprompted by interview questions, described how instant notifications within the gamified PD increased their engagement. Using gamification, the notifications alerted the participants when a level was achieved and a badge was issued. Alfonse provided the following perspective on the notifications, when asked about the gamification features:

> *"It was that first notification that popped up in part because I had never seen any notification like that in eCourseware [LMS], so at first I was like 'well what is this' and seeing that and then seeing the achievement…made me want to get more notifications."*

The above quote describes how a participant received an instant notification when obtaining a badge and, as a result, was motivated to stay engaged in the PD. The notifications appeared prominently in the course navigation bar when a badge was awarded. Due to the notification's visibility, participants did not have to search for the next award milestone within the course. Peyton provided a similar, unprompted response regarding the notifications:

> *"…if I read this thousand-word text, I'll get a little notification. It'll pop up…I guess if you got that little carrot dangling in front of you…it makes it a little bit easier because you have something to strive for."*

When commenting on PD notifications, Rodney said, "*getting some kind of notification that I had I had actually surpassed a level was better than just getting all the questions right on the test*". Collectively, the above quotes suggest the immediate feedback experienced within the course generated a sense of progress and increased engagement, which are both components of flow. Participants were focused on completing the required tasks to master the activity in order to achieve the corresponding award.

While few of the participants expected badges from course progress, their first awarded badge quickly developed an expectation for badges whenever a module was completed. Cesar stated, "*when I took the second quiz I couldn't get anything right away and I was saying, 'well, I got one already where's my other award?*'". In terms of flow,

this quote suggests that badges helped maintain engagement and produce the sustained interaction necessary for flow to emerge. When asked about the certificate that was awarded upon completion of the course, Cesar provided positive perceptions of engagement, as it related to the badges and certificates.

> "*…the fact that you can get a certificate at the end you know telling you. 'yes you have complete this'… um when you know I received the first award like I'm saying I was not expecting that…then that was very, very rewarding...engaged me even more not only learning what is in there or reading, or continuing but I want more, I want to see what I can do more in the course."*

Furthermore, Cesar also commented on the fact that the certificate was automatic, and she didn't have to wait on someone to issue it to her.

> *"…normally you have to wait for somebody to send you this certificate or if you go to a conference…just sign that right away for you there and sometimes they misspell my name. This was great because the system probably just put your name in there automatically and it was spelled correctly."*

The above quotes suggest awards for completing a goal motivate engagement by providing immediate feedback. The PD interface was designed so that participants would receive the instant notifications of completing milestones, while also providing clearly defined goals within each module. Hence, notifications keep participants concentrated on the tasks necessary to progress within the course and provide an ideal environment for flow to occur.

Competition and the role of flow. Findings within this theme suggest that the competitive aspect of gamification impacted participants' perception of flow within the

PD. Participants expressed “intense focus” and “concentration”, as they were trying to complete the required “tasks” and get on the leaderboard. That said, not all participants were driven by the competitive aspect of the points and leaderboard, as it relates to competing with their peers. However, all participants expressed that achieving awards gave them a personal sense of accomplishment. Peyton was one of the participants who was driven by the competition of the leaderboard.

> “*I'm a very competitive person…so I'm looking at the leaderboard trying to figure out why I'm not number one and so I was really checking it…so yeah absolutely I was constantly looking every time I did something.”*

In this quote, the leaderboard ranking fostered engagement, sparked interest, and encouraged sustained interaction with the course. This, in turn, encouraged a context for flow to emerge. Every time a participant logged into the course, the leaderboard was prominent on the interface. The leaderboard was constantly updated to show the points that were awarded to each participant after obtaining badges linked to learning competencies.

However, when prompted about the leaderboard, Amanda stated:

> *“I think for me…I looked at it a few times and I judged everybody kind of randomly but in terms of like actual engagement…for me I think that part wouldn't be very useful. I could see though how for some students that might be impactful.”*

For some participants, the community leaderboard within the course increased engagement and, through trying to increase their ranking, allowed them to experience a state a flow. However, other participants did not find the community leaderboard

similarly engaging. Unlike Peyton and Amanda, Rodney wasn't always checking the leaderboard in the PD. However, Rodney did find personal accomplishment in the gamification aspects.

> "*I think some want to get all of them all [badges] and get on the leaderboard…wanting to accomplish everything there is to accomplish. But for me it was beneficial because you saw your progress and then it you knew… 'hey if I get every badge that there is to get…I will have accomplished and absorbed all the information that the person who designed the course wanted me to get'*."

As stated previously, the course notifications on the interface allowed participants to receive instant feedback and view their progress within the PD. Interestingly, Alfonse didn't check the leaderboard often, but he found engagement and motivation in being able to see his own personal accomplishments. Alfonse stated, "*seeing the option to look at all the badges I've earned so far…all the ones that are available…really engaged me and pulled me back into the course in a way that most features don't".* The awards link was purposely placed in the course navigation bar beside the 'content' link. This allowed participants to easily view all the awards that were available in the course and their personal progression towards the awards.

Similarly, Emma and Cesar didn't see any personal value in the competitiveness of the leaderboard and had no interest in comparing their accomplishments with their peers. However, Emma did provide a unique perspective regarding the competition aspect, in terms of wanting to show off her badges.

> *"I would love to show off the badges I earned from my professional development courses… I would like to share on my social media and show other people like*

'hey this is a really fun course I took online'."

This suggests that badges foster a self-rewarding experience and result in a desire to share badges as social markers of accomplishment. Within the LMS, users are able to post their badges to numerous third-party sites and showcase their accomplishments to their peers.

When prompted, participants shared various perspectives of their flow experience while participating in the PD. When asked about flow, Rodney stated:

"*Yeah, I would say that I achieved flow probably after I got that that first badge. I am pretty competitive with awards like that and so after I got that after I got the first badge…it suddenly became kind of a thing to complete."*

Rodney later expanded on his perspective of flow within the PD, by explaining his intense focus on obtaining the badges.

"*I was focused on it [badges], to the point where a colleague was trying to get my attention…they had to come over to my desk to actually get my attention, because I wasn't paying attention to anything else other than what I was doing in the course".*

In this case, the badges helped to promote a state of flow, by incorporating competition and challenge to trigger intense focus on the tasks within the PD.

The role of effective segmentation and cognitive load in flow. This theme's findings reveal that participants perceived segmentation as beneficial to both their engagement and maintaining cognitive load within the PD. The PD was designed to unlock content, via release conditions within the LMS, as participants completed the learning competency and earned a badge for the corresponding instructional unit. Participants expressed positive feedback in the design and delivery of the PD. A few participants provided their

perspective on the segmentation and content leveling aspect. Alfonse stated the following:

> *"…unlocking an achievement was sort of like 'oh I got this thing and more content just opened up'… I think it really helped. I wasn't just presented with this just…'oh well here's the long you know list of checkmarks you're going to need to take off' it was like the course itself grew as I grew through the course."*

Alfonse's comment relates to the modular structure of the interface design of the PD. As he progressed within the course and completed the required activities, more content became available. The feature narrowed participant's visibility to a few items at a time instead of the entirety of the course's content.

Additionally, Rodney provided his perspective on the gamification element of content leveling:

> *"…achieving different levels and completing different levels. I felt...I guess probably the best way to put it is…I felt like I had I was more done with the previous level after I received the award...more than if I had just some kind of assessment and just gotten everything right."*

The quotes by Alfonse and Rodney show that content leveling can bolster flow experience, by providing clearly defined goals in purposeful segments and a sense of control over the required tasks in the course.

While segmentation is important in course design and for cognitive load, Peyton suggested that content leveling helped outline a pathway to PD completion and sustained his engagement in the course.

"*You can get to a point where you don't know really how you're*

progressing in the course, but if you've got… you know these objectives laid out in front of you and clearly defined… it really helps to see your total progress and feel like they you actually accomplishing something. For me…it was beneficial because you saw your progress immediately. It was stated what was needed to be completed to progress to the next level." Peyton later expanded on the effective design. *"You move towards the next level and you know…you get that checkpoint, checkpoint, checkpoint…until you get to that certificate. Yeah, I am done! A sense of accomplishment.*"

Peyton's statement highlights how segmentation can be facilitated using content leveling as a design feature. Within participant's statements, a theme emerged, though not always mentioned explicitly, regarding segmentation and chunking of content. Amanda disclosed how the layout of the content and the breakdown of the modules influenced her ability to stay engaged and maintain cognitive load.

"*I think that as the most surprising part about this course…I think it's because those things [activities] checked off when I was done with them and so I was able to just like…without having to think where I go back and look next…the next content immediately was available. I was able to walk through it…it was so easy to plug back into course."*

Another way of balancing cognitive load in the PD was providing content in multiple means (ex. text, audio, and video). Though participants were not prompted regarding their perception of cognitive load, a few participants expressed their awareness of this aspect of the PD. Cesar provided her perspective on the representation of the content and on the ability to have multiple means of engagement with the materials.

"*It takes longer to do anything because I am one of the students that need different approaches when learning new content…because English is my not my primary language. I enjoyed having different ways to interact with the content…having the videos to go along with the text and graphics really helped."*

The course was designed to allow participants to choose the learning modality that best suits their learning preference. Each instructional module was designed to allow for different interactions within the content (audio, video, and readings).

Peyton also provided feedback on the segmentation of the video content and how the design influenced engagement by giving the learner control over the flow of information. *"There were short videos…two or three minutes or maybe even just a little bit longer, and those to me were very insightful and held my attention*". Along with segmentation, minimizing distractions and confusion is essential for the flow state of hyper-focus. Additionally, Rodney provided his perspective on the design elements, particularly the plain and clear language that was used, as it related to minimizing cognitive load in the PD.

"*I could follow everything pretty well. Nothing felt like it was too much. The videos didn't feel too long to view, and the text was not overwhelming…or had a lot of jargon in it that that I needed to continue to refer back to…to figure out what it meant. It was written in plain language and easy to understand."*

Furthermore, Amanda provided details on the streamlined design and how she appreciated the automatic check marks included in the segmentation of the content.

"*I'll be honest though it was beautiful, so I don't know why my course doesn't look like that. I thought it was streamlined…I thought it was attractive I didn't hurt my*

eyes to read…like everything about how the material looked was better than what I have seen any course before. I really liked that…I can't stress enough how much I liked having those things checkoff on the side where it had…the little dot I think…it was a check box. I knew that the dots meant I had to continue, and I knew that the checks meant that I was done."

The above quotes indicate that the design aspect of content segmentation is important in managing cognitive load and reducing distractions within the PD. The course was designed to allow for logical progression of the learning materials, while also providing participants with clear visual indicators of their advancement in the PD. This type of design creates an environment for flow to be achievable, by providing a sense of progression and a clear path of completion.

Summary

The purpose of Chapter Four was to report on the themes that emerged from the analysis of the data collected during the interview process. The primary research question, that the themes sought to answer, asked "How does gamification-based professional development, if at all, engage faculty within higher education?" While offering different perspectives, all six participants agreed that the gamification elements within the PD increased their engagement. Many of the participants stated they hoped future PD opportunities at the institution were designed similarly and contained gamification elements. One participant stated, "*the gamification features made it engaging, in a way that I had not previously experienced. I hope that future professional development incorporates this design*." Another participant stated, "*if I could do the*

majority of my professional development like this, I think I would be more inclined to do more professional development."

The participants discussed how professional development should not be boring and all the "fun" should not be just for the students. They also discussed how much they valued being able to immediately see their accomplishments and share them with their college/department, if they were inclined to do so. The participants also expressed realizations over the importance of keeping online faculty engaged in professional development, due to the constant changes with instructional technologies and federal/state/board accreditation standards. The PD reminded the participants of the importance of staying up-to-date with these changes, in addition to the importance of effective and engaging PD within their college and university.

CHAPTER FIVE: DISCUSSION AND CONCLUSIONS

Introduction

As stated previously, the problem of practice is that online faculty are not engaged in professional development offerings (Elliott et al., 2015). As highlighted by the literature, this problem has been a struggle for many institutions in higher education (Jolley, Cross, & Bryant, 2013; Meyer, 2014) and is likely to increase as online offerings continue to grow. If faculty are not provided the proper professional development to be successful in these learning contexts, this problem could directly impact student success, retention, and degree completion (Willett, Iverson, Rutz & Manduca, 2014).

One way to address the problem of engagement is by introducing gamification-based design to online faculty professional development. In contrast to didactic-based approaches, gamification provides the opportunity of increased engagement by introducing aspects of competition, content leveling, control over the content, and instant feedback on progression (Suh et al., 2017 & Perryer et al., 2016). According to the literature on flow theory, gamification provides a foundation for the design and delivery of engaging professional development (Guo et al., 2016).

Despite the increased interest and opportunities afforded by gamification, a research gap exists about the degree to which this approach could benefit engagement. Thus, the purpose of this case study was to examine online faculty's perceptions of engagement in a gamified professional development. The study sought to better understand how, if at all, gamification-based professional development influenced online faculty's engagement within higher education. The participants were recruited from a pool of online faculty who were already enrolled within a gamified professional

development offering at a large public urban research university in the southeast United States. Ten online faculty members volunteered to participate in the study and completed the gamified PD, while six of the participants offered their perceptions through one-on-one interviews. The data collected from the interviews was analyzed using categorical aggregations and themes were identified through two rounds of detailed coding.

The findings reported in Chapter Four account for the participants' perceptions of engagement within the gamified PD, experience of flow within the gamified PD, and the influence of gamification elements on engagement. In Chapter Five, these findings will be discussed in reference to each of the research questions and in reference to the current literature. This chapter is divided into four main sections: (1) summary and discussion of the findings which includes the following (a) RQ1: What are the perceptions of online faculty regarding the application of gamification in professional development? (b) RQ2: How, if at all, do online faculty experience flow during participation in gamification-based professional development? (2) suggestions to improve practice, (3) limitations and recommendations, and (4) conclusion.

Summary and Discussion of the Findings

An interpretation of the findings presented in Chapter Four will be discussed, organized by the research questions and their corresponding themes.

RQ1: What are the perceptions of online faculty regarding the application of gamification in professional development?

This section discusses the discoveries regarding the participants' perceptions of the application of various gamification elements within the UDL gamified PD course. The significant themes that emerged from the data analysis related to this research

question were the following: (a) *increased perceived engagement through self-directed learning* and (b) *gamification features activate external motivation to engage.*

Increased perceived engagement through self-directed learning. The data gathered within this theme provided evidence that the participants' perception of engagement increased within the PD due to the gamification (specifically, the self-directed learning design of the course). The participants within this study all agreed on their positive perception of engagement and especially appreciated how gamification allowed for autonomy within the PD. Participants specifically mentioned an appreciation for the "seamless progression" of the content and the ability to progress at their own-pace in a "logical way". The findings closely align with literature that asserts engagement increases in online learning when learners are presented with a clear path of progression and a sense of control over their learning (Hamari, J., & Koivisto, 2014; & Liu et al., 2017).

Further analysis of the qualitative data describes what aspects play a role in self-direction: (a) increased engagement related to the clarity of the content and (b) the various formats of multimedia that were presented within the PD. In contrast to the way traditional professional development offerings disseminate information by a lecturer, clear content design embeds information within an interface that increases participant engagement by basing course progression on participant decision making (Dohery, 2010). Furthermore, by presenting content in various multimedia forms, the participants were presented with different formats that supported self-directed learning (Su, 2015). The conclusions align with various studies focused on self-directed learning. For example, Attali & Arieli-Attali (2015) proposed that learning objectives and content need to be

clear and well-integrated into the online learning environment for gamification to increase engagement. Although some literature proposed that the application of gamification may only increase engagement if the learner has some previous knowledge of the content (Kuo & Chuang, 2016), the results of this study build on prior literature by suggesting that previous knowledge of the content is not a requirement for engagement and flow to occur within gamified learning. In addition to the literature on self-directed learning, the findings of this case study align with flow theory literature's findings that clear goals and a sense of control can lead to a state of flow and increased engagement (Kiili, Freitas, Arnab & Lainema, 2012).

The results also allude to the importance of multiple interaction points in a gamified approach to PD and its role in self-directed learning. As cited previously (Suh et al., 2017), gamification provides interaction with the interface that is not possible in traditional, lecture-based approaches to PD. This level of interaction granted participants the ability to progress through content on their own time and interact with the multimedia format most applicable to their learning style. As a result of increased interaction, the vital flow element of sense of control was introduced to their learning. Again, these results are supported by previous literature which explains that learner autonomy has a relationship with self-directed learning (Yang, 2015). In contrast to prior approaches to lecture-based PD where information is disseminated en masse, the data suggests that a sense of control afforded by multiple interaction points allows learners to engage with content they deem most relevant and engaging as they progress in a gamified learning environment (Ozhan, & Kocadere, 2019)

Gamification features activate external motivation to engage. While gamification-based learning was a new experience for several participants, the participants' perceptions of increased engagement highlighted the role of gamified features in supporting flow (Chen & Hwang, 2014; Hanus & Fox, 2015; Looyestyn et al., 2017). Specifically, participants mentioned how the awards (badges and certificate) sustained their engagement to continue progressing within the PD. These various, external motivators embedded in the learning environment led to increased states of flow and allowed participants to stay within the optimal learning channel.

In the context of this case study, gamification elements (ex. badges) provided the participants with short term goals that produced sustained engagement with the PD. The badges functioned as micro-learning goals to imbue module completion with a sense of achievement and progression. This observation corresponds with other research on the subject. For example, Kyewski & Krämer (2018) identify how badges create intrinsic motivation by presenting learners with specific tasks to unlock extrinsic awards. Göschlberger & Bruck (2017) explain that participants experienced intense, short-term concentration on tasks when offered smaller challenges within a micro-learning setting. And Looyestyn et al. (2017) assert that "gamification positively impacts engagement and downstream behaviors, especially in the short term" (p. 16). These insights corroborate the value of gamification within instructional design. Hypothetically, an instructional design characterized by a sequence of short-term tasks within a gamified, broader PD course is the perfect context for flow state to occur.

In addition to badges, the study demonstrates that certificates are also a significant source of external motivation. In the context of this case study, the certificate was

awarded upon completion of the course; badges were the avenue for obtaining the final award certificate. Therefore, the certificate differed from badges in terms of perceived rigor and length of concentration required for obtaining the award. While the badges represented short term goals and were attained on an individual basis, some participants found the certificate was the main, external motivation for completing the PD because they could be shared with their peers (i.e. – department chair, colleagues, social networking). In either case, the different, external motivators could have attributed to a sustained state of flow by providing a longer concentration on task and presenting a greater challenge for this macro-learning artifact (Ding, et, al. 2017). In conclusion, the flow antecedents that contributed to the overall engagement in the PD can be attributed to the reward elements of gamification.

RQ2: How, if at all, do online faculty experience flow during participation in gamification-based professional development?

This section discusses the discoveries regarding the participants' experiences of flow within the UDL gamified PD course. The significant themes that emerged from the data analysis related to this research question were the following: (a) *competition and the role of flow* and (b) *role of segmentation and cognitive load in flow.*

Competition and the role of flow. The data collected within this theme indicated that the majority of participants found the competition aspect of the PD conducive to a state of flow. The community leaderboard produced competition within the community, increased participants' engagement with the content, and sustained participant interaction in the course. As detailed in Chapter Four, some participants checked the leaderboard routinely to compare their score against their peers. While competition is typically

described as competing against others in the gamification literature (Ding, 2017; Gibson et. al., 2015; Rawendy et al., 2017), some participants were instead driven by their own internal competition to achieve all the awards without comparing their achievements to the other participants. However, results align with prior literature demonstrating that competition among peers within a gamified learning environment can lead to increased engagement (Harwood & Garry, 2015; Oprescu, Jones, & Katsikitis, 2014). Contrastingly, some literature provides examples of a leaderboard, displaying personal ranking within a virtual community, decreasing engagement and preventing flow (Ding, Kim, & Orey, 2017). However, the current study shows that a leaderboard may have a positive effect on some learners. For example, the leaderboard increased engagement by allowing participants to compare their achievements with their peers in a communal setting. When engagement was decreasing, competition may have renewed interest in completing tasks and thus rejuvanated engagement by participants focusing on obtaining points to increase their communal ranking on the leaderboard. Literature traditionally shows that flow operates exclusively within purview of individual cognition (Linnenbrink, 2006; Payne, Jackson, Noh, & Stine-Morrow, 2011; Kennedy, 2004), however, this study provides some evidence that flow may be impacted by a broader context especially the community in which the learner finds themselves.

Additionally, the leaderboard allowed participants to perform a constant, communal assessment of their ranking and led to sustained engagement within the content. By routinely checking their progress and constantly comparing themselves with their peers, the participants were driven to stay engaged in the activities in order to earn the associated points. The literature suggests that leaderboards can provide individual

goal commitments and increase engagement as participants seek to gain ranking through the social aspect of comparing results with peers (Landers et al., 2017).

Competition can also increase motivation to finish the course. While this study explored the participants' perspective of flow and gamification, an alternative theoretical explanation for an increase in motivation could be attributed to self-determination theory (SDT). Deci and Ryan (2000) argue that humans have intrinsic motivation "to seek out novelty and challenges to extend and exercise one's capacities to explore and learn" (p. 70). This inherent tendency can be associated with an internal competitive drive. According to self-determination theory, learners have three innate psychological needs: autonomy, competence, and relatedness (Niemiec, Lynch, Vansteenkiste, Bernstein Deci, & Ryan, 2006). The competitive elements of the PD could be linked to the participants' inherent need for competence in almost a cyclical model. For example, moving through the gamified components of the course could have appealed to participants' extrinsic motivation to obtain points that, in turn, satisfies an internal drive to progress in the course.

In relation to flow theory, the study shows there is some evidence that the sense of self-reward and task-based challenges provides an optimal state for flow to occur (Csikszentmihalyi, 1991). The competition element also provided participants with instant feedback through points awarded and badges. The main purpose of competition within the PD was to keep the participant focused on their overall performance and progression toward mastery of the learning objectives in the course.

Role of segmentation and cognitive load in flow. The data collected within this theme displayed how segmentation of content via release conditions contributed to the

management of cognitive load and subsequent support of flow. In terms of instructional design, Mayer & Mareno (2003) emphasize the importance of segmentation in learner-controlled segments and its impact on sustaining optimal cognitive load. Indeed, a variety of studies show that the segmentation effect has a significant role in producing learning outcomes (Mayer & Moreno, 2003). Furthermore, Sharek & Wiebe (2011) suggest that "a person experiencing boredom may report different amounts of cognitive load compared to someone in the flow condition" (p. 1520). The data in the current study builds on the assertions of prior theorists by suggesting a link between the segmentation effect and its role in fostering flow.

The current case study shows that segmentation could allow for the participant stay within the optimal channel of flow by releasing content at the ideal time. Specifically, the current study suggests that using release conditions to segment content funnels participants into the ideal flow channel. The PD provides content leveling through segmentation and prevents the participant from entering the boredom channel through waiting on additional content to be released. The flow channel allows participants to stay within their optimal learning experience. As stated previously, Csikszentmihalyi (1975) defines flow as the psychological state where a learner is involved with a goal-driven activity where nothing else seems to matter during that period of time. Flow can also be defined as an activity which produces an experience that is so enjoyable that the participant may be willing to do something for its own sake without being concerned with the overall outcome. The goal of the PD was to keep participants engaged with the course and avoid the channels of boredom and frustration that are common within some faculty PD (Elliott et al., 2015, Gibson & Blackwell,

2011). By purposely designing the interface with segmentation in mind, a learning experience was created that maximized participants' attention and engagement in the PD.

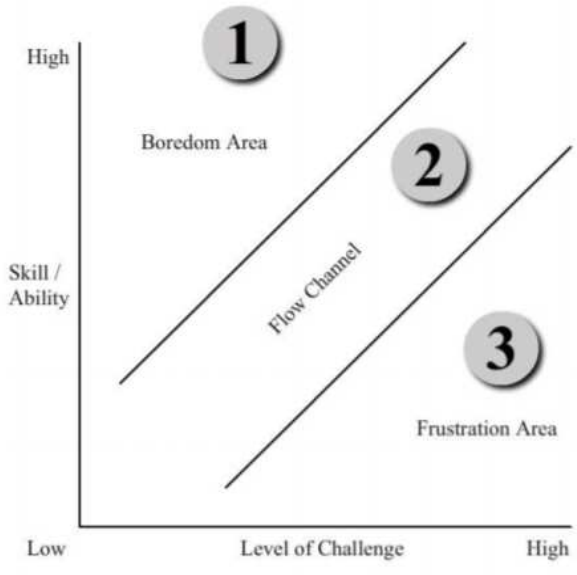

Figure 6. Three Conditions based on Flow Theory (Csikszentmihalyi,1990; Sharek & Wiebe, 2011)

Again, the gamification aspect of content leveling produced segmentation by using release conditions. By using content leveling, the participants were provided with a clear sense of progression and earned points by "leveling up" with the release of the corresponding badge. This interface design allowed for flow to occur, by providing clear goals and immediate feedback on level completion (Hamari & Koivisto, 2014). The PD content was released to participants based on completion of the learning competency associated with the module. The data suggests that content leveling was a critical aspect of the design of the PD to limit cognitive load.

Compared to previous studies on segmentation and cognitive load that focused their discussion on strategically dividing the content (Moreno, 2007; van Gog, Paas, &

Sweller, 2010), this study uniquely explores the role of conditions on *when* the segments can be released to the learner based on completion of tasks within a gamified learning environment. Furthermore, the release conditions used within the study assists participants with avoiding the frustration channel, by maintaining optimal cognitive load and not releasing too much information beyond what the participants working memory could handle. The study results suggest that, by controlling the release of content within the ideal flow channel, participant engagement is increased and avoids the boredom and frustration channels. If the content is released prior to the learner acquiring the skills necessary to complete the tasks, the probability of experiencing flow is low due to the task being too challenging.

Suggestions to Improve Practice

The focus of this case study was online faculty's perceptions of engagement within a gamified professional development course. The results of the study suggest that online faculty PD should not employ a "one size fits all" approach. In order for PD to be engaging to the participant, the following design approaches are recommended: the design should be centered around a self-directed learning approach, gamification elements should be provided that increase engagement and external motivation, and segmentation through content leveling should be practiced by providing a sense of progression.

Regarding self-directed learning approach, the results suggest that PD participants should be provided with a design that allows for autonomy and provides multiple forms of interaction with the content. The traditional didactic approach to professional development does not provide participants with a sense of control over their learning.

When provided control, participants have an invested interest to continue progressing and completing the PD. Additionally, the study suggests that presenting the content in multiple media forms provides participants with self-direction to select the media that best aligns with their desired format.

Furthermore, the study also suggests that providing challenges, through leaderboard-based competition or badge acquisition, drives participant engagement and provides a sense of reward and accomplishment. By providing challenges through a self-directed learning approach, participants can experience increased engagement to complete the required tasks to further progress within the PD.

Additionally, PD design should be centered around a gamified model that provides participants with an intrinsic and extrinsic motivation to stay engaged in the PD. The results of this study showed how badges provided participants with an instant reward for obtaining a learning goal, motivated participants to obtain, and, as a result, sustained their engagement within the PD. The didactic offerings of PD traditionally do not provide participants with extrinsic motivation (e.g – awards) to stay engaged. By implementing gamification elements, participants can be provided with awards (ex. badges & certificate) to increase engagement and drive engagement to complete the PD (Mitchell et. al.,2018). However, instructional designers should keep in mind that the awards should be implemented in a way that brings value and are applicable to the participant.

The study found that competition drove engagement and created an optimal environment for flow to occur. The results of the study also suggest that competition occurs between members of the community for recognition and within an individual for personal accomplishment. As stated previously in Chapter Two, studies have shown the

positive effect that competitive gamification features, such as a leaderboard, have on engagement as participants interact on tasks to increase social ranking (Barata, 2013; Mekler et al. 2015). However, the results of the study suggest there is also an individual competition that can occur as participants sought to obtain all the available awards for personal development and not solely for community recognition.

The final suggestion to improve engagement in professional development is segmentation of content. The results of the current study suggest that segmentation leads to an optimal flow state of concentration and intense focus. As stated earlier, a non-instructor driven PD should be centered around self-directed learning. However, for self-directed learning to be effective, the PD's design strategies need to take cognitive load into consideration; these design strategies include checkpoints for progression of content, clear identification of the PD's learning goals, and consistent module organization. The results of the study show that gamification can assist with segmentation by using content leveling tactics to release content based on a set of required conditions. By creating PD around segmentation design, participants could experience increased engagement, maintain cognitive load, and derive a clear logical path of completion.

Limitations and Future Studies

This case study identified intersections between PD, gamification. and flow theory and offers potential for future research. This study was limited to online faculty at one research institution in the southeast U.S. Future studies could examine perceptions of engagement and flow within different educational settings (ex. primary and secondary education) and among different stakeholders within a higher education setting (support staff and administrators). These differing perspectives hold immense value because

research shows that various leadership positions play a unique role in professional development within their institutions (Gerken, Beausaert, & Segers, 2015). Alternatively, one could replicate this study in a secondary education setting; while literature shows there is some similarity in faculty professional development to primary and secondary education (Gerken, Beausaert, & Segers, 2015), some research also argues their educational roles differ in many ways (Louws, Meirink, Veen, & Driel, 2017). Collectively, these future research opportunities could demonstrate how flow and engagement manifest across different stakeholders in various educational contexts.

This case study was based on a qualitative approach utilizing one-on-one interviews and memoing for data collection. Although the data provided rich feedback, the triangulation of data could be expanded. The study may have benefited from a mixed methods approach that included validated survey instruments based on the flow construct of engagement. Furthermore, future studies could incorporate a control and sample group to evaluate the faculty engagement in a gamified and non-gamified PD environment. Literature has shown the potential for other ways to evaluate gamification design such as usability and click streams to track learner progress within the learning environment (Deterding, Sicart, Nacke, Ohara & Dixon, 2011). Future research could incorporate a usability study to examine engagement and flow within a gamified PD environment. Another limitation of the study was examining only individual descriptions of the gamification and flow elements of the PD. Future studies could incorporate a focus group to provide more rich descriptions of participants' experiences. Once again, these studies could expand beyond the qualitative data presented in this case study.

Finally, the study was limited to the gamification features of badging, certificates, content leveling, and a leaderboard due to the limitations of the institution's learning management system. The study could have benefited from additional gamification elements such as digital avatars, a progress bar within the content modules, and actual games within the PD course. By including additional gamification design, a more holistic understanding of engagement and flow could be gained from these different elements. Future research should examine additional gamification features and compare game-based design PD with gamification-based design. Finally, a novelty effect could be a potential limitation of the study. PD offerings at the institution have traditionally been conducted in-person. Participants could have experienced flow due the experience being new and exciting, compared to their previous experiences with PD offerings. Future studies could examine flow perceptions over time from a longitudinal perspective

Conclusion

The goal of this case study was to examine online faculty's perceptions of engagement within a gamified PD course on UDL. Using these findings, institutions can adapt their current PD offerings to increase engagement and create more optimal learning environments for flow to occur. Institutions currently struggle with providing effective and engaging PD opportunities for faculty (Elliott et al, 2015; Weschke et al, 2010 & Wingo et al., 2017). As online education continues to expand and more online courses are offered at institutions, faculty will be required to keep up-to-date with constantly changing instructional technologies (Brinkley-Etzkorn, 2018). Faculty will also continue to encounter unique burdens related to effective teaching, student engagement, and

research development; therefore, it is critical that faculty are provided with engaging PD to meet these demands.

This study's findings highlight how gamification can be an effective design element to increase engagement within faculty PD offerings by facilitating a flow state. The gamification elements associated with the flow construct of engagement include increased concentration on tasks, clear attainable goals, a sense of progress, immediate feedback, and intrinsic/extrinsic rewards. The results of this study can be used to inform faculty professional development design practices at the researcher's institution in addition to faculty professional development at large.

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APPENDIX A

Institutional Review Board
Division of Research and Innovation
Office of Research Compliance
University of Memphis
315 Admin Bldg
Memphis, TN 38152-3370

March 21, 2019

PI Name: Scott Vann
Co-Investigators:
Advisor and/or Co-PI: Andrew Tawfik
Submission Type: Initial
Title: GAMIFICATION APPLIED TO FACULTY PROFESSIONAL DEVELOPMENT: A CASE STUDY
IRB ID: #PRO-FY2019-427
Exempt Approval: March 20, 2019

The University of Memphis Institutional Review Board, FWA00006815, has reviewed your submission in accordance with all applicable statuses and regulations as well as ethical principles.

Approval of this project is given with the following obligations:

1. When the project is finished a completion submission is required
2. Any changes to the approved protocol requires board approval prior to implementation
3. When necessary submit an incident/adverse events for board review
4. Human subjects training is required to be kept current at citiprogram.org every 2 years

For any additional questions or concerns please contact us at irb@memphis.edu or 901.678.2705

Thank you,
James P. Whelan, Ph.D.
Institutional Review Board Chair
The University of Memphis.

APPENDIX B

Online Faculty Email Invitation

Subject: Invitation to participate in a case study

Dear Faculty,

My name is Scott Vann and I am an EdD student in the Instructional Design and Technology program and instructional designer here at The University of Memphis. Dr. Andrew Tawfik (aatawfik) is the faculty advisor for this research study.

I am inviting you to participate in a study entitled "Gamification Applied to Faculty Development: A Case Study". This case study will examine online faculty perceptions of engagement within a gamified professional development course, at a large urban research university. If you are interested in participating in this study, please complete the short survey below (eight questions) to determine your eligibility.

SURVEY LINK

If determined eligible to participate, you will be sent an electronic consent form via DocuSign. Once you complete the consent form, you will be added to the professional development. The study involves completing a gamified professional development course on Universal Design for Learning (UDL). The course takes an estimated one hour to complete.

After completion of the course, you will be asked to participate in a 45-60 minute one-on-one interview that will be conducted virtually via BlueJeans.

You will have the right to end your participation in the study at any time, for any reason. If you choose to withdraw, all the information you have provided will be destroyed.

All research data, including audio-recordings and any notes will be encrypted and stored digitally in a secured one OneDrive folder (the university's file management system). Any hard copies of data (including any handwritten notes or USB keys) will be kept in a locked cabinet. Research data will only be accessible by the researcher.

Thank you for your time and your consideration to participant in this study.

Sincerely,
Scott W. Vann

APPENDIX C

Faculty Demographics Survey

What is your gender?

- ○ Male
- ○ Female
- ○ Other (specify) _____

How would you describe your ethnicity?

- ○ White, non-Hispanic
- ○ African American
- ○ Latino/Hispanic
- ○ American Indian
- ○ Asian or Pacific Islander
- ○ Other (specify) _____

What is your age range?

- ○ 18-24
- ○ 25-34
- ○ 35-44
- ○ 45-54
- ○ 55-64
- ○ 65 or older

Are you currently teaching courses within eCourseware?

- ○ Yes
- ○ No

Are you currently teaching online courses part-time (9 hours or less) or full-time (12+ hours) at The University of Memphis?

- ○ Part-time
- ○ Full-time

How many years of experience do you have teaching online courses?

- ○ This is my first year
- ○ 1-2 years
- ○ 3-5 years
- ○ 6-10 years
- ○ 10+ years

What is the highest degree you have completed in your teaching discipline?

- ○ Bachelor's degree (e.g. BA, BS, BPS)
- ○ Master's degree (e.g. MA, MS, MEd)
- ○ Professional degree (e.g. MD, DDS, DVM)
- ○ Doctorate (e.g. PhD, EdD)

Which college/school are you currently teaching online courses for at The University of Memphis?

- ○ College of Arts & Sciences
- ○ College of Business
- ○ College of Communication & Fine Arts
- ○ College of Education
- ○ College of Engineering
- ○ College of Nursing
- ○ School of Health Studies
- ○ School of Law
- ○ School of Public Health

○ University College (TN eCampus)

APPENDIX D

THE UNIVERSITY OF MEMPHIS.

Institutional Review Board
315 Administration Bldg.
Memphis, TN 38152-3370
Office: 901.678.2705
Fax: 901.678.2219

Consent Statement

Title	Gamification Applied to Faculty Professional Development: A Case Study
Researcher	Scott Vann, The University of Memphis
Researcher Contact Information	901.351.9432; swvann@memphis.edu

You are being asked to participate in a research study. The information below provides details for you to consider when deciding whether you want to participate. If you volunteer, you will be one of about ten people to do so.

Scott W. Vann of the University of Memphis, Department of Instructional Curriculum and Leadership is in charge of the study. He is being guided in this research by Dr. Andrew Tawfik (ICL/IDT).

The purpose of this qualitative case study is to investigate how gamification influences online faculty's engagement with professional development at a large urban research university. You are being invited to participate because you are currently enrolled in the Universal Design for Learning (UDL) professional development course at The University of Memphis.

Should you agree to participate, you will be asked complete the gamified UDL professional development and invited to participate in a one-on-one interview, so that Scott Vann can gather feedback about your individual experience within the course. This one-on-one interview will take approximately 45-60 minutes and can be scheduled via a virtual webinar (BlueJeans). Scott will audio record the interview using BlueJeans for data analysis. There will be no cost to you to participate in this study.

While completing the UDL professional development course, memos will be kept by Scott Vann of observations from the participant's progress within the course. Observations will be made of participant's number of logins to the course, average time spent on content, learning competencies completed and the number of badges awarded. The data will only be available to Scott and memos will be stored in a secure location.

Your participation should take an estimated two hours, 1 hour to complete the course and 45-60 minutes for the interview. Participating in this study is completely voluntary and if you decide to participate now, you may change your mind and stop at any point. You may choose not to complete the course or participate in the one-on-one interview.

THE UNIVERSITY OF MEMPHIS.

Institutional Review Board
315 Administration Bldg.
Memphis, TN 38152-3370
Office: 901.678.2705
Fax: 901.678.2219

There is no guarantee that you will get any benefit from taking part in this study. However, your willingness to take part may, in the future, help institutions better understand how to increase faculty engagement within online professional development. You will not be paid for taking part in this study.

We will make every effort to keep the information collected from you private. We will protect the confidentiality of your research records by not including any individually identified information in any report associated with this study. All participants will be asked to provide a pseudonym, or one will be provided for you.

If you have questions about your rights as a research participant you may contact Scott Vann at 901.351.9432, Dr. Andrew Tawfik at 901.678.3451, or the University of Memphis Institutional Review Board at 901.678.2705 or email irb@memphis.edu.

ELECTRONIC CONSENT
Please select your choice below. You may print a copy of this consent documents for your records. Clicking on the "Agree" button indicate that you

- Have read the above information
- Voluntarily agree to participate
- Are 18 years of age or older

PLEASE CHECK ONE

☐ AGREE

☐ DISAGREE

_____

Signature

APPENDIX E

Interview Protocol

Gamification Applied to Faculty Professional Development: A Case Study

Pseudonym:

Date/Time:

Location:

Intro: When I say the words "professional development" what immediately comes to mind? Why?

Primary Research Question: *How does gamification-based professional development, if at all, engage faculty within higher education?*

1. Tell me about your perception of engagement in the online professional development course?

2. How would you describe your engagement in previous professional development opportunities?

    a. What about now after completing this course?

    b. What do you feel increased or decreased your engagement?

3. How, if at all, did you perceive flow during participation in online gamification-based professional development course?

    a. Did you ever lose track of time while completing the course?

    b. While you were completing the course, did you feel focused on what you were doing?

4. How, if at all, has your intent to complete additional online professional development opportunities changed since starting the gamified course?

5. What was most rewarding about the gamified experience? Why so?

6. What was most challenging part of the gamification experience within the course? Why so?

7. What was your perception of the gamification elements within the course?

8. Is there anything else you would like to share about your experience in the online professional development course?