Architecture of Engagement: Autonomy-Supportive Leadership for Instructional Improvement

Travis N. Thurston
Utah State University

ARCHITECTURE OF ENGAGEMENT: AUTONOMY-SUPPORTIVE LEADERSHIP

FOR INSTRUCTIONAL IMPROVEMENT

by

Travis N. Thurston

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Approved:

Ryan Knowles, Ph.D.	Robert Wagner, Ph.D.
Major Professor	Committee Member
Amy Piotrowski, Ph.D.	Sylvia Read, Ph.D.
Committee Member	Committee Member
Brian Warnick, Ph.D.	Richard S. Inouye, Ph.D.
Committee Member	Vice Provost for Graduate Studies

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ABSTRACT

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Travis N. Thurston, Doctor of Philosophy

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Major Professor: Ryan Knowles, Ph.D.
Department: School of Teacher Education and Leadership

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DEDICATION

To my children – Christen, Thayne, Colton, and Phoebe – who inspire me each day to: "work hard, learn lots, and have fun!" And for Jenny, who reminds me to "play to the whistle" in every aspect of life, especially when the challenge at hand seems insurmountable.

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Travis N. Thurston

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CHAPTER 1

INTRODUCTION

Any discussion on improving instructional practice in post-secondary education should be student-centered, recognizing that "student success is at the heart of institutional core goals" (Roberts, 2018, p. 141). Instructional leaders at all levels of the university, whether department heads, deans, provost, or director for centers of teaching and learning, have a stake in student success at the institution. The way instructional leaders and instructors frame the purpose of a post-secondary education to students can significantly impact student perceptions and overall student success and retention (Colver, 2018). As online student enrollments in higher education continue to rise (Online Learning Consortium, 2016; Seaman, Allen, & Seaman, 2018), institutions are recognizing the need to better support online students, especially given attrition rates that continue to trend higher for online students than their face-to-face counterparts (Angelino, Williams, & Navtig, 2007; Hart, 2012; Stone & Springer, 2019). Instructional leaders acknowledge the "direct relationship between student engagement, student retention, and the role that faculty have in teaching an online course" (Estes, 2016, p. 66). This concept of the impact that instructors have on student success was succinctly stated by Provost Frank Galey (2019) when he stated that "What happens in the classroom is critical to the success of our students" in speaking to a group of over 400 instructors at a teaching conference at Utah State University. Given the enormous impact instructors have on student success, it is important for instructional leaders to identify ways of providing resources and support for online instructors to better engage students, and

thereby improve success of online students.

Support for online instructors should include access to proper teaching training and technology training to support approaches to instructional practice (Beach, Sorcinelli, Austin, & Rivard, 2016). The support or structures to improve teaching can stem from interpersonal relationships, the institution, personal commitments, and intellectual or psychological characteristics (Caffarella & Zinn, 1999). Autonomy-support comes from the literature on self-determination theory (SDT) addresses the concept of structures in a learning environment to support an individual to be an agent in their own learning or in their own professional practice. Autonomy-supportive behavior from an instructional leader promotes the professional agency of instructors, and on the flipside if an instructional leader is not being autonomy-supportive to an instructor it would be evidenced by pressure toward a particular outcome or other controlling behavior (Deci & Ryan, 1987). In other words, instructors thrive when their professional agency is being supported by leadership, rather than leadership attempting to control the behaviors of instructors. Instructional leaders at post-secondary institutions can support online instructors, not force them, by providing access to evidence-based teaching resources and options for a variety of formal training opportunities. This provides online instructors options for building competence through reflection and professional learning in collaborative learning experiences (Reeve & Su, 2014). By providing these supports, instructional leaders can empower online instructors with autonomy-supportive structures. The purpose of this multiple-paper dissertation is to illustrate how instructional leaders can improve online instruction using autonomy-supportive

approaches in three key domains: instructional development, instructional design, and instructional practice.

First, support must be given to faculty and instructors through instructional development which includes engaging instructors in ongoing training to improve instruction. Trainings should provide opportunities for personalization to relevant topics for instructors and allow for reflection of teaching practice. Second, support should also be offered through instructional design, whether that is from an instructional designer, or peer instructors at the institution. Instructor presence in online courses requires instructors to consider both instructional or course design, and course facilitation. Finally, instructors need to be supported in the implementation and adaptation of teaching practices in their online classrooms. This support requires instructors to engage in a certain amount of self-reflection on their own teaching, and it also requires instructors to consider student perspectives to impact future iterations of course design and teaching practice. These three main domains are examined in this multiple-paper dissertation with one paper addressing each domain.

I selected the multiple-paper approach for this dissertation as it provided the best option to address all three key domains of instructional leadership to improve online instruction. Students are asked to produce a dissertation as preparation for researching later in their career, and the multiple-paper dissertation format allows for writing succinctly on a topic and to be precise and efficient in reporting findings to publish an article (Duke & Beck, 1999; Krathwohl, 1994). The multiple-paper dissertation format allows for an authentic connection between coursework, the culminating project, and

meaningful professional application (theory to practice). Further, a multiple-paper dissertation exposes doctoral candidates to the rigors of publishing manuscripts in peer-reviewed journals and writing publishable content that can immediately contribute to the literature in their particular discipline (Murphy & Vriesenga, 2005; Thomas, 2015). Therefore, the structure of this multiple-paper dissertation was produced based on guidelines provided by the graduate school at Utah State University, and the specific insights from my dissertation supervisory committee. Each paper addressed one of the three key domains of improving online instruction in higher education as part of an architecture of engagement. The first paper, Chapter 2, addresses an autonomy-supportive approach to instructional development. The second paper, Chapter 3, addresses the importance of intentional instructional design. The final paper, Chapter 4, addresses the need for online instructors to take an autonomy-supportive approach to teaching by reflectively engaging, and considering students as partners in the scholarship of teaching and learning (SoTL).

Statement of Problem

Distance education and online programs have been part of the post-secondary landscape for decades. The success of public institutions, especially those with a land-grant mission, is impacted heavily by the ability of instructional leaders to support their online and distance education student populations toward successful outcomes (Gavazzi & Gee, 2018). Courses offered completely asynchronously within a learning management system (LMS) are generally referred to as online courses, while courses that have a

synchronous meeting component using two-way video broadcasts or other technology for interaction are referenced more generically as distance courses. Student enrollments continue to climb in online higher education programs (Seaman et al., 2018), and instructional leaders in faculty and instructional development have identified "teaching in online and distance environments" as one of the top issues needed to provide training for instructors in the coming years (Beach et al., 2016, p. 92). It is essential for instructional leaders to support instructors to implement strategies that will engage online learners, especially considering that a positive online learning experience can "foster a lifelong learning relationship between the learner and the institution" (Ragan & Schroeder, as cited in Nilson & Goodson, 2018, p. 196).

High-impact practices (HIPs) have been used at post-secondary institutions to improve retention and student success for face-to-face students on college campuses. HIPs are generally implemented as top-down initiatives, and include: first year seminars and experiences, common intellectual experiences, learning communities, writing-intensive courses, collaborative assignments and projects, undergraduate research, diversity/global learning, ePortfolios, service learning/community-based learning, internships, and capstone courses and projects. With low retention rates for online students threatening gains in overall future student enrollments, instructional leaders are also beginning to explore how HIPs can be adapted for supporting student success in online and distance environments (Linder & Hayes, 2018). Specifically, the *learning communities* HIP is best suited for adaptation and implementation in online courses because "students should…be encouraged to learn from each other" (Rovai, 2003, p. 14).

To plan for student interaction and to rely on students impacting one another's learning, certain structures must be in place to guide student expectations for how to engage, interact, and succeed in an online course. Providing resources to build students toward success, also known as scaffolding, has been found to improve student retention in online courses by leading students to better achieve learning outcomes (Taylor, 2015). The terms scaffolding and autonomy-support are sometimes used interchangeably, however in the literature scaffolding is more commonly connected to supporting student expectations and student learning; whereas, the educational literature identifies autonomy-support as more commonly connected with supporting student motivation and interest toward learning. Scaffolding and autonomy-support are crucially complementary concepts when designing and facilitating online learning environments for the improvement of online student engagement, motivation and retention (Baeten, Dochy, & Struyven, 2013; Lee, Pate, & Cozart, 2015; Nichols Hess & Greer, 2016; Tobin, 2014). When courses and instructors fail to provide proper autonomy-support and interaction, online students can feel isolated, and the lack of resources can cause undue stress (Sutton, 2014), which can in turn impact student success.

Therefore, instructional leaders are tasked with identifying scaffolds to bridge the gaps between instructional development programming, instructional design, and instructional practice to design a cohesive strategy for improved instruction which can lead to greater student success. Given the need for HIPs to be adapted for the online environment to improve online student success, a more in-depth understanding of autonomy-supportive instructional leadership in these three key domains should be

explored. Specifically, this dissertation will focus on collaborative learning as a hallmark for autonomy-supportive approaches to instructional development, instructional design, and instructional practice.

Purpose of Study

Evidence suggests that instructional leaders, especially those involved with instructional development, are taking on "a more central role in leadership teams involved in institutional strategic management and change initiatives" (Beach et al., 2016, p. 14). Instructional leaders in instructional development serve as a type of connective tissue at an institution bringing key stakeholders to the table for the betterment of the institution. Instructional leaders are influencing institutional initiatives that address low retention rates in higher education online programs (Sorcinelli, Austin, & Eddy, 2006), and are doing so with data to support that the gap in online programs can be addressed best by improving instructional practice for those who teach online (Chaloux & Miller, 2014; Kane, Shaw, Pang, Salley, & Snider, 2016). These same instructional leaders are also tasked with designing faculty and instructional development programming to mitigate gaps in effective instructional practice, and, in many cases, directly engage with instructors to align institutional priorities with evidence-based teaching practices.

Establishing autonomy-support in instructional development, instructional design, and instructional practice first requires adapting HIPs for online courses and programs in higher education. Specifically, the *learning communities* HIP will be explored for this purpose. However, there some important distinctions to make concerning learning

communities. The same phrase is used in the literature to describe two different concepts: a learning community (LC) as part of HIPs and an online learning community as established for interaction and collaboration in online courses. When implemented in conjunction with other HIPs strategies, such as *first year experience* and *community engaged learning*, LCs have been implemented at the institution level usually spanning more than a single course as part of HIPs initiatives, and can facilitate increases in student retention and learning outcomes (Bonet & Walters, 2016). Although there are no empirical studies comparing the outcomes of face-to-face versus online learning communities (Johnson, Powell, & Baker, 2018), a number of studies have demonstrated that online course-based learning communities can be built through the use of intentional design, course structure, and proper facilitation (Pallof & Pratt, 2007; Garrison, Cleveland-Innes, & Fung, 2010; Shea, Li, Swan, & Pickett, 2005).

Online learning communities can be deployed or established at the online course level, and can also incorporate collaborative learning opportunities. For example, in a guide for *High Impact Teaching Strategies* from the State of Victoria, the concept described as "collaborative learning" is evidenced by instructors engaging students through interactive group work that includes authentic tasks. This concept of collaborative learning especially applies to online courses because U.S. federal guidelines mandate the necessity of offering online courses that allow for "regular and substantive interactions between students, and between faculty and students" (Higher Education Act of 1965 §§ 600.1 - 600.11). In the 21st century, online courses must be intentionally designed and facilitated to include interaction among students and interaction between

students and the instructor. In other words, online course design and facilitation should adhere to social-constructivist principles by including autonomy-supportive collaborative learning. Students have also identified additional interaction with instructors as a key factor for improving their performance in online courses (Gaytan, 2015). Because online courses can be designed and facilitated to engage this concept of collaborative learning, instructional leaders should embed collaborative learning in instructional development programming as well. In this sense, collaborative learning in online courses could be described as autonomy-supportive. For this reason, online course redesign allows instructors and instructional designers to evaluate courses and find ways to improve the motivational design of online courses with authentic assignments and collaborative learning activities to better engage students in future iterations of those same courses (Education Advisory Board, 2016; Thurston, 2018). The literature provides evidence that student retention and student success can be improved through improved instructional design and improved instruction (Rovai, 2007; Salmon, 2004; Mancini, Cipher, & Ganji, 2018).

Overview of Theoretical Perspectives

Although each chapter of this multiple-paper dissertation utilizes a complementary theoretical framework, scaffolding is an overarching theoretical concept that ties the papers together. Wood, Bruner, and Ross (1976) explain that "Scaffolding situations are those in which the learner gets assistance or support to perform a task beyond his or her own reach if pursued independently" (as cited in Pea, 2004, p. 430).

This description inherently speaks to a structure or interaction in which the learner is provided with the necessary resources for a given educational situation to help them be successful. Student interaction with course content, the instructor, other students, and even technology in an online course can produce positive outcomes, including: improving student learning (Offir, Lev, & Bezalel, 2008; Sorensen & Baylen, 2009), developing a feeling of community (Swan, Garrison, & Richardson, 2009; Wang, Chen, & Anderson, 2014), and raising student engagement and retention (Estes, 2016; Angelino, Williams, & Natvig, 2007). There are a number of theoretical perspectives on scaffolding from the 20th century that have converged with self-determination theory to inform the concept of autonomy-support for online learners in the 21st century, including social-constructivist theory, gradual release of responsibility instructional framework, and self-determination theory.

Social-Constructivist Theory

Although Vygotsky did not use the term scaffolding in his work, his concepts surrounding learning through social interaction speak to the concept of scaffolding. In particular, Vygotsky's (1980) zone of proximal development (ZPD) is operationalized through the use of scaffolding. The epistemological approach of social constructivism supports collaborative learning because it focuses on the use of social interactions to support learners toward meaning making. Vygotsky viewed learning as being socially constructed through activity, communication, and interactions with others (Swan, 2005). Additionally, Dewey's pragmatic views include the idea that any educational experience worth engaging in should be grounded in the process of reflective inquiry and that inquiry

itself should be a social activity (Swan et al., 2009).

Further, gradual release of responsibility supports the use of collaborative learning within online courses because "students are expected to apply the skills and knowledge they have been taught and turn to one another for support and enrichment. As they interact with one another, learning moves forward…" (Fisher & Frey, 2013, p. 66). The gradual release of responsibility framework, as articulated by Fisher and Frey offers four phases in the scaffolding of instructional activities from instructor dominated to student-centered. The framework begins with focused instruction from the instructor (sometimes referred to as direct instruction), then guided instruction where the instructor begins to engage students more actively, followed by collaborative learning where students engage with one another through problem solving and/or discussion, and finally independent learning where students take on the bulk of responsibility for their own learning after constructing the needed knowledge, skills, and/or supports to continue forward. Using this framework *as a process* is important because "It is through this process of gradually assuming more and more responsibility for their learning that students become competent, independent learners" (Graves & Fitzgerald, 2003, p. 98). This concept of gradual release has also been described as faded scaffolding (Hao, 2016), which is an autonomy-supportive and student-centered approach to scaffolding. Therefore, not only should collaborative learning be considered a way of engaging students, but also it should be considered a phase in the overall teaching process which necessitates the use of scaffolding.

Self-Determination Theory

      The term autonomy-support hails from the literature on self-determination theory (SDT) and relates to the overarching motivation of the learner. Whereas extrinsic motivation tends to carry a negative connotation of being controlling, intrinsic motivation is considered to be more autonomous or self-directed. Generally, intrinsic and extrinsic motivation are held in a dichotomous balance, however Ryan and Deci (2000) posit that motivation should be viewed on a continuum with amotivation (lack of motivation) on one end and intrinsic motivation (inherently autonomous motivation) on the other with four varying degrees of extrinsic motivation between. SDT, therefore, removes the dichotomous perspective of extrinsic and intrinsic motivation and suggests that, given the right mindset, factors that could potentially be viewed as extrinsic motivators can be internalized by an individual and therefore act as intrinsic or autonomous motivation (Niemiec & Ryan, 2009). Self-determination theory frames motivation education as creating an environment with appropriate supports that allows an individual to develop intrinsic motivation, because "Intrinsically motivated behavior is by definition self-determined. It is done freely for the inherent satisfactions associated with certain activities and with undertaking optimal challenges" (Deci & Ryan, 1987, p. 1033).

      The Community of Inquiry (CoI) framework can be used as a way to operationalize SDT into the classroom from an instructor perspective, or in instructional development from the perspective of instructional leaders. CoI posits educational experience as the culmination of three domains that scaffold collaborative learning: cognitive presence, social presence, and teaching presence (Danaher, Hickery, Brown, &

Conway, 2007; Garrison, 2009; Garrison et al., 1999). Specifically, CoI can be applied to the learning environment whether in physical face-to-face setting or in a virtual space (Garrison et al., 2010). The concept of humanizing the educational experience comes from the application of the CoI presence in higher education (Afolabi, 2016; Garrison & Archer, 2000) and has significant crossover into SDT as a means of intentionally planning for social presence, cognitive presence, and teaching presence, thus providing for the basic psychological needs of learners.

Autonomy-Supportive Learning Environments and Architecture of Engagement

Autonomy-supportive learning environments have emerged from the literature on self-determination theory (Ryan & Deci, 2000) and focus on the interplay between student autonomy, held against structure and control from the instructor and institution (Jang, Reeve, & Deci, 2010). This concept of autonomy-support while applied to face-to-face teaching in the literature also has implications for online teaching, and more specifically within the constructs of online course design and online discussions to engage collaborative learning. As Gilbert and Dabbagh (2005) suggest, in order to plan and facilitate meaningful discourse in online courses, there must be a balance of structure, asynchronous communication, and the constructivist process of meaning making. Riggs and Linder (2016) refer to courses that have been scaffolded to help students succeed as courses using an architecture of engagement. Establishing an architecture of engagement in online courses begins by including autonomy-supportive structures in the form of explicit expectations (Stavredes, 2011), content focused course

organization (Reisetter & Boris, 2004), and alignment of learning outcomes with all elements of the course (Nilson & Goodson, 2018). Although the concept of an architecture of engagement in an online course is a helpful phrase to portray the extent to which design and intentional planning can provide autonomy-support in the online learning environment, using this phrase to only describe an online course structure is perhaps too narrow of a perspective.

This multiple-paper dissertation explores the concept of architecture of engagement through the lens of autonomy-supportive instructional leadership as a holistic overarching concept that applies to both instructors and students. It could be hypothesized that greater alignment of autonomy-support across all aspects of online course design and delivery might result in increased success for students enrolled in online courses. As shown in Figure 1.1., this dissertation is comprised of three

CHAPTER 1	CHAPTER 2	CHAPTER 3	CHAPTER 4	CHAPTER 5
Introduction	**Instructional Development**	**Instructional Design**	**Instructional Practice**	**Conclusion**
Theoretical and practical basis for an Architecture of Engagement	Paper 1 - *Structuring Personalized Faculty Development Programming with Autonomy-Support and Microcredentials*	Paper 2 - *Design Case: Implementing Gamification with ARCS to Engage Digital Natives*	Paper 3 - *#DigitalPowerups: Scaffold and Hashtags to Empower Higher-Order and Humanized Student Engagement in Online Discussions*	Proposed future research on *Architecture of Engagement*

Figure 1.1. Dissertation structure: Multiple-paper structure with introduction and conclusion.

manuscripts that begin to explore this concept by addressing autonomy-support in the following three main domains: instructional development, instructional design, and instructional practice.

Overview of Research

Autonomy-Supportive Instructional Development

The first paper, or Chapter 2, was published in an edited volume titled, *Handbook of Research on Faculty Development for Digital Teaching and Learning* by publisher IGI Global (Thurston & Schneider, 2019). As such, this chapter was formatted using the styling guidelines of the publisher. This chapter addresses the foundation of an architecture of engagement through the design and implementation of autonomy-supportive instructional development (faculty development) programming using microcredentials. In the literature, faculty development is used as a catch-all phrase whereas instructional development is more specific to the improvement of teaching and is more inclusive because not all online instructors are considered to be faculty. For the audience of the IGI Global book in which this chapter was published, faculty development was the preferred term; however, the term instructional development will be used elsewhere in this dissertation to be more precise.

This paper emerged from my work in the Center for Innovative Design and Instruction at Utah State University where we engage the concept of collaborative learning through instructional development programming that establishes a culture of teaching excellence and provides ways for instructors to share best practice with one

another through seminars, conferences, and scholarly writing. Instructional leaders will benefit from the concepts presented in this chapter when designing or redesigning their own autonomy-supportive instructional development programming that establishes the foundation for building an architecture of engagement in both the instructional design and online course facilitation.

Autonomy-Supportive Instructional Design

The second paper, or Chapter 3, was published in the peer-reviewed *Journal of Empowering Teaching Excellence* and is formatted according to the journal styling guide (Thurston, 2018)*.* Chapter 3 is an evaluative design case with a narrative approach to analysis, which is often used in education for the purpose of sharing and exploring evolving understanding and professional practice (Hamilton, Smith, & Worthington, 2009). This chapter scaffolds the instructional design process of evaluating a course utilizing the self-rating evaluation instrument known as the Quality Online Learning and Teaching (QOLT) Course Assessment tool developed within the California State University system. Based on the recommended improvements provided through the QOLT, I redeveloped course elements and implemented gamification. This study also provides connections to theoretical underpinnings of online course design and explores summative student perception of the implementation using the qualitative analysis formula of "describe, compare, relate" (Bazeley, 2009, p. 10), which classifies student responses as either perceptual arousal, inquiry arousal, or variability. The paper concludes with recommendations for both instructional designers and instructors wishing to implement gamification for similar purposes.

This paper emerged from an opportunity to teach a course for the Instructional Technology and Learning Sciences department at Utah State University. Engaging the concept of collaborative learning through what Könings, Seidel, and van Merriënboer (2014) describe as intentional design, I explored how to include input from instructional designers, instructors, and students. This design case contributes to an emerging body of literature on using gamification to engage digital native students in online courses. Further, this paper bridges Chapters 2 and 4 of this dissertation to complete the argument for instructional leaders to scaffold a holistic architecture of engagement.

Autonomy-Supportive Instructional Practice

The third paper, or Chapter 4, is formatted and styled for future submission to the journal entitled *The Internet and Higher Education* (Thurston, 2019)*.* In this mixed-methods sequential explanatory research design, I used a case study approach to investigate the research questions. This case study focused on the time during which graduate level learners in an online course specifically participated in the discussion forums using a specific instructional strategy known as digital powerups. This approach allowed for the flexibility needed to describe the context of intentional course design decisions that were made before students participated along with evidence-based decisions for several features utilized within the Canvas LMS including likes, sort by likes, and embedded threads. This is an important contribution to the field, because the literature on online discussions has not expanded to investigating the digital powerups instructional strategy.

This paper emerged from an opportunity I had to teach a course in the School of

Teacher Education and Leadership at Utah State University. This paper is the culmination of the three papers and addresses architecture of engagement from the micro level of collaborative learning and instructor presence. Building on instructor training and instructional design, this paper identifies an instructional strategy that I intentionally used to provide an autonomy-supportive experience for students. This is accomplished through the design and structure of the course activity from an instructional design perspective along with the facilitation of the activity by a well-trained instructor. With proper design and facilitation, online discussions can be autonomy-supportive and improve student learning by establishing a space for collaborative learning.

Conclusion

This multiple-paper dissertation engages an instructional leadership lens through the exploration of providing autonomy-supportive programming for instructional development to improve instruction, designing autonomy-supportive online learning environments to improve student engagement through instructional design, and facilitating autonomy-supportive teaching strategies to improve student motivation and collaborative learning. Theoretical perspectives for this dissertation are grounded in social constructivism with motivational considerations rooted in research on self-determination theory in educational contexts. Therefore, a more in-depth understanding of autonomy-support in each of these three key domains and how they are influenced through instructional leadership is needed for future research on improving online courses for students and improving professional development for instructors.

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CHAPTER 2

STRUCTURING PERSONALIZED FACULTY DEVELOPMENT PROGRAMMING WITH AUTONOMY-SUPPORT AND MICROCREDENTIALS[1]

ABSTRACT

This chapter explores the theoretical foundations and practical considerations necessary for instructional leaders to improve student retention in higher education online courses by improving training of online instructors using autonomy-supportive principles. To improve instructional practice, faculty development programming should focus on the specific needs of online instructors by providing personalized learning opportunities and reflection. Using self-determination theory as a framework, the psychological needs of instructors engaging in faculty development can be addressed through autonomy (personalization), competence (achievement), and relatedness (support). The authors recommend utilizing digital badges or microcredentials to scaffold programming, including a three-tiered system of badging that builds toward a culminating credential. Autonomy-supportive faculty development programming will empower instructors to improve teaching practice, and better engage online students.

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INTRODUCTION

Greater attention is being paid to online courses in higher education as student enrollments continue to trend upward year after year, however, concern exists among higher education leaders who identify low retention rates as a significant barrier to the further expansion of online education (Allen & Seaman, 2015). The ability for instructors to engage their students, facilitate discussions with peers, and support students toward successful learning outcomes is paramount. Consistently, students identify the social presence aspects of online courses, or the interaction between instructor and student, and interactions among students, as the most important factors to scaffold student success in online courses (McIsaac, Blocher, Mahes, & Vrasidas, 1999; Cho & Kim, 2013). However, many online instructors lack formal training on how to teach or facilitate online courses. As a result, instructional leaders at both doctoral and research institutions recently identified teaching in online and distance environments as the top issue that will need to be addressed with faculty over the coming years (Beach, Sorcinelli, Austin, & Rivard, 2016). Fortunately, an increasing number of instructional leaders in faculty development are situated in positions at their institutions to directly impact the adoption and implementation of formal online instructor training.

To begin addressing teaching in online environments, faculty development offerings should be focused on training instructors in online pedagogical practice and how to interact with students in asynchronous and digital learning environments. This requires the instructors to consider delivery of lecture content, providing formative feedback on quizzes and assignments, and facilitating interactions in online discussion

forums. Instructional leaders that have placed a focus on the training of online instructors through faculty development find that teaching improves and student satisfaction levels of the overall online course experience increase (Chaloux & Miller, 2014; Kane, Shaw, Pang, Salley, & Snider, 2016; McAvinia, Donnelly, McDonnell, Hanratty, & Harvey, 2015). In addition to the increase in student satisfaction, the improvement of course design and course facilitation also leads to increased rates of student retention overall (Mancini, Cipher, & Ganji, 2018; Rovai, 2007).

It can be difficult to get online instructors to commit to synchronous training and faculty development offerings at a specific time and place, however, an increasing number of institutions are utilizing asynchronous means to deliver these trainings in a more convenient format for working professionals. As instructors engage with digital content, similar to their online students, instructional leaders cannot measure their engagement by merely tracking "seat time" or hours of attendance, as is typically done in face-to-face workshops or trainings. If instructional leaders are to expect online instructors to improve their practice, a paradigm shift in faculty development is needed as well. A growing number of institutions are beginning to track teaching improvement through the reflection and evidence of implementation from the learners (in this case the learners would be online instructors). One way to track this type of asynchronous engagement in faculty development programming is through the use of microcredentials or digital badges. Digital badging can be used as the mechanism for collecting and recording learning artifacts, reflections on teaching improvement, and tracking teaching improvement over time (Fontichiaro & Elkordy, 2016), and can be particularly beneficial

in faculty development programming (Chen, Lowenthal, Bauer, Heaps, & Nielsen, 2017). As instructional leaders provide teaching improvement activities for online instructors in asynchronous learning environments, digital badges or microcredentials can be leveraged as a means for online instructors to keep a record of what they are learning in the form of reflection.

Student retention in online higher education courses needs to be improved for institutions to successfully move forward in the 21st century. To address this issue, instructional leaders need to provide motivational learning environments for instructors to engage in improved faculty development programming specifically relevant for online instructors. Thus, instructional leaders must find ways to make training relevant for online instructors and implement more effective ways of tracking teaching improvement. This chapter explores how faculty development programming focused on supporting the intrinsic motivation of online instructors can improve teaching practice by providing a learning environment for professionals that encourages personalized learning and reflection. In addition, recommendations are provided for instructional leaders on how improving access to resources and providing relevant options for online instructors using microcredentials can create a holistic autonomy-supportive faculty development initiative.

BACKGROUND

Issues in Online Instructor Development

While taking online courses has become increasingly more commonplace among

college students and accounts for the main growth of total enrollments in the United States (Sener, 2012; Hart, Friedmann, & Hill, 2018), institutions have been slow to identify policies and resources to specifically support those that teach online (American Association of State Colleges and Universities [AASCU], 2006; Reid, 2014; Vaill, & Testori, 2012). Institutions also struggle to balance top-down mandates versus grassroots efforts (Bolman & Deal, 2017) which can make or break new faculty development programming initiatives.

As a consequence, many institutions do not offer effective faculty development opportunities for online instructors (Orr, Williams, & Pennington, 2009). To further complicate the issue, adjunct and part-time instructors are more likely to teach online than full-time faculty (Orr et al., 2009; Shannon, 2007), and adjuncts tend to have even less access to formal workshops and consultation services which are the most common formats for instructional leaders to disseminate training (Beach et al., 2016; Sorcinelli & Austin, 2006). However, non-tenure track faculty are not only more likely to consider faculty development as a positive endeavor, but are also more likely to attend offerings than their tenure track peers (Betts, 1998; Pesce, 2015). Thus, the problem not only becomes how to reach the non-tenure track and adjunct online instructors with faculty development offerings, resources, and support, but also how to motivate those that are tenure-track faculty to want to engage in faculty development.

Another identified gap is that many instructors in higher education are trained to be experts in their field of study, but generally have had very little exposure to pedagogy or online teaching (Brew, Boud, & Un Namgung, 2011; Cox, 1995) resulting in teaching

practices based on how they were taught when they were students (Lane, 2013). Traditionally, this gap has been addressed with faculty development programming for on-campus instructors which has been considered fundamental cornerstones (Saroyan & Trigwell, 2015) for institutions as they attempt to become what Dill (1999) describes as an "academic learning organization" to improve teaching and learning. Teaching and learning centers, and their associated services, have been a part of the higher education landscape in the U.S. for over 50 years, and the vast majority of institutions identify the main goal for faculty development as "creating or sustain- ing a culture of teaching excellence," (Sorcinelli, Austin, Eddy & Beach, 2006, p. 43). Most faculty development programming is designed to impact the personal educational philosophies of instructors (Stes, Min-Leliveld, Gijbels, & Van Petegem, 2010) and many studies have identified these faculty development programming strategies as being effective in improving instructional practice (Felder & Brent, 2010; Gibbs & Coffey, 2004; Rienties, Brouwer, & Lygo-Baker, 2013; Stewart, 2014; Van Note Chism & Szabo, 1998). Further, instructors who have engaged in faculty development programming have been found to improve their instructional practice, which has also led to the improvement of learn- ing outcomes for their students (Condon, Iverson, Manduca, Rutz, & Willett, 2016; Dahlstrom, 2015). Improved teaching practice can also improve student retention and persistence (Gregory & Martindale, 2016; Ragan & Schroeder, 2014). Unfortunately, at many institutions these faculty development offerings are targeted at tenure-track faculty who are located on a main campus who have access to face-to-face workshops, so the offerings are not reaching all of the instructors who teach online (Elliott, Rhoades,

Jackson, & Mandernach, 2015). Therefore, programming for the improvement of online

instructional practice should be offered in more inclusive ways to engage all instructor

types (adjuncts, graduate instructors, lecturers, etc.), and be offered in both synchronous

and asynchronous formats that provide access to those not physically present on a main

campus.

SELF-DETERMINATION FOR FACULTY DEVELOPMENT STRUCTURES

Zinn (1997) identified *institutional structures*, and *intellectual and personal*

characteristics as two of the four domains that categorize a variety of factors that can

enable or impede successful faculty development. Caffarella & Zinn (1999) then further

identified main factors that can enable faculty develop- ment in each of those domains.

Each of these factors pairs well with other research in adult learning and faculty

development, as cited. In the *intellectual and personal characteristics* domain, some of

the main enabling factors include: intrinsic motivation (Vansteenkiste, Lens, & Deci,

2006; Cerasoli, Nicklin, & Ford, 2014), willingness to take on new challenges (Betts,

1998; Roby, Ashe, Singh, & Clark, 2013), and self-confidence or self-efficacy (Bernard

et al., 2004; Davis, Schoorman, & Donaldson, 1997; Zimmer- man, 2008). Additionally,

in the *institutional structures* domain, the following were identified as enabling factors:

variety of opportunities for faculty development (Elliott, Rhoades, Jackson, &

Mandernach, 2015), recognition of different types of professional learning (Gamrat,

Zimmerman, Dudek, & Peck, 2014; Hickey & Soylu, 2012), and access to necessary

resources (Fredericksen, Pickett, Shea, Pelz, & Swan, 2000; Moriña, Cortés-Vega, &

Molina, 2015).

While the faculty development framework provided by Caffarella and Zinn (1999) is extensive, the *personal characteristics* domain and the *institutional structures* domain can be better understood through motivation and autonomy-support as central themes of Self-Determination Theory (SDT). While SDT is implicitly focused on an individual's psychological needs, the principles of SDT can be embedded into the structures of an organization (Gagné & Deci, 2005) and into faculty development programming.

Motivation

When instructors engage in teaching improvement training, or faculty development, they take on the role of learner. Learners have a natural tendency to develop an internal interest in a topic and a desire to engage with both internal and external stimuli (Ryan & Deci, 2009). This internal interest or desire to learn can be considered intrinsic motivation. SDT proposes that each learner has three innate psychological needs: *competence*, *relatedness*, and *autonomy* (Ryan & Deci, 2000; Anderman & Leake, 2005). These needs are considered necessary for both task motivation and overall well-being. *Competence* speaks to the need for mastery in learning which drives reflective practice (Deci, 1975; Cerasoli, Nicklin, & Nassrelgrgawi, 2016). This need for competence or the quest for mastery is evident in online instructors, as they tend to be highly motivated to learn and experiment with new instructional approaches (Roby et al., 2013). For those instructors who are highly motivated, digital badging offerings can work well to scaffold their teaching improvement activities and

instructional development. Not only should this kind of optimal challenge be presented to instructors, but "leaders can increase motivation by providing the right combination of experiences, conditions, and tools to enable the development of the skills required to master the task at hand" (Lyness, Lurie, Ward, Mooney, & Lambert, 2013, p. 4). Further, those who have already engaged in faculty development indicate higher levels of interest to participate in future offerings (Betts & Heaston, 2014). *Relatedness* not only suggests the need to feel connected with others, but it also speaks to feeling that a task has greater purpose (Deci & Ryan, 2008; Pink, 2011). Another way to consider *relatedness* is in terms of the *symbolic frame* (Bolman & Deal, 2017) by helping in- structors feel that they are an integral part of the organization and that their work is meaningful to the overall goals of the institution. Organizational purpose should be foundational to faculty development programming, but internal goals for individuals should also be addressed to fulfill the need of purpose.

However, "it is important to note that it is possible to strive for both intrinsic and extrinsic goals for either autonomous or controlled reasons" (Brühlmann, Mekler, & Opwis, 2013, p.11). *Autonomy* encompasses the need for choice and being the agent of one's learning and propensity toward self-efficacy (Bernard et al., 2004; Gagné & Deci, 2005; Zimmerman, 2010). "Self-efficacy, self-determination, and feelings of purpose are characterized as being critical determinants of intrinsic motivation" (Davis et al., 1997, p. 28) in the domain of autonomy. Learning should be an active process, and in faculty development the instructors serve as "the major agent in their own learning, which occurs as a result of personal experiences" (Hase & Kenyon, 2007, p. 112) through self-initiation

and choice (Deci et al., 1994). The need for autonomy can be met through external events by leaders who support the perception of an internal locus of control (Deci, Koestner, & Ryan, 1999).

Intrinsic motivation has also been identified to be a better predictor of quality performance and task persistence than extrinsic incentives (Kanfer, Chen, & Pritchard, 2012), however, intrinsic motivation can actually be enhanced when performance incentives are supplemented in individuals who are already self-determined (Cerasoli et al., 2014; Gerhart & Fang, 2015; Luyten & Lens, 1981). "The more intrinsically motivated a student is, the more likely it is that he or she will report engaging in proactive study at any point in time. This suggests that instructors will be highly likely to boost learner participation and engagement by cultivating intrinsic (rather than extrinsic) motivation" (Cerasoli et al., 2014, p. 280). This insight into intrinsic motivation should inform faculty development programming structures as some instructional leaders view extrinsic motivators (stipend, release time, recognition, etc.) as the only way to motivate faculty to teach online (Betts, 1998; Meyer, 2012; Wolcott, 2001). However, Cerasoli et al. (2014) recommend that organizations take a balanced approach of offering some extrinsic incentives as well as providing supporting resources to allow intrinsic motivation to blossom within the provided environment. Supporting instructors in learning through these various teaching improvement activities necessitates that instructors reflect on those activities along with documenting their personal takeaways that they intend to implement into their own teaching.

Professional Learning Through Reflection

Engaging instructors in reflection immediately following participation in teaching improvement activities is an important aspect of faculty development as it fosters personal growth and professional proficiency (Procee, 2006). The act of documenting and reflecting on learning experiences adds a certain amount of authenticity, relevance, and intentionality to the overall teaching improvement process. Perhaps the best way to frame professional learning through reflection to faculty is that "It entails a process of contemplation with an openness to being changed, a willingness to learn, and a sense of responsibility for doing one's best" (Jay, 2003, p. 1).

Instructors are much more likely to be intrinsically motivated when they engage in learning opportunities that are authentic to real-world applications, and that have personal relevance to their own work (Knowles, 1986). Reflection can provide deeper engagement, as "authentic learning at its best kindles a desire in students to learn more about fascinating and meaningful topics that they might otherwise not have known about…lead[ing] students to a deeper understanding of the power of purpose" (Knight, 2013, p. 228).

Reflections also empower instructors to tell their own learning stories. These stories can provide powerful insights into the process of learning a new teaching strategy, implementing it into the classroom, and concluding with sharing lessons learned along the way. Given these benefits, instructional leaders are "intentionally integrating and leveraging the power of story and storytelling into faculty development" (Lowenthal, 2008, p. 352). These stories and reflection can also lead instructors into engaging in the

scholarship of teaching and learning (SoTL), as "Reflection within education involves leveraging the process of continuous improvement in the classroom as well as continuous growth as an educator and scholar" (Mitchell & Mitchell, 2015, p. 49). In other words, reflection is integral to the iterative process of improving teaching.

SoTL provides an outlet for instructors to pursue intrinsically motivating inquiry projects on teach- ing and learning, and allows supportive guidance from instructional leaders (Case, 2013). Instructors should be encouraged to participate in SoTL and instructional leaders should provide support via a mechanism for documenting these teaching improvement activities across time. One way that reflection and documentation of professional learning and instructional development can be facilitated is through the implementation of a microcredentialing initiative.

RECOMMENDATIONS

Instructional Leadership Considerations

When instructional leaders provide autonomy-supportive environments by applying SDT to organizational structures, it leads to higher performance, greater persistence and better acceptance of organizational change (Gagné & Deci, 2005). Specifically, online instructors are more likely to be motivated to teach in an asynchronous format when their instructional leaders show commitment, provide resources and acknowledge teaching accomplishments (Cook, Ley, Crawford, & Warner, 2009; Travis & Rutherford, 2013). Operating through the *human resource frame* (Bolman & Deal, 2017) instructional leaders should emphasize that new initiatives are focused on

empowering instructors as they are the most important resource at the institution

(Gregory & Martindale, 2016). To avoid the appearance of a top-down mandate, the

political frame (Bolman & Deal, 2017) can be addressed by establishing a faculty

committee. The faculty committee should comprise a variety of stakeholders including

tenure-track faculty, adjuncts, graduate instructors and other professionals that support

instructors, like librarians and instructional designers (Mooney, 2010). This autonomy-

supportive approach speaks to all three of the SDT psychological needs, and provides

support from multiple levels of stakeholders when implementing a new digital badging

initiative.

Trying to provide proper online teaching resources and trainings to instructors

that range from adjunct to tenure-track, and from on-site to remote participants presents a

number of significant challenges. Given that instructors value a variety of formats for

faculty development (Taylor & McQuiggan, 2008), the initiative should be designed for

both synchronous and asynchronous audiences. Faculty development initiatives should

include offerings of different time commitments (one hour, one day, multiple days, one

semester, etc.) and incorporate synchronous experiences when possible (conferences,

workshops, seminars, group discussions, etc.) along with asynchronous options (self-

paced online tutorials, courses, recordings of synchronous sessions, etc.) to provide

holistic programming (Nilson & Goodson, 2018; Thurston, 2017). In addition to

providing a variety of options through faculty development program- ming, the

intentional design of a microcredentialing initiative can tie all of the offerings together by

taking what may appear as a smattering of offerings and presenting them as one cohesive

curriculum.

Microcredentials

The terms *microcredentials* and *digital badges* are often used interchangeably in the literature, but simply put, microcredentials are an online representation of learning experiences or acquired skills (Gamrat et al., 2014). As a Boy or Girl Scout might earn badges to represent certain acquired skills or content mastery, so too adult learners can earn digital badges to represent similar educational milestones. Information- rich metadata is encoded directly into microcredentials which includes the issuing institution, recipient, date, and the criteria or outcomes met by the learner to earn the badge. Instructors in higher education can use digital badges to "signal information about [their] qualities, abilities, skills, and achievements to others" (Grant, 2014, p. 10).

While implementing, digital badges can be used in the gamification of content or as extrinsic motivators (Brühlmann et al., 2013; Delello, Hawley, McWhorter, Gipson, & Deal, 2018; Thurston, 2018). This chapter focuses on the innate ability of digital badges to serve as a vehicle of professional, authentic, and criteria-based microcredentials that are valued by higher education institutions. While some research tends to focus on how digital badges themselves can serve as extrinsic motivators for learners to engage in content and persist (Delello et al., 2018; Gibson, Ostashewski, Flintoff, Grant, & Knight, 2015), it is perhaps more important to consider how digital badges can scaffold adult learners toward engagement for intrinsic reasons or more personally relevant reasons than just earning a badge (Finkelstein, Knight, & Manning, 2013; Rughiniş & Matei, 2013; Shields & Chugh, 2017). We understand through learning science literature that, "The

driving force behind [intrinsic motivation] is enjoyment, curiosity, fascination...or a sense

that the task or subject matter is relevant," (Nilson & Goodson, 2018, p. 109). Faculty

development programming with microcredentials should be structured in a way that

provides relevant training in interesting ways that will allow adult learners (in this case

online instructors) to become intrinsically motivated to engage and feel supported in all

three aspects of SDT: autonomy (personalization), competence (achievement) and

relatedness (support).

Personalization

Designing for choice and personalization is perhaps the most important aspect of

using microcredentials, which provide autonomy-support and move learners toward

engaging in faculty development for intrinsic reasons. Providing personalization through

choice or options for custom learning paths can provide an autonomy-supportive

structure for professional learning (Gibson, Coleman & Irving, 2016) by not requiring a

prescribed path to completion, nor stringent or controlling requirements. This allows

online instructors to become agents in their own professional learning, by allowing each

individual instructor to choose when they want to engage in training, how often they

access resources, and more importantly, it provides options for instructors to choose

which topics and format of training are most relevant to their needs (Ching & Hursh,

2014; Darling-Hammond, Porter, Garet, Yoon & Bransford, 2005; Finkelstein et al.,

2013; Kearney, Schuck, Burden & Aubusson, 2012).

Instructional leaders must recognize that instructors have individual and varying

needs, and require support and training at different times and in different ways. This

requires leaders to be transformational in their approach to focusing on cultivating the

individual, like Mike Krzyzewski, who leads and influences his organization by "being

inspirational, motivational, and visionary" (Oke, Munshi & Walumbwa, 2009, p. 65).

Krzyzewski models the importance of individualized relevance in training by providing

learning opportunities to build capable and competent individuals who become

empowered and efficient professionals. Placing emphasis on individual relevance hails to

seminal work on learning contracts for adult learners (Knowles, 1986) and motivational

design principles (Keller, 1987). Digital badges can thereby be valuable tools for

personalized faculty development because they can act as a form of documentation of

professional learning and a repository for learning reflections (Hickey & Soylu, 2012).

Microcredentials pair well with the concept of *microlearning* which structures smaller

chunks of content repetitively to increase overall learner comprehension (Ambrose,

Bridges, DiPietro, Lovett, & Norman, 2010; Finkelstein et al., 2013; Nilson & Goodson,

2018). Indeed, instructional leaders will find that microcredentialing is valuable in

allowing participants to personalize instructional development and make it more

individually meaningful (Gamrat et al., 2014).

Achievement

First and foremost, the focus of a microcredentialing initiative should be to

improve instructors in their teaching practice and in their ability to help students succeed

in online course environments. Through participating in a variety of teaching

improvement activities, each instructor has the opportunity to be- come more competent.

Again, the overarching goal should be to improve competence in teaching and engaging

students. Competence allows for career advancement, increased job opportunities, and interest in learning more about teaching, which instructors identify as the top motivators for participation in digital badging, rather than earning badges in and of themselves (Dyjur & Lindstrom, 2017). These findings indicate that rather than digital badges being perceived as an extrinsic motivator, they should rather serve as a visual documentation tool (EDUCAUSE, 2013) indicating that "Learning doesn't stop when we achieve a degree or accept a new position; badges serve as microcredentials of achievement beyond the transcript or career step" (Diaz, Smith, & Petrillo, 2014, p. 2). When learning has been demonstrated, a microcredential provides a recognition mechanism to acknowledge that the learning has occurred. Digital badges can also be used to acknowledge prior learning, and can also operate well as stackable credentials. In other words, rather than each badge being an island unto itself, as badges are earned they can compound with the learner achieving a culminating credential (Diaz et al., 2014).

Just as instructors should have options when it comes to choosing relevant teaching improvement activities, they should also have options when it comes to sharing their achievements. Badges should have options to be exported to other internal systems (like those used for tenure and promotion) or external systems (like social media or LinkedIn) that allow for badges to be displayed to peers, students, and potential employers. Although digital badges are inherently digital, options should also be given to instructors to print the badges for use in promotion binders, or for departments to keep on file as evidence of effort to improve teaching practice.

Support

      While support can take on many different meanings in terms of online education, for our purposes, support speaks to the concept of relatedness in social terms. Support in this case is linked with our need to share our patterns of competence (successes and failures) about teaching, however this need yields returns as we in turn learn more from discovering the experiences and patterns of competence from others as well (Colver, 2018). Instructors not only need to feel connected in a faculty development learning community, but it is important for instructors to feel that they are part of a greater purpose than perhaps just teaching their own class (Deci & Ryan, 2008). Instructors should be provided with support and understanding of how their course fits into their department's curriculum, how their course fits into various majors or emphasis areas, and how their course fits into the overall structure of university education for students at their institution.

      Instructional leaders should also help online instructors understand the significance of their role in online student retention since a positive online learning experience can "foster a lifelong learning relationship between [their student] and the institution" (Ragan & Schroeder, as cited in Nilson & Goodson, 2018, p. 196). Relatedness or support tend to be familiar to many instructors, as "faculty are often most interested in [faculty] development when it involves someone they know" and when there are "opportunities for collaboration with other faculty members" (Pesce, 2015, p. 172).

      Badges should be offered in a way that encourages participants not only to learn from the community, but to also contribute back to the community. Instructors find

intrinsic value in being able to contribute to a learning community (Assegaff, Kurniabudi, & Fernando, 2016). Successful faculty development programming encourages the continued participation of instructors as they learn through exploration and discovery. Indeed, exploration, renewal and change are vital elements in the improvement of teaching practice (Sorcinelli et al., 2006). In other words, once an instructor has implemented a new teaching practice into their own course, they should share what they have learned back into the community by contributing to a journal article or contributing to a presentation at a seminar or a teaching conference. This can be facilitated by instructional leaders by creating a three-tiered system of badging.

Autonomy-Supportive Badging

Badges should be structured in a tiered model to account for the type of participation or engagement, and allow for the badges to stack toward a culminating badge or certificate (Gibson et al., 2016; Hunter, 2016; Muilenburg & Berge, 2016). These three tiers should be aligned with Bloom's Taxonomy as *engage* badges are considered lower-level knowledge building, *implement* badges are more application focused, and *contribute* badges represent higher-order development as depicted in Figure 2.1. This figure illustrates how faculty development programming using microcredentials can be scaffolded using Bloom's Taxonomy, and how a culminating certificate can be made up of multiple badges from different tiers. This allows learners to build a strong base of knowledge or competence as it relates to SDT. It also provides a significant amount of autonomy-support for learners to choose topics and events that are relevant to their own teaching and then implement the items that will be most beneficial for their

students within their particular discipline.

Figure 2.1. Stackable badges

Source: Thurston, 2016
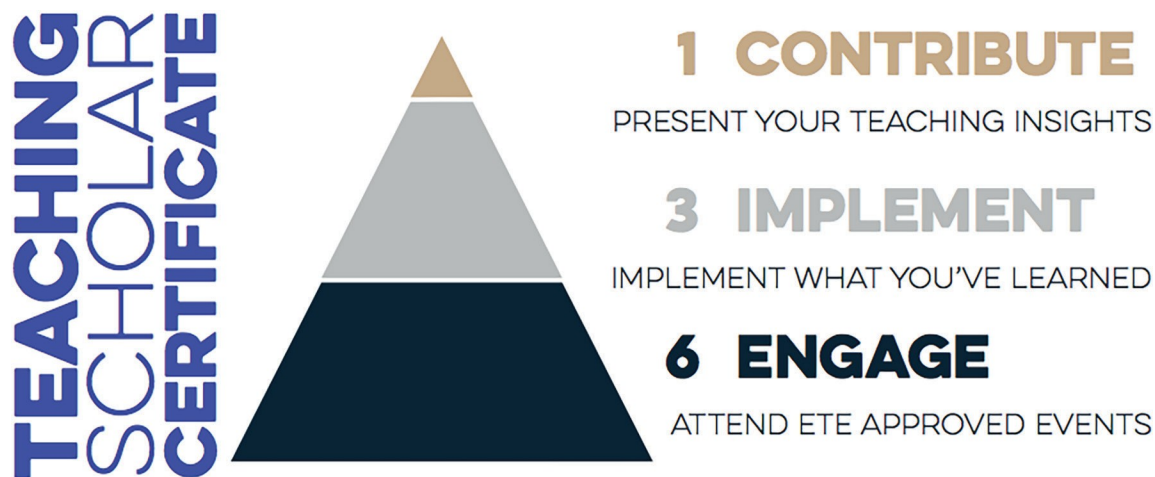
Finally, this type of programming also allows individuals to engage in relatedness through sharing best teaching practice with peers in the development of a learning community. When learners engage in a variety of different badging opportunities, it is important to include a culminating stackable badge or certificate to signal the completion of a cohesive learning path.

Three types of teaching-related learning experiences that can be embedded into faculty development programming with microcredentials include: reflection of participation at a workshop or other teaching improvement event, implementation of new teaching strategies, and sharing experience with peers in both formal and informal settings, which creates the potential for instructors to engage in reflective practice (McQuiggan, 2007). These three tiers allow microcredentials to be awarded for three

distinct levels of learning experience as is done in faculty development programming at Utah State University, Kent State University, Indiana University and the University of Central Florida, among others. As research indicates, instructors have a lot to remember, and at times that knowledge can be easily lost if they don't use it right away (Felton & Evans, 2002) and document what was learned. "Many instructors enhance their teaching practice through workshops, seminars, and other non-credit offerings; digital badging offers a flexible, personalized way for individuals to plan, document and share their accomplishments" (Yu, Dyjur, Miltenburg, & Saito, 2015, p. 88). Microcredentials also offer an ideal form of documenting teaching improvement activities (Gamrat et al., 2014; Hamson-Utley & Heyman, 2016; Siebert & Walsh, 2013), which provides an autonomy-supportive way to record learning reflections. Microcredentials can also provide a "framework that helps the learner to make sense of experience and to learn from that experience" (Dyke, 2006). Additionally, microcredential requirements can be tailored to "encourage active participation, take advantage of prior experiences and build on them, employ collaborative inquiry, and empower participants to reflect and take action on their learning" (Taylor & McQuiggan, 2008, p. 36).

Finally, the authors suggest to begin by using the programming that already exists at the institution as a starting point for a microcredentialing initiative. For example, if there is a boot camp workshop for new online instructors offered at the institution, consider how instructors can earn the digital badge for each of the three-tiered levels. An *engage* level badge for that event could be as simple as participating and submitting a reflection of the takeaways or other key points from the workshop. An *implement* level

badge should require evidence that the instructor utilized one of the teaching strategies or other takeaways from the workshop and incorporated it into their teaching. It should also include a reflection of their patterns of competence (successes and failures of implementation). A *contribute* level badge for this event could simply be that the instructor returns to the workshop the following year and presents on a topic pertinent to new instructors. The suite of badges offered to instructors through the faculty development initiative is known as a badge constellation (EDUCAUSE, 2013). The constellation should be developed based on current programming, and a common theme in the design of badges should be considered as depicted in Figure 2.2. This figure shows an example of how badges can have a common theme or style but represent three different levels or tiers of achievement. By pairing the programming offered with microcredentials, online instructors can identify which events and services are most relevant to their teaching, and discover which individualized learning path will be most beneficial for them.

Figure 2.2. Three-Tiered badging

Source: Thurston, 2016

FUTURE RESEARCH DIRECTIONS

Future research directions on this topic could include a qualitative or mixed-methods study to better understand the perception of online instructors who engage in faculty development programming using autonomy-support and microcredentials. Additionally, a qualitative study focused on this same population of individuals could provide insights on the impact of student retention and persistence when taking online courses from instructors who have participated in faculty development opportunities compared to students taking courses from instructors who have not.

CONCLUSION

Autonomy-supportive instructional development or training for online instructors is the key to improving instruction and thereby improving the retention of online students. In addition to traditional faculty development programming through workshops, seminars and other microlearning opportunities, digital badging or microcredentialing can be implemented as a vehicle for documenting teaching improvement activities. Not only can a badging initiative, support documentation of teaching improvement activities; but by using self-determination theory as a theoretical framework, autonomy-supportive programming can allow personalization, achievement, and holistic support. Following the recommendations from this chapter instructional leaders should promote autonomy-supportive programming and use microcredentials to take faculty development for online instructors into the twenty-first century

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KEY TERMS AND DEFINITIONS

Autonomy-Support: A type of environment or programming that scaffolds for learner success. This concept hails from the literature on self-determination theory.

Badge Constellations: Suite of badges that are available from a particular issuer, such as faculty development programming or an institution of higher learning.

Digital Badges: Form of microcredentialing that serves as a sign post for learners representing the mastery of skills or other learning outcomes.

Faculty Development: Sub-field of educational development in higher education institutions focused specifically on the improvement of teaching of faculty and future faculty. While not an inclusive term, faculty development offerings can also include services for non-tenure track, adjunct and other instructor types as well.

Metadata: Information that can be included on digital badges, in this case, such as outcomes achieved, professional and instructional development information, and Bloom's taxonomy.

Programming: Combination of one-off workshops, and other ongoing events and services usually offered through a center for teaching and learning designed to train instructors and improve teaching practice.

CHAPTER 3

DESIGN CASE: IMPLEMENTING GAMIFICATION WITH ARCS TO

ENGAGE DIGITAL NATIVES[2]

Abstract

Gamification is an emerging topic for both student engagement and
motivation in higher education online courses as digital natives
become post-secondary students. This design case considers the
design, development, and implementation of a higher education
online course using the ARCS model for motivational design
combined with the four-phase model of interest development as a
framework for gamification implementation. Through "designerly
ways of knowing," this design case explores engaging digital native
students with a gamified online course design, which will be of
interest to instructional designers and instructors in higher
education. Overall, students in the pilot course responded favorably
to the incorporation of gamification and perceived it to have a
positive impact on the overall learning experience. Future iterations
can improve upon this approach to plan more targeted gamification
strategies.

A design case explores "designerly ways of knowing" (Cross, 1982, p. 223) and

thinking (Gray, et al., 2016; Park, 2016; Legler & Thurston, 2017), within thecontext of

"a real artifact or experience that has been intentionally designed" (Boling, 2010, p. 2).

This design case includes considerations and analysis of the creation and delivery of an

online instructional technology course, using motivational design and interest

development as a framework for implementing gamification. Working toward

"improving the congruence between the perspectives of students and those creating the

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[2] Thurston, T. N. (2018). Design case: Implementing gamification with ARCS to engage digital natives.
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learning environment" (Könings, et al., 2014, p. 2), this design case should inform future gamified course design strategies. With implications for intentional teaching (Linder, et al., 2014) and design (Cameron, 2009), this case should be of interest to higher education instructional designers and instructors alike.

As an instructional designer in higher education, I work with many instructors who are searching for student engagement strategies. I encourage instructors to use student-centered and evidence-based practices to improve online courses. Therefore, when I had the opportunity to teach an online course that serves as an introduction to website coding and development for non-computer science majors, I wanted to find a way to make the course more engaging for my students. This explanatory case study is framed by an online course redesign, which aimed to improve levels of student engagement and motivation by introducing a learner-centered, game-like environment to structured course activities. This was done by referencing the *attention* category of the ARCS model for extrinsic motivation and relying on the four-phase model of interest development to build intrinsic motivation.

Literature Review & Theoretical Framework

More than one in four higher education students in the United States are enrolled in at least one distance course nationwide (Allen & Seaman, 2016). With online enrollments growing, designing engaging architectures in asynchronous course environments becomes paramount (Riggs & Linder, 2016). One way to engage students is through gamification, which utilizes various game-like features (points, levels, quests

or challenges, Easter eggs, etc.) in non-game contexts, in order to change learner behavior (Deterding, et al., 2011). As digital natives (both generation z and millennials) become post-secondary students, gamification is emerging as a topic for addressing student engagement and motivation in higher education online courses, (Nevin, et al., 2014; Schnepp & Rogers, 2014; Khalid, 2017).

Digital Natives

Given the fast-paced and technology-connected world in which we live, it's no surprise that "[t]echnology influences all aspects of everyone's lifestyle in most developed and developing societies, including their behaviour, learning, socialization, culture, values, and work" (Teo, 2016, p. 1727). Prensky (2001) originally proposed that *digital natives* be defined as the generation who have grown up immersed in technology, while Tapscott (2009) defines them as those born after 1976, and Rosen (2010) identifies them as those born after 1980. As such, students from *generation z* and *millennials* are typically classified as digital natives. However, there is disagreement in the literature on classifying digital natives as a generation, because "some individuals born within the digital native generation may not have the expected access to, or experience with digital technologies, [and] a considerable gap among individuals may exist" (Chen, Teo & Zhou, 2016, p. 51). For that reason, others suggest that the label of "digital native" be used more as a classification of a specific population of students, and not applied broadly to a generation tied to age (Helsper & Eynon, 2010; Margaryan, Littlejohn & Vojt, 2011). According to Palfrey and Gasser (2011), three criteria must be met in order to classify a student as a digital native: the student must be born after 1980, have access to digital

technology, and possess digital literacy skills.

A common misconception is that digital natives are not yet old enough to be in college, yet they are considered to make up the dominant population of students currently enrolled in college courses in the United States (Seemiller & Grace, 2016). Our current education system was not specifically designed for digital native students (Pensky, 2001), so it's "essential that we continue to develop higher education in ways that promote effective forms of student engagement (Kahn, et al., p. 217). Selwyn (2009) acknowledges that digital natives have been found to express enhanced problem-solving and multitasking skills, to enjoy social collaboration, and to learn at a quick pace while engaging with technology. However, it is not realistic to assume that all students will exhibit all of these skills. Digital natives tend to prefer engaging in games and can learn through digitally-based play and interactions (Prensky, 2001; Palfrey & Gasser, 2008). This suggests that providing autonomy-supportive assignments that require the use of problem-solving skills in game-like environments will appeal to digital native students (Mohr & Mohr, 2017).

Gamification

A number of theoretical and practical models for implementing gamification are emerging (Muntean, 2011; Urh, et al., 2015; Kim & Lee, 2015; Mora, et al., 2015), which employ various instructional approaches to motivate learners to engage with course content. Gamification implementation approaches are being attempted in various online course disciplines from the humanities to the physical sciences, and from business to instructional technology (Hanus & Fox, 2015; Chapman & Rich, 2015; Jagoda, 2014;

Domínguez, et al., 2013; Stansberry & Hasselwood, 2017). When gamification is implemented effectively, it can provide the impetus for students to become intrinsically motivated to construct knowledge through relevant learning activities (Armstrong, 2013), as well as provide situated contexts in which students can apply knowledge and skills (Dondlinger, 2015). Gamification can increase student engagement by introducing myriad motivational components into the learning environment (Keller, 1987) while also providing for autonomy-support, which affords both choice and structure toward student engagement (Reeve, 2002; Jang, Reeve & Deci, 2010; Lee, et al., 2015). The elements needed in design and development make "motivating students . . . a topic of practical concern to instructional designers" (Paas et al., 2005, p. 75) and instructors, as "a clear design strategy is the key to success in gamification" (Mora, et al., 2015, p. 100).

ARCS Model & Interest Development

"Learning as a result of motivation has been attributed to interest" (Dousay, 2014), which makes interest a critical positive emotion in learning and motivational contexts (Schraw, et al., 2001; Schroff & Vogel, 2010). Simply stated, gamification can initially be used as a hook to gain the attention of students in a course, which can then allow students to build interest in course content and become intrinsically motivated to continue to learn. With this concept in mind, the theoretical framework for this design case nests gamification and the four-phase model of interest development (Hidi & Renninger, 2006) within the *attention* category of the ARCS model (Keller, 1987).

In this framework, "interest refers to focused attention and/or engagement" (Hidi, 2006, p. 72), while the ARCS model refers to a motivational design structure, which

includes "how many of what kinds of motivational strategies to use, and how to design them into a lesson or course" (Keller, 1987, p. 1).

Motivational design is considered a subset of instructional design and learning environment design (Keller, 2010). However, by combining motivational design and interest development, "it is possible to incorporate gamification into the ARCS model for gamification of learning" (Hamzah, et al., 2014, p. 291). As depicted in Figure 3.1, students progress sequentially through the four-phase model of interest development. However, the ARCS Model engages students cyclically, and students can be engaged in multiple sections of ARCS simultaneously. The *attention* section is discussed extensively in this case study, through perceptual and inquiry arousal, but each of the other sections play important roles in motivational design. *Relevance* speaks to providing students with a rationale linking to previous experience and giving students choice. The *confidence* section addresses facilitating student growth, communicating objectives, and providing feedback. Finally, the *satisfaction* section considers praise or rewards, and immediate application of skills or materials learned.

While gamification provides extrinsic elements to increase student engagement and motivation (Muntean, 2011), it can also be used to gain student attention toward triggered or situational interest, which can develop intrinsic motivation using content and learning environment (Hidi & Renninger, 2006). This process allows students to continue to engage in the content and learn more of their own volition (Schraw, et al, 2001; Banfield & Wilkerson, 2014). While intrinsic motivation typically requires individual interest within students, "some other students without such individual interest may also

find the topic interesting because of situational interest factors, like novelty" (Hidi,
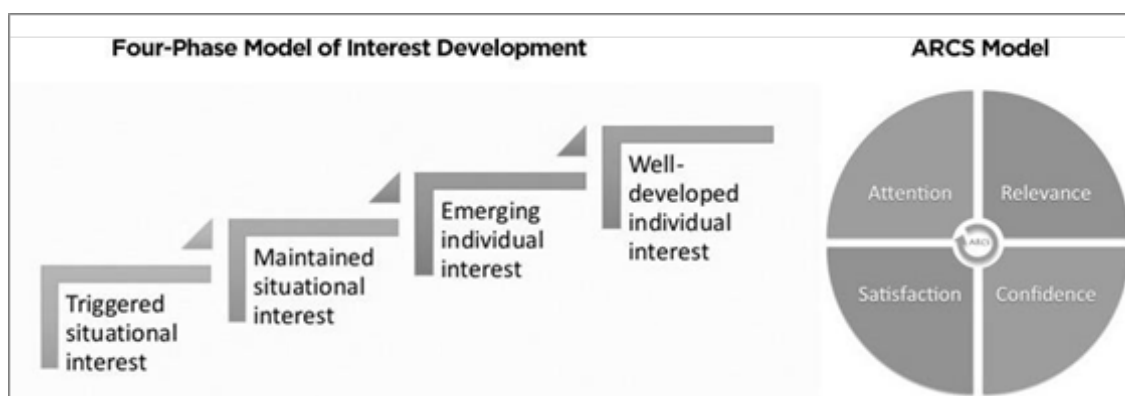
2006, p. 73), or in this case, gamification.

Figure 3.1. Four-Phase Model of Interest Development (Hidi & Renninger, 2006) and
ARCS Model (Keller, 1987).

Therefore, this course design provides the environment in which an individual can

become intrinsically motivated (Gagné & Deci, 2005) and thereby "facilitate[s] the

development and deepening of well-developed individual interest" (Hidi & Renninger,

2006, p. 115). This course also includes elements of autonomy-support and student choice,

as "online environments that offer students further choice may also give teachers a way of

leveraging students' interest for the purposes of increasing their attention and motivation

for school tasks" (Magnifico, et al., 2013, p. 486).

Design Context

The author of this design case served as the instructional designer for the

redevelopment of the course and taught the gamified version as a pilot course in an

adjunct instructor capacity. This positionality affected the overall approach of the design

case, as the initial analysis of the course was an instructor-led self-evaluation of course

components. This serves well for a complete design case, as the same individual developed and taught the course, providing seamless continuity from its intentional design to its intentional teaching. The development that this design case followed began with an initial analysis of the course, a redesign process that considered rationales for implementing gamification elements, and an instructional piloting of the course, which included the gathering of student feedback to be used in future iterations of this and other gamified classes.

Initial Analysis

The initial review of the course organization, and identification of the major assignments and assessments, found that the course was designed as high-touch for the instructor, requiring a significant time commitment in providing formative feedback to students throughout all course case studies within the learning management system (LMS). The course in this design case provided an introduction to Hypertext Markup Language (html), used to create webpage structure, and Cascading Style Sheets (CSS), used to style visual appearance of webpages. These are two of the main technologies employed in building webpages. Therefore, this high- touch course design was considered necessary. One of the objectives of this introductory class was to train students in a complex technical skill, which requires educators to inhabit the course's structures by engaging in a significant amount of formative feedback and reinforcement of concepts (Riggs & Linder, 2016). The course was broken into modules, with each module representing one week's worth of material. Coursework was grounded in relevant case studies from the textbook and required students to apply the learned skills in

summative projects. Specifically, the course included twelve case study assignments, five low-stakes quizzes, five class discussion-based assignments, and two personalized projects (midterm & final) with peer reviews.

This course delivery mode was originally designed with a blended objectivist-constructivist approach (Chen, 2014) and was consistent with basic andragogic principles, by requiring immediate application of knowledge and skills learned (Huang, 2002). In other words, this course focused on teaching html and CSS coding to non-computer science majors. The aim was to provide students with a basic understanding of coding that can be applied in a supporting way to any of a variety of future professions that students will pursue. The objectivist-constructivist approach included combining some self-directed learning and skill-building with hands-on and project-based assignments and assessments, to demonstrate learning. Because students in this course only learned the basics of html and CSS, and might never have the opportunity to apply these skills in their professions, there was a potential gap in student motivation that needed to be addressed within the course design.

To identify areas of strength and deficiency in our course design, an instructor self-rating evaluation instrument was utilized. Developed by The California State University system, and formally known as the Quality Online Learning and Teaching (QOLT) Course Assessment – Instructor Self-Rating (2013), the evaluation instrument serves to engage instructors in rating the quality of the course. This is done using 54 objectives, spread over nine sections in the instrument, with a four-point scale based on Chickering and Gamson's (1987) principles for good practice. Based on the data reported

by the instructor, each section of our course was rated as either *baseline (minimum)*, *effective (average)* or *exemplary (above average)*, and the instrument provided recommended improvements based on the results of the evaluation. Scores, results, and recommended improvements for the course from the QOLT evaluation are displayed in Table 3.1.

Table 3.1: Results and Recommended Improvements from Initial Course Analysis

Section	Score	Result	Recommended Improvement
1 Course Overview and Intro	17/24	91% Exemplary	*provide relevant content*
2 Assessment of Learning	17/18	94% Exemplary	
3 Instructional Materials	16/18	89% Exemplary	
4 Student Interactions	17/21	81% Effective	*increase student engagement*
5 Facilitation and Instruction	18/24	75% Effective	*increase teacher presence*
6 Technology for Learning	10/15	67% Baseline	*focus media elements*
7 Learner Support & Resources	6/12	50% Effective	*provide additional links*
8 Accessibility	4/21	19% Baseline	*increase content accessibility*
9 Course Summary	6/9	67% Effective	*individual student feedback*
Total Overall Score	**111/156**	**72% Effective**	

Scores indicated that sections one, four, five, seven and nine were viewed as *effective,* but still had room for improvement. As anticipated, sections two and three were sound in design and rated at the highest classification as e*xemplary*. Sections six and eight were rated at the lowest classification as *baseline*. Combining the scores of all nine sections, the overall design of the course was rated as e*ffective* at 72%.

Nevertheless, there were a number of recommendations from the QOLT instrument to improve the course further by increasing student engagement, providing relevant content, focusing on media elements, and increasing content accessibility. The intentional design changes to the course were

based on the recommended improvements on sections one, four, six and eight from the QOLT, and were framed using the ARCS model with a gamification approach. Given the results of this analysis, it was determined that the course design already met criteria for the *relevance*, *confidence* and *satisfaction* categories of the ARCS model (Keller, 1987). The added gamification aspects would therefore correspond with the *attention* category, with emphasis on interest development, as the course was an introductory- level coding class structured to develop basic html & CSS web-design skills. While the other three categories of ARCS are not explored explicitly in this design case, there tends to be a reasonable amount of overlap between the four categories (Gunter, et al., 2006).

Student Attention

As evidenced by the analysis of the learning environment factors (features of the course in the LMS), along with the more humanist approach of evaluating student perceptions, this case study takes a holistic approach to motivational design. It was expected that the initial novelty of gamification would wear off by midterm (Keller, 1999); however, it should have provided a structure that would scaffold student expectations. The original design of the course had intentionally embedded all course content into the assignment pages, to limit the number of content pages and to scaffold

student page access. To begin the redesign process, the custom-built Design Tools were

utilized, which could be integrated directly into the Canvas LMS (John, 2014), and the

course content was removed from the assignments and placed into content pages for each

module. This necessitated rapid development with styling and course pages (Thurston,

2014). The Design Tools influenced the overall course organization by changing the

basic course structure, homepage layout (see Appendix 3A), appearance, and

functionality (Mora, et al., 2014), as well as building out the framework to provide more

accessible materials and focus on the media elements, as per QOLT recommendations.

The following subcategories were addressed using the process questions posed by Keller

(1987, p. 2): perceptual arousal, inquiry arousal, and variability.

Perceptual Arousal. The implementation of gamification in this course aimed

first to capture student interest through the novelty of such elements being present in

higher education courses. This was accomplished by a change in semantics and the

creation of a course theme, as "triggered situational interest can be sparked by

environmental or text features" (Hidi & Renninger, 2006, p. 114). A spy theme was

selected as the overarching theme of the course, which included altering course

semantics. The instructor was referred to as a trainer, students as recruits, the course itself

as the AIM Code Project, points for the course as XP (experience points), assignments as

challenges, weekly modules as levels, and course videos as classified intel, all of which

was portrayed on the module introduction pages (see Appendix 3B). The name AIM Code

Project was selected as a spinoff term derived from WebAIM (web accessibility in mind),

which was created at Utah State University (USU) in the Center for Persons with

Disabilities. This name played well into the course format and placed a greater emphasis on improving accessibility, as recommended in section eight of the QOLT.

This theme also led to the development of a storyline that included students training for a secret government project to become coding agents. In the course introduction module, students were met with a call to action:

You have been recruited specifically for the AIM Code Project, because of the individual set of skills you bring to our group. We see potential in your abilities, and during this training, you will be called upon to incorporate your current skill set and your background or experience as you learn html and CSS coding.

The Goal: Progress through each level of challenges, gather XP, and access helpful resources to ultimately become an AIM Guild Agent. As your trainer/instructor, I will be with you through this journey to provide assistance when needed. One last thing: watch for opportunities to gain additional XP through gathering clues and accepting special assignments. That's all for now. Good Luck!

This narrative from the instructor served to immerse students in the gamified elements. Once the students received their call to action, they were presented with a twist. The spy theme allowed leeway to "create a situation that [would] gain the player's attention via dramatic elements" (Gunter et al., 2006, p. 14), which in serious games is also known as the "dramatic hook" to gain user attention in setting the problem. Students were informed that a spy had infiltrated the AIM Code Project, and they would be gathering clues throughout the course to identify the spy. This placed additional emphasis on students finding a bug icon and accessing the secret clues each week. Details

surrounding these clues are explored more in the variability section below.

      Inquiry Arousal. Case studies can be used for inquiry arousal to involve students in hands-on, relevant learning activities (Jacob, 2016). While the course already included interesting examples, new videos were created for this iteration, aimed to stimulate an attitude of inquiry by introducing each week's content in an interesting way. The case studies posed a weekly surmountable challenge that required students to use certain skills and coding elements to build upon a webpage they were creating. Because the skills learned through these case studies were directly implemented in coding a webpage for the final course project, and were applicable to future work in html coding, our course structure provided relevant experience by Keller and Suzuki's definition: "relevance results from connecting the content of instruction to the learners' future job or academic requirements" (Keller & Suzuki, 2004, p. 231).

      The USU media production team created the introductory video for the course, to provide curricular onboarding, as well as a launching module to set expectations (Mora, et al., 2015). Additional intro videos were produced for each module or level of the course. The course launch video introduced students to the navigation and class structure on Canvas and incorporated the storyline of the gamified theme. Additionally, all of the video resources that had been compiled in previous iterations of the course were presented to the students as "classified intel," in line with the spy theme and framed as though the students now had access to these resources to support them in their case studies. The media elements added to this course addressed the deficiencies found section one of the QOLT evaluation, and the change in focus for other media elements improved

the QOLT score for section six.

Formative quizzes were part of the original class and were used to check understanding throughout the semester. However, for our new course design, these quizzes were changed to low-stakes quizzes or learning activities, allowing students to take them in an open-book format with multiple attempts allowed. This type of low-stakes quizzes can improve student metacognition and knowledge transfer in new contexts (Bowen & Watson, 2016, p. 62). Students earned the "quiz key" by completing an academic integrity module at the beginning of the course. Although the course was predesigned to allow for multiple quiz attempts, students were informed that reattempting quizzes was a privilege they could earn by completing the academic integrity module. Thus, once students had earned the "quiz key" digital badge, they could use it throughout the semester for multiple reattempts on the five quizzes, which became inquiry-based activities rather than traditional assessments.

In terms of gamification, the concept of multiple quiz attempts can be compared to the game concepts of 'save points' and 'multiple lives,' which allow users a safe way to fail and learn from failure to improve performance. "This contrasts with the traditional 'examination'; a one-shot chance to succeed in a class. Indeed, within virtual environments, the clock can be wound back to the last save point, providing learners with the opportunity to succeed through multiple attempts, resulting in experiential learning, otherwise unobtainable by students doing 'the best' they can with one shot" (Wood, et al., 2013, p. 519).

Taking the concept of relevant learning activities a step further, students were

required on the last quiz of the semester to apply a coding skill learned in class to our spy

context. Using the "quiz key" idea, the LMS feature that required an access code for

students to unlock the quiz was activated. Usually this feature only enabled students to

take a quiz at an appointed time: for example, when proctoring was available. In this

case, however, the access code for the quiz was placed in a hidden div (a function in

coding that facilitates hiding content on a page) in the html code of the LMS quiz page.

Students were required to inspect the page and search through the html code to find the

hidden div and the quiz access code, which was represented as a green key. Students then

had to input the access code to be able to take their final quiz. This played well into the spy

theme and allowed students to apply a relevant coding skill into the context of the course.

Variability. This section focuses on maintaining student attention, which was

perhaps the most difficult task. Identifying a strategy that utilizes a novelty like

gamification to initially capture student attention and then maintain that attention over 15

weeks is challenging, because "no matter how interesting a given tactic is, [students] will

adapt to it and lose interest over time" (Keller & Suzuki, 2004, p. 231). This led to the

inclusion of two gamification elements that would introduce variety over the duration of

the semester.

The first element was the inclusion of secret clues, which in gamification terms

would be considered *Easter eggs* or hidden tips. In this case, the clue was accessed by

finding a small bug icon that was located somewhere in the content pages or video page

for each module. Once students found the secret clue, they were awarded one bonus

point, one tip to help on their case study for that week, and another tip to identify the

AIM Code spy. This aligned with section one of QOLT by providing relevant content.

The next element was the inclusion of bonus levels, which were only offered in every other

module. These levels provided an opportunity for social engagement on a current-event

topic (e.g., net neutrality) in a discussion thread. This improved upon section four of the

QOLT and provided variability to the course flow.

Student Evaluation

Upon completing our course development with added gamification elements, the

class was offered as a pilot course to a mixed enrollment of undergraduate and graduate

students, with the author serving as the instructor. Based on demographic information,

the students in the course fit the previously-discussed criteria to be classified as digital

natives (Palfrey & Gasser, 2011). To help improve future iterations of the course, at the

semester's conclusion, students were asked to complete an anonymous survey to provide

overall course feedback, as well as feedback specific to the gamification aspects of the

class design. Among other questions, the survey included one Likert-style inquiry about

the impact that gamification elements had on the learning experience, as well as one

open-ended question asking for additional feedback about the course in general.

Results

Student Survey Responses

In the anonymous student survey at the end of the semester, one question

specifically addressed the course's gamification elements. For this, students were asked

to indicate on a 1-to-5 Likert scale how gamification contributed to their learning

experience. On average, students rated this item at 4.14 (n = 21, $SD = 0.85$, $SE_M = 0.19$, Min = 2.00, Max = 5.00). Perception data showed that 17 of the 21 students reported that the course's gamification aspects either somewhat (rating of 4.0) or significantly (rating of 5.0) enhanced their learning experience. It should be noted that one student indicated that the gamification aspects somewhat reduced the learning experience (rating of 2.0), while three students indicated that the gamification aspects neither enhanced nor reduced the learning experience (rating of 3.0). Although a strong majority reported a rating of 4.0 or 5.0, the results speak to the point that gamification was not effective for all students.

The open-ended narrative responses were analyzed using the "describe, compare, relate" formula (Bazeley, 2009, p.10), with organized themes from the ARCS model implemented for the gamification portion: perceptual arousal, inquiry arousal, and variability.

Perceptual Arousal. This theme relates to the design objective of captivating student attention with novelty and triggering initial interest in course content. Overall, students indicated that in general, they enjoyed how the course included elements of gamification. However, feedback ranged across a spectrum, from one student who found gamification to be distracting, to others who reported that it significantly enhanced their learning experience:

- "I enjoyed the gamification…making the assignments more interesting."

- "At first the gamification was pretty exciting and fun. It motivated me to spend more time in the course."

- "I have always felt that gamification has aided my ability to learn. I love the idea that we are learning while having fun."

- "When I first read the syllabus, I became excited for the course because of the gamification aspect. Striving to do my best in my classes is something I've always done, but the gamification led to a greater desire to not only do my best on the assignments but to work to find the spy who was leaking the information to others."

Student narratives revealed that while they enjoyed gamification overall, they also thought that additional instructions or a rationale for the gamification elements would have been beneficial. The narrative exposed mixed results, as some students struggled with taking it seriously as part of a college course, while others felt that it was a positive factor in capturing their interest and impacting their engagement:

- "I think that I engaged a little more in this class because of gamification. It was kind of silly at times, but I liked it."

- "The storyline was fine, but I think you should push it more."

- "Initially I was skeptical about the plot set up for this course. I didn't see how it would be integrated. As I got into it, though, I especially appreciated the pattern of each week or 'level.'"

- "As for the gamification, I thought it was fun! I'll be honest however; it was a little bit confusing. I think it was well planned out, but in the future, I think greater effort could be made to highlight the aspect of the gaming. Maybe making it a little simpler would be beneficial."

These student narratives underline the importance of additional scaffolding and of providing a more explicit rationale (in the course syllabus and introduction module) for including gamification elements. Overall, students touched on the idea that they approached gamification with an established schema that appeared to have influenced them in multiple ways. Some students perceived gamification as fun, while others viewed it as a gimmick and out-of-place in a college setting.

Inquiry Arousal. This theme speaks to engaging students in relevant activities

that promote inquiry. Focusing on the videos and media elements was a subject of

emphasis for the improvement of the course design from the QOLT analysis, and was

implemented to raise the level of inquiry for students using gamification. Student

responses touched on two main aspects of the videos: (1) the gamified feature of listing

them as "classified" content, and (2) the weekly intro videos that provided context for the

case studies while also playing on the course theme:

- "In our class I really enjoyed how our teacher put short games, and fun videos for us to view or play as we worked on our projects."

- "The videos were helpful and it was nice to have them available."

- "I liked the little videos at the beginning of units. It's good to have an introduction, and the spy music and secretive nature made the videos more interesting."

- "It was interesting to look forward to what video would be put forth each week."

Another aspect of inquiry arousal was the mention of the applied activity of

searching for the hidden green key in the quiz html. Students cited this activity as being

relevant to the objective of learning coding, which fits into QOLT section one. One

student took it a step further, recommending the implementation of more activities that

were relevant to html skills and that played on the spy theme of the course:

- "I liked looking in the source code for the green key."

- "While the assignments, discussions, and quizzes were taken seriously, there was an element of fun to it (like the green key)."

- "The activity where we had to look at the source code was a good example of relevant tasks, b/c that's something we actually have to do [in html coding]."

- "[I] felt like there was a disconnect between the spy elements and the

work I was actually doing. Like, quick example, what if you acted
like the spy was ruining all your web pages by altering the code, so
you sent me the damaged HTML file to find what went wrong, or the
spy removed the images, so I had to put them back in, or the spy
stole a whole page, and I had to code it from scratch."

The responses in this section speak to the impact that inquiry arousal had on

engaging students in relevant tasks, and to how the gamification aspects of the course

played a factor in directing student attention to the importance of these events.

Variability. This theme centers on concepts from the design that focus on

maintaining student attention. This was a difficult area to address, as sustaining attention

must be done by conveying relevance over the initial novelty of the gamification

elements. Students responded to this theme by recognizing the engagement aspects

inherent to finding secret clues each week:

- "I liked that the secret clues were also helpful to the overall project,
  that encouraged me to pay more attention to them."

- "Looking for clues was great."

- "One thing that I found very useful about the gamification aspects of
  this course is that it helped make sure I was not just glazing over the
  lesson content. I have found with other online courses [that] my
  mind starts to wander as I read the course content or unintentionally
  skip over content. But when looking for secret clues, it helped me
  make sure I was accessing all the content and not skipping over
  anything."

The use of the secret clues (Easter eggs) was purposely designed to encourage

sustained attention while providing relevance. Offering tips on the weekly case studies

within the context of the spy theme seemed to work well. It was also encouraging to see a

student report that the existence of the clues became a signal for the student to be

attentive while engaging in course content. This was unintended in the design, but

certainly a positive result. The bonus levels and overall reactions to gamification also fit well into the theme of variability:

- "I enjoyed the bonus levels added after some of the modules. They were fun, but I liked specifically that it was fun AND relevant."

- "I thought the gamification experience was quite fun! This was actually my first time experiencing a "gamified" classroom, and I wish more of my instructors had tried to implement gamification into their courses."

- "Review activities like [bonus levels] made it seems like it's less of a class, and more fun. Plus, it reinforced the concepts nicely."

- "At first the gamification was pretty exciting and fun. It motivated me to spend more time in the course. However, the novelty kind of wore off part way through the semester. I think it is hard to maintain that type of motivation over several months."

This final section of comments not only addressed how important it was to students that gamification elements be fun, but also that they provide a frame for relevance in the coursework. The final student comment points to the challenge of using a novelty like gamification to engage students for a 15-week semester. The intention was that students would initially find extrinsic value in the gamified content, but through triggered interest development, students would shift toward intrinsic value through relevant activities. This certainly did not seem to be the case for all of the students in the course.

Discussion and Conclusion

This design case contributes to the emerging body of literature that surrounds engaging digital native students with gamified instruction (de Byl, 2012; Kiryakova, et al.,

2014; Özer, et al., 2018; Annansingh, 2018) and provides an example of a motivational design strategy, created to improve student engagement. Instructional designers and instructors have been provided with an evidence-based framework for implementing gamification in higher education online courses. As the instructional designer and instructor for this course, I found that the design and facilitation of a gamified online class could be an effective way to engage students.

Similar to studies on student perceptions of gamification in online courses (Leong & Luo, 2011; O'Donovan, et al., 2013; Jacobs, 2016), this design case revealed that students had an overall favorable view of the gamification elements of the course. In terms of class quality improvement based on the QOLT evaluation, emphasis was placed on improving sections one, four, six and eight, which included providing relevant content, increasing student engagement, placing focus on media elements, and increasing content accessibility. Based on the QOLT scores from the initial analysis, as well as improvements made from the QOLT instrument's recommendations, metrics for each of these sections were improved, which increased the overall score for course quality. Additionally, student idiographic responses indicated that the videos and relevant activities in particular became a focal point for student engagement, which justifies the instructional emphasis that was placed on these resources.

Implementing gamification elements into a course and providing relevant learning opportunities with autonomy-support is appealing to digital native learners (Mohr & Mohr, 2017), and gamification appears to be an engaging way to gain student attention. In this design case, students responded favorably to the inclusion of gamification in the

course and the impact it had on the overall learning experience, which confirms similar work on this topic (Prensky, 2001; Palfrey & Gasser, 2008). Idiographic responses also indicate positive impact in terms of perceptual arousal, inquiry arousal, and variability in gaining student attention with gamification elements. Students indicated that additional scaffolding for the gamification would be helpful, and recommended adding or adapting relevant learning activities that directly relate to the spy theme and overall course narrative.

Perceptual Arousal. The gamification elements were added in part to capture student attention through novelty, which can be used to trigger initial interest in the four-phase model of interest development. Overall, student narratives indicated that the gamification elements were interesting and fun, and they initially appeared to engage students in the course. However, while the gamified aspects of the course caught their attention, some students also indicated that they were somewhat confused by this new approach to an online course in higher education. Students suggested that this confusion could be mitigated with additional scaffolding in the syllabus and the introduction module.

Inquiry Arousal. This theme was approached by focusing videos and media elements to improve the course design (as recommended by the QOLT analysis) and to engage students in relevant activities that promote inquiry. Student narratives indicated that these videos were engaging in bringing students into the gamified theme, and in incorporating course content. Overall, students responded positively to the quiz that required them to apply the skill of searching through a webpage's html code to find a

hidden access code. Students reported that this activity was not only relevant to the course content, but also engaged the gamified spy theme in the course. One student in particular felt a disconnect between the case studies and the spy theme, and recommended that there could have been more applied activities similar to finding the hidden access code. This was an interesting comment, as the student indicated an openness to seeing more assignments that played into the gamified theme, despite a perceived disconnect in some of the assignments. Moreover, this student also provided a very specific example that spoke to the acceptance of gamification as a tool for student engagement.

Variability. The concept of providing variability to maintain student attention was of concern, as the novelty of the gamification elements could wear off and students could lose interest. However, responses indicated that the implementation of secret clues (Easter eggs) was an element that resonated with students. An unintended result was that students indicated that the secret clues encouraged them to pay closer attention to content to avoid missing the clues. This aspect of secret clues also connected well with the gamified spy theme of the course. Students indicated further that the bonus levels provided a certain amount of variability and engagement throughout the semester. As expected, some feedback confirmed that the initial novelty and excitement of gamification wore off over the semester.

Recommendations

According to Armstrong:

Gamification in [online education] is awaiting those who are willing to explore, experiment, and iterate – and it's these trail-blazers who are likely to find themselves in the best position to meet the evolving needs of an ever-increasing population of digital native students (Armstrong, 2013, p. 256).

We accordingly affirm that in order to create more robust and clear gamification design strategies for gamified courses (Mora, et al., 2015), future iterations of this and other online classes will greatly benefit by utilizing and considering the designerly ways of knowing, the course structural description, and the rich student feedback provided by this case study (Könings, et al., 2014)

Instructors. This design case speaks to the role the instructor plays in the development of relevant assignments, providing timely and engaging media elements, and providing scaffolding. Instructors should commit to collaboratively engage in the backwards-design process of course development with instructional designers, which leads to a better understanding of intentional teaching (Linder, et al., 2014). It is also recommended that instructors acknowledge that a gamified course will require tweaks and honing through an iterative process from semester-to-semester, through intentional design (Cameron, 2009). This requires gathering and implementing student recommendations for improvement. In this design case, students identified a need for additional scaffolding and more relevant assignments.

It is recommended that instructors consider how to best support our new digital native learners by providing problem-based activities (Selwyn, 2009) with constructive, formative feedback. One way instructors can accomplish this is by acknowledging that

with new learners, instructors should consider how to use media elements and digital tools of communication more effectively, to bridge the generational gap. At minimum, instructors can work with instructional designers to learn communication features within or outside of the LMS. One emerging and innovative approach is the use of gamified dashboards that utilize learning analytics to provide students with immediate feedback related to performance on assignments and quizzes (de Freitas, et al., 2017).

Finally, instructors should use their content expertise to identify relevant assignments, and work with instructional designers to incorporate these assignments into a gamification design strategy in the LMS. These types of gamified learning activities have been found to produce positive effects on the knowledge acquisition and engagement of digital native learners (Ibáñez, et al., 2014). Instructors with an interest in student success are essential in the development and facilitation of teaching in gamified learning environments.

Instructional Designers. This design case speaks to the role of the instructional designer as an advocate of the student to the instructor (Hopper & Sun, 2017) in assembling autonomy-supportive learning materials, and in getting instructors to buy into the educational viability of gamified problem-solving activities for digital native learners (Gros, 2015). Improving congruence between student perspectives and those of instructional designers and instructors is identified by Könings, Seidel and van Merriënboer (2014) as participatory design. Such structured collaboration can lead to improved quality of learning within the LMS.

It is recommended that instructional designers teach instructors and serve as

advocates for innovative approaches and evidence-based instructional design methods.

These efforts include providing autonomy-support to instructors by teaching them how to

facilitate gamified learning experiences within the LMS. This process can be described as

faded scaffolding, which uses instructional supports that are gradually removed as the

expertise level of the learner improves in a specific teaching strategy or skill (Clark and

Feldon, 2005). This concept is not only relevant for learning in online courses, but

specifically in gamified instruction, as "scaffolding in games is used to bridge the gap

between the player's current skills and those needed to be successful . . . [and] proper

scaffolding provides a satisfying game experience for players" (Kao, et al., 2017, p. 296).

It makes sense that student feedback in this design case recommended the inclusion of

additional scaffolding. However, instructional designers must also keep in mind that

some types of scaffolding, or too much scaffolding in general, can actually become

learning barriers (Sun, et al., 2011). Instructional designers must also be prepared for the

inevitable necessity of gathering student feedback, and of improving the design of

gamified courses in an iterative process over multiple offerings of a course. This design

case illustrates that instructional designers can and should play a crucial role in the

preparation and design of instruction for gamified learning environments.

Future Directions

Based on the findings of this design case, future studies on formulating online

courses for digital native students will explore the use of scaffolding and autonomy-

support in different formats. These include, but not limited to: learner preference, self-

directed learning, and student choice. Additionally, our findings on the implementation of

relevant assignments will lead to the exploration of making online discussions more

relevant and of engaging students through scaffolding and autonomy-support with

Bloom's revised taxonomy.

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Appendix 3A: Course Homepage

Appendix 3B: Course Module Page

LEVEL | **<course>**

Welcome to Level 1, AIM Recruit *Student Name Inserted Here*,! Each level will have an overview page similar to this page. You'll find the learning objectives, items to study and task list, challenges (assignments) and videos to watch for this coming week in Level 1. Let's get started!

✓ Objectives

Upon completion of Level 1 you should be able to:

- Describe the evolution of the Internet and web standards.
- Describe the importance of accessibility.
- Define the purposes and relationships of web browsers, servers, protocols, URLs, domain names, markup languages, and CSS.
- Create and test your first web page.

🔍 Study & Task List

- Review: Felke-Morris, *Basics of Web Design*, Chapter 1
- Syllabus
- Install the following:
  - Web Developer Toolbar ↗
  - WAVE Toolbar ↗
  - Firebug ↗ (Optional, since most browsers have built-in firebug-like functionality now)
  - Sublime Text ↗ is a great text editor for either Mac or Windows.
  - Notepad++ ↗ (Recommended free text editor for Windows users)
  - TextWrangler ↗ (Recommended free text editor for Mac users. Please, for your own sake, don't use TextEdit)

📋 Challenges

+10 XP Discussion Activity: Introduce Yourself to the Class
+10 XP Take the Course Pretest
+10 XP Discussion Activity: Share a Web Resource

▶ Video Resources

▼ *Classified Intel* Click here to access videos

The playlist includes 11 videos encompassing about 1 hour.

The following YouTube playlist contains videos that demonstrate how to install and use several of the developer tools used in this course. As a beginner, don't be distracted by the jargon and terminology that is used, but rather note the possibilities and realize that they will make more sense down the road.

Click the Classified image (right) to gain access the video playlist, or you can access the playlist directly on YouTube ↗ .

YouTube playlist of videos created by my colleague Neal Legler, AIM Code Trainer. The additional tutorial videos below were created by Kevein Reeve, AIM Code Trainer .

How the Web Works (12:28)

Creating your first web page (8:22)

CHAPTER 4

#DIGITALPOWERUPS: SCAFFOLDS AND HASHTAGS TO EMPOWER HIGHER-ORDER AND HUMANIZED STUDENT ENGAGEMENT IN ONLINE DISCUSSIONS

Abstract

To engage students in online discussions, instructors must design and facilitate the student experience in authentic and relevant ways. In this study, I consider student perceptions and student engagement in online discussions by examining the design and implementation of an emerging online discussion strategy called digital powerups. Digital powerups are keywords displayed as hashtags that are associated with corresponding prompts in online discussion forums allowing for student choice and voice. As the instructor in the course being evaluated in this study, I implemented the digital powerups strategy to improve student engagement with 13 graduate students enrolled in an online course on diverse teaching strategies. Using the community of inquiry framework as a lens, the research questions for this mixed-methods sequential explanatory case study were approached in two phases (QUAN ➔ qual). Descriptive statistics were used to identify that students used *#remember* and *#connect* digital powerups most often in initial posts and comments to peers. A Pearson correlation identified a statistically significant positive relationship between the use of the *#create* powerup and earning a bonus from peers in the discussion. Additionally, a stepwise linear regression analysis revealed that of all the powerups, only the *#remember* independent

variable predicted 46% of the variance in earning a bonus from peers. Online instructors interested in using the digital powerups strategy to engage students in online discussions will find particular interest in this study.

Keywords: online discussion, scaffolds, hashtags, student engagement, humanized learning

1. Introduction

Online instructors take on two important roles in the development and implementation of online courses. First, the role of designer is important to structure the virtual learning environment, and, second, the role of facilitator is vital because the instructor needs to inhabit the learning environment with a social presence that facilitates student learning throughout the course. These two roles are encompassed in the term *instructor presence* (Garrison, Anderson, & Archer, 1999). An important aspect of the course development process focuses on how the design and facilitation of a course will provide regular and substantive interactions among students, and between instructor and students. Online discussion forums are considered to be "the beating heart of nearly every online course" (Sull, 2014, p. 11) because the learning environment is where these interactions and community building take place (Mazzolini & Maddison, 2007; Nilson & Goodson, 2017; Phirangee, Demmans Epp, & Hewitt, 2016).

Research in the field has identified that when online discussions are designed and facilitated properly, students engage in the co-construction of knowledge through discourse, student perception of learning is higher, and students report higher satisfaction with the overall learning experience and have much higher rates of retention (Arbaugh,

2008; Garrison & Arbaugh, 2007; Garrison, Cleveland-Innes, & Fung, 2010; Nilson &

Goodson, 2017; Richardson & Swan, 2003; Swan, Garrison, & Richardson, 2009).

However, a contrasting body of literature suggests there are key inadequacies and

criticisms to using online discussions and to the learning managements systems (LMS)

used to facilitate online discussions. These criticisms include not engaging students in

higher-order thinking, not allowing co-construction of knowledge and reflection, and

burying pertinent discussion posts in the discussion threads. Although the literature on

online discussions is replete with studies addressing general approaches to either

designing or facilitating online discussions, or recommendations for new platforms to

support online discussions, there is a need to examine new and emerging strategies for

online discussions that address both aspects and utilize features of a contemporary LMS.

Specifically, the digital powerups strategy (Gustafson, 2016) addresses these issues, as

well as provides opportunities for students to engage in substantive interactions in

relevant and authentic ways. In this single-case study I focus specifically on the emerging

digital powerups strategy, which has not been researched previously. As a single-case

explaining a phenomenon that has not been researched previously, this study is

considered revelatory in nature (Yin, 2009). As there is no common definition of digital

powerups in the literature, I define digital powerups as "keywords displayed as hashtags

that are associated with corresponding prompts in online discussion forums."

Implementing this strategy requires the instructor to consider both design and facilitation.

1.1. Role of the instructor in online discussions

The role of the instructor in designing and facilitating online discussions is a vital

component to the success of this new strategy. In this study, I served in the role of instructor in both the course design and facilitation of the discussion forums. I initially learned about the strategy in preparing to teach the course and, rather than telling my students about the strategy, I wanted to immerse them in it. In this study, instructor presence (Garrison, et al., 1999) is used to refer to the role of the instructor, and I define this term as "the intentional and hands-on approach an instructor takes in both instructional design, and course facilitation."

1.1.1. Designing the learning environment with explicit expectations

Online instructors can design the structure of their course by implementing the concept that Riggs and Linder (2016) refer to as an *architecture of engagement*. Designing an architecture of engagement, a borrowed term in education, like scaffolding, was initially used as a metaphor that referred to the planning of urban neighborhoods and community spaces. As the term implies, this includes the design of space and structures "that center human lives within meaningful contexts of engagement" (Dotson, 2013, p. 140) and allows for "shared emotional connection among members develop[ing] from the frequency and quality of social interactions as well as experiencing shared events and feeling as if they and others are personally invested in the group" (p. 145). In other words, the design of the space speaks to the intended use and the ability or inability for individuals to authentically engage and connect with each other. The need for a virtual learning space that is designed for interaction and social presence brings to mind the design of brick-and-mortar school classrooms.

The architecture of school structures and classrooms have been specifically

designed to establish predetermined social norms and expectations of interactions for students in a specific and prescribed way (Piro, 2008). Students are socialized from an early age in elementary school to know how to behave and what to expect when they enter a classroom. The architecture of the classroom or the physical space inherently signals expectations to students based on these established social norms. Once students reach college, these social norms signal certain expectations for behavior and interaction when they sit down in a large lecture hall designed for them to listen to the instructor compared the expectations for interaction in a small classroom with chairs arranged in a circle designed for students to engage in peer discussion (Riggs & Linder, 2016). Based on these established social norms, students understand the expectations for their behavior simply based on the learning environments in which they enter.

Although students have been socialized for many years to understand the inherent expectations in physical spaces and brick-and-mortar classrooms, these same types of expectations have not necessarily been established for virtual learning environments. Online instructors do not have the benefit of simply relying on the learning environment to signal behavioral expectations for students, thus it becomes necessary for online instructors to explicitly establish social norms and student behavioral expectations in asynchronous courses and facilitate student participation. This can in part be done through communication guidelines presented in the syllabus and detailed instructions in each assignment.

1.1.2. Facilitating student engagement with constructive interactions

Approaching the design of the virtual learning environment with a focus on

supporting student success is known as humanizing the online course (Jones, 2017; Kilgore, Bartoletti, & Al Freih, 2018; Pacansky-Brock, 2012). In this study, humanizing is defined as "designing and facilitating an online course as a social-constructivist experience through intentional interaction and awareness of student needs." Structuring student expectations is merely the first step to humanizing an online course, but it sets the stage for facilitating student engagement in authentic and relevant ways as shown in Figure 4.1.
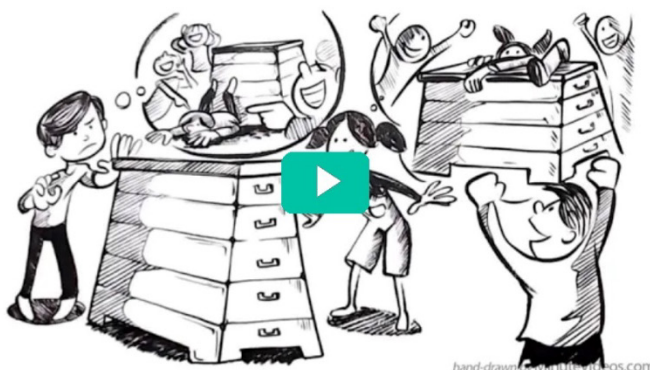
Facilitation is of utmost importance because instructor presence "is the mechanism that bridges the transactional distance between instructor and student in a virtual classroom" (Orcutt & Dringus, 2017, p. 16) and has been found to influence both student perception of learning and overall student satisfaction in online courses (Afolabi, 2016; Akyol & Garrison, 2011). Cho and Cho (2016) detailed that this instructor presence is comprised of several elements, including: providing regular feedback on student interactions, providing positive and supporting comments in discussions, scaffolding with guidelines and reminder messages, and monitoring interactions.

Instructors can stunt discussion interaction or influence the flow of the forums, as Mazzolini and Maddison (2007) report, when instructors jump into the discussion threads too often. Instructor interactions with students can take the form of posting course announcements, participating in the online discussion forums, sending individualized messages, and providing timely feedback on assignments for each student (Martin, Wang, & Sadaf, 2018). When instructors intentionally focus on engaging with students through individualized feedback, students show increased cognitive presence in online courses

Figure 4.1. Sample Canvas LMS discussion prompt.

(Barnes, 2016), and that interaction is vital for the perceived learning of online students

(Garrison & Cleveland-Innes, 2005).

1.2. *Community of inquiry as a theoretical and conceptual framework for online instruction*

Although it is important to consider course content and the technology being

leveraged in online courses, it is perhaps of greater importance to consider the human elements involved. Humanizing an online course requires the intentional planning and integration of human interaction, and therefore requires a virtual space to facilitate interaction and reflection among those involved (Kilgore et al., 2018). Learning environments designed to engage students in discourse with peers and individual reflection in order to construct knowledge are considered to be *social constructivist* in nature and require instructors to explicitly connect learning activities to discussions in interesting ways to engage students (Jones, 2017).

An epistemological approach of social constructivism contributes to online learning in that it focuses on the use of scaffolds to support learners toward meaning making. Vygotsky (1980) viewed learning as being socially constructed through activity, communication, and interactions with others (Swan, 2005). Additionally, the pragmatic views of Dewey (1923) included the concept that any educational experience worth engaging in should be grounded in the process of reflective inquiry and that inquiry itself should be a social activity (Swan et al., 2009). These principles of social constructivism provide the groundwork for the Community of Inquiry (CoI) framework, which is described as "a comprehensive theoretical model that can inform both research on online learning and the practice of online instruction" (Swan et al., 2008, p. 1). The CoI framework (Figure 4.2) is composed of three main elements: cognitive presence, social presence, and teaching presence. Cognitive presence encompasses how students interact with content in a course, social presence addresses aspects of community and peer to peer interaction, and teaching presence addresses structure and process (or design and

facilitation). Social presence tends to get the most attention in the literature as it is the "ability of participants to identify with the group or course of study" (Garrison, 2011, p. 34) and "exchange ideas freely, explore different perspectives, and solve problems collectively" (Joksimović, Gašević, Kovanović, Riecke, & Hatala, 2015, p. 640).
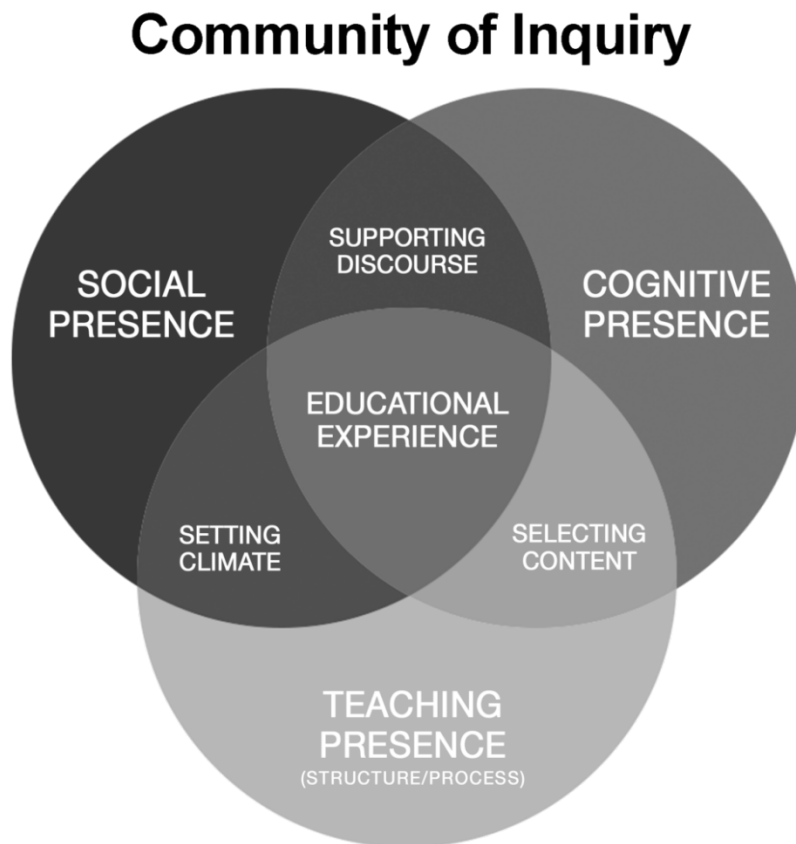

Figure 4.2. Community of inquiry framework (Barnes, 2016).

When creating online learning environments that are conducive to student engagement, Lee, Pate, and Cozart (2015) recommended three guidelines to design for autonomy-support: provide choices (Flowerday & Schraw, 2000; Radenski, 2009), provide rationale (Reeve & Jang, 2006; Xie & Ke, 2011), and provide opportunities for

personalization (Knowles, 1986; Patall, Cooper, & Wynn, 2010). By including these three aspects, the design of an online discussion forum can become an autonomy-supportive community space or a humanized learning environment. The social presence aspect of discussions represents the humanized aspects, or the personally fulfilling and affective elements of engaging in a community of learners that contributes to students engaging cognitively (Garrison et al., 1999). Humanized learning discussion forums allow students and instructors to pose questions and engage in reflection and the co-construction of knowledge (Chen, deNoyelles, Patton, & Zydney, 2017; Garrison et al., 2010; Gilbert & Dabbagh, 2005; Yang, Yeh, & Won, 2010). Although an important starting point, a discussion forum in and of itself does not inherently provide humanized learning without the application of constructivist instructional techniques (Covelli, 2017). However, when designed and implemented to do so, online discussions unequivocally support social constructivist learning (Maor, 2003).

Although online discussions are designed as inherent social spaces, which seems to speak specifically to social presence, the strength of the CoI framework is in the dynamic interplay and overlap between the cognitive, social, and teaching presence constructs (Hora & Ferrare, 2013; Shea & Bidjerano, 2009). Although the literature focused on social presence outweighs studies on CoI as a whole (Lowenthal, 2010), it is worthwhile to consider that the instructor plays a critical role in guiding students through the learning experience in an online course (Martin, Wang, & Sadaf, 2018). Indeed, the researchers who established CoI define teaching presence as "the design, facilitation, and direction of cognitive and social presence for the purpose of realizing personally

meaningful and educationally worthwhile learning outcomes" (Anderson, Liam, Garrison, & Archer, 2001, p. 5). Thus, the CoI framework is an appropriate lens for this study to explain the phenomenon of higher-order online learning experiences using digital powerups (Garrison et al., 2010). This case in particular focuses the research questions on the cognitive presence and social presence domains, and the teaching presence domain is addressed in the rich description of the digital powerups strategy.

1.3. Context of the current study

One emerging approach to student engagement in online discussions, known as digital powerups, has recently come to the forefront of innovative strategies in higher education, although it originated in K-12 settings (Gustafson, 2014, 2016). Before this approach begins to be implemented more widely, it is important to investigate how this phenomenon was used in the design and facilitation of online discussions, as well as to investigate how students engaged in the strategy and their perceptions surrounding the learning experience. To date, the digital powerups strategy does not appear in the literature making this study one that can contribute to the knowledge base on effective online instruction. Although considered an emerging strategy for online discussions, the digital powerups strategy is deeply connected to the literature on social constructivist approaches to learning and the literature on online discussions.

1.3.1. Connecting digital powerups to the literature

Many online instructors question their ability to authentically engage students in online courses (Allen, Seaman, Poulin & Straut, 2016; Herman & Nilson, 2018), which is

not surprising given the inadequacies that exist in the design and facilitation of online

discussion forums that appear in the literature. Specifically, these inadequacies include:

not engaging students in higher-order thinking (Andresen, 2009; Gao, Zhang, & Franklin,

2013; Hay, Peltier, & Drago, 2004); not allowing co-construction of knowledge and

reflection (Cho & Cho, 2016; Lambiase, 2010); and burying pertinent discussion posts in

the discussion threads as new posts get most attention (Hewitt, 2003; Rubin, Fernandes,

& Avgerinou, 2013). Although these three inadequacies are representative of the way

many online discussions are implemented, they are not insurmountable barriers. Further,

these inadequacies can be mitigated by utilizing the design and instruction of a strategy,

like digital powerups.

Gustafson (2014) originally presented digital powerups to address the first

inadequacy on online discussions because it can enhance student engagement from

lower-level responses to higher-order thinking in Bloom's revised taxonomy from

Krathwohl (2002). Utilizing Bloom's taxonomy as a scaffold for enhancing student

engagement, higher-order learning, and labelling content in discussion forums aligns with

the literature in online learning (Cheung, Hew, & Ng, 2008; Christopher, Thomas, &

Tallents-Runnels, 2004; Darabi, Arrastia, Nelson, Cornille, & Liang, 2011; Ertmer,

Sadaf, & Ertmer, 2011; Gilbert & Dabbah, 2005; Valcke, De Wever, Zhu, & Deed, 2009;

Whiteley, 2014). One way to use Bloom's as a scaffold in online discussions is by

utilizing hashtags. A hashtag, which is a number sign followed by a keyword (Pacansky-

Brock, 2012), can be used as visual representations of prompts in the digital powerups

strategy. By explicitly labeling different levels of Bloom's with specific prompts or

hashtags, students are given an immediate cue as to the level at which they are engaging in the discussion. Making students aware of these levels is the first step in shifting the discourse toward higher-order levels of thinking.

This concept of scaffolding also speaks to the second inadequacy in not allowing co-construction of knowledge and reflection. According to Wood, Bruner, and Ross (1976) "Scaffolding situations are those in which the learner gets assistance or support to perform a task beyond his or her own reach if pursued independently" (as cited in Pea, 2004). This support can come from the environment or the support can also come from other learners in what Vygotsky (1980) refers to as the zone of proximal development, which emphasizes the need for learner-learner interactions. Instructor presence is required in the development of the environment and in the scaffolding of learner-learner interaction using specific communication expectations (Emelyanova & Voronia, 2014; Kanuka, Rourke, & Laflamme, 2007; Zydney & Seo, 2012). Further, Gustafson (2014) frames digital powerups as a strategy to scaffold online interactions in the discussion forums and to empower students with both choice and voice. Providing an autonomy-supportive learning environment (Lee et al., 2015; Reeve & Jang, 2006) allows for the co-construction of knowledge and reflection between learners (Cho & Cho, 2016).

The third inadequacy, that discussion posts become buried in the threads, is not addressed with the digital powerups strategy inherently, but it can be addressed when paired with an LMS, like Canvas, that supports specific features to address this issue.

1.3.2. Features of the LMS for online discussions

Although online discussions have the potential to provide a space for CoI, one of

the inadequacies of online discussion forums is that higher quality discussion posts can get lost in the discussion threads. These concerns have been observed in a variety of LMS's including Moodle, Blackboard, D2L and others. However, there are certain affordances that an LMS can provide to users that directly impact the success of students. For example, "An effective LMS must make it easy for students to find what they need when they need it… [and] it must facilitate easy communication, both through informal contact and formal feedback" (Rubin et al., 2012, p. 50).

Along with the digital powerups strategy, there were additional features that were utilized in the Canvas LMS specifically to help mitigate some of the common pitfalls associated with online discussions. The option to use threaded discussions was used, which uses a hierarchal structure in the forum to show linear continuity to interactions. In other words, as shown in Figure 4.3, each students' initial post (labeled "a" in Figure 4.3) showed in the forum, along with the comments (labeled "b" in Figure 4.3) from peers. Canvas LMS uses white space to indent the comments below each initial post as a visual cue to the student of the hierarchy in the thread.

To address the constraint of not allowing co-construction of knowledge another feature borrowed from social media was enabled. The Canvas LMS discussion feature of "liking" was used to promote engagement and external motivation because students who earned the most "likes" from their peers earned bonus points for the discussion assignment that week. This design decision was made to create a sense of social responsibility and community in posting content that could contribute to the class and appeal to peers, which provided all students with the "opportunity to contribute to

Figure 4.3. Sample Canvas LMS discussion thread with digital powerups.

teaching presence" (Garrison, 2011, p. 62). This also allowed an associated feature to be used that mitigated relevant content being buried in the threaded discussion. Specifically, posts were initially sorted in the discussion thread chronologically by date of initial post, but as posts started receiving "likes" from students, the LMS reordered the posts from the most likes to the least likes. This allowed students to curate the discussion forums, which along with the comments and discourse in the thread led to "co-constructing knowledge while engaging with course content" (Moreillon, 2015, p. 44). This again not only helped to scaffold engagement in curating the best quality posts, but was intentionally implemented to lead students toward feelings of responsibility to the group to write quality posts.

Attempting to encapsulate the overarching social-constructivist learning philosophies of Bruner, Piaget, and Vygotsky, the authors Conrad and Donaldson (2011) explained that "humans do not learn in a vacuum but rather through interaction" (p. 2). And given that "In higher education, quality social interaction matters for student success" (Chen, Chang, Ouyang, & Zhou, 2018, p. 22), instructors should intentionally plan to engage students in learning using virtual environment functionality that they are already familiar with. For digital natives taking online courses (Thurston, 2018), the virtual environment that many are most familiar with is social media. The discussion thread feature in Canvas LMS is designed to have the same look, feel, and functionality as a social media platform (Lee & Bonk, 2016). As depicted in Figure 4.1, media can also be embedded in discussion prompts, which further resembles social media.

As shown in Figure 4.4, included in a Canvas LMS discussion post are design

elements that are also found in social media platform posts. The first recognizable feature

of a Canvas LMS discussion post provides personally identifying information about the

individual who made the post (labeled as "a" in Figure 4.4). These identifying items

include an avatar, the student name, and the date the post was made. Next, students can

quickly reply (labeled as "c" in Figure 4.4) in a thread with additional comments and

replies, and others participating in the discussion have the opportunity to give a "thumbs-

up" or "like" for each discussion post (labeled as "d" in Figure 4.4). The digital powerups

strategy builds on the features inherent in the discussion forum as a social media

interaction space by introducing hashtags (labeled as "b" in Figure 4.4) that serve first as
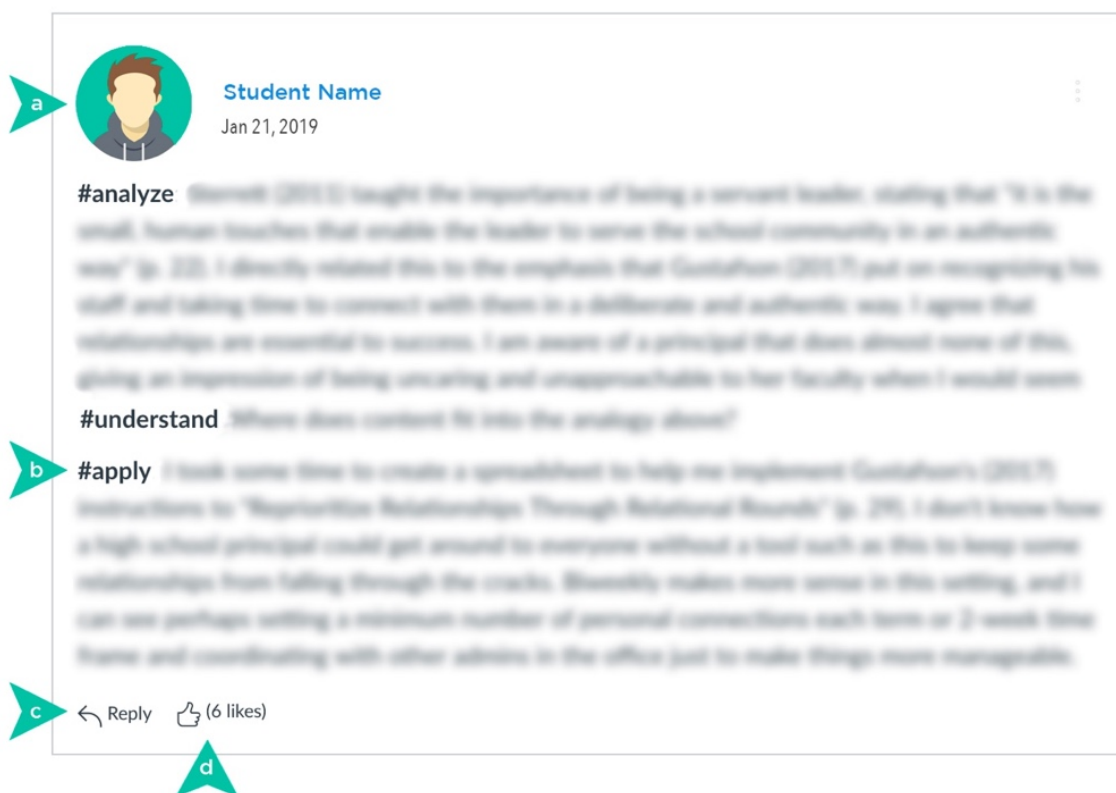
Figure 4.4. Canvas LMS discussion posts including social media design elements.

a reminder of the prompt being addressed, and secondly as a tag or marker to quickly indicate the level of Bloom's that is being engaged. Not only is the powerup indicating the level in which students are engaging (lower, mid, or higher), but also the prompts associated with the powerups scaffold or frame the student responses. Often students engage in the lower levels (#remember, #understand) of Bloom's based on the design and facilitation of the discussion (Gao et al., 2013), but the powerups nudge students into engaging in discussions in the mid-levels (#apply, #analyze, #evaluate) and the higher-order levels as well (#create, #connect).

1.3.3. Planning and implementing the digital powerups strategy

Positionality and context are critical factors in the way this case study is framed because I planned the implementation of the digital powerups strategy in the semester before it was used with students. I served in the role of instructor and was planning the digital powerups strategy as an instructional improvement to the course and not as a research intervention. Therefore, the explanation of the planned implementation focuses on both the instructional design aspects of the teaching strategy, and the instructional facilitation aspects.

As I prepared to teach an online graduate course focused on exploring a variety of innovative teaching and leadership strategies, it became important for me to follow the guidelines Gustafson (2016) provided as a brief conceptual overview of digital powerups and how this strategy can be employed to progressively push students toward higher-order engagement in online discussion forums. Gustafson (2014) also described digital powerups as scaffolds for each level of the Bloom's revised taxonomy action verbs. The

importance of both choice and personalization as motivational factors is central to this

strategy because students are allowed to choose two to four of the powerups in

responding to prompts and use additional powerups in comments to engage with peers.

Gustafson (2016) presented digital powerups as badges students earned when engaging at

the different levels, and students included a code in their post, but I adapted this so that

students used the powerup verbs as tags or hashtags to structure and organize their

discussion posts (e.g., #create). Table 4.1 shows each powerup and the corresponding

prompts.

Table 4.1

Digital Powerups for Online Discussions

#remember	List or restate something you just read; then, add an opinion in your response.
#understand	Ask a question that will help you understand what you read. Allow a peer to respond to your question.
#apply	Organize what you read into something new. Include a poem, chart, timeline, diagram, or model in your response.
#analyze	Examine a quote you read, and then compare it to a different text. Explain why you think they're related.
#evaluate	Critique something that you read in a respectful manner. Cite text-based evidence in your response.
#create	Develop a novel response based on what you read using text, video or other supplies to innovate.
#connect	Connect to an issue outside of your school. Think globally, and share how you collaborated in your response (this requires actual action on your part).

Note. Adapted from "Figure 8.3 Digital Power-Ups" (Gustafson, 2016, p. 115).

In moving toward implementation, additional details needed to be clarified

beyond Gustafson's recommendations for successful facilitation. Therefore, I developed

additional in-depth instructions for the students that were posted in each of the weekly

discussions. This was necessary because discussions should be "explicitly described [with] well-structured prompts [to] support the students to interact and co-construct higher-order knowledge" (Zydney & Seo, 2012, p. 78). Indeed, "course design with clear guidelines, expectations and scaffolds for participation in online discussions as well as a high level of leadership by a course teacher are necessary for students to take a deep approach to learning" (Joksimović et al., 2015, p. 642). Therefore, well-structured prompts were provided each week based on the course content for each module, and the seven digital powerup options shown in Table 4.1 were provided for students to choose from to create their initial posts using a hashtag and the key action verb from Bloom's.

Again, as per Gustafson's (2014) suggestions, students were asked to use two or three powerups in their initial post, and an additional powerup in at least one comment to a peer's post. Although every student was asked to respond to the same prompt, they were approaching the prompts from different perspectives and drawing on their own learning experience paired with their professional experience. I provided students with a rationale for participation, and the powerups provided choice and personalization in the way students engaged in the weekly discussions. Students would label each digital powerup used in their post with the corresponding hashtag. When used on social media platforms, hashtags provide a construct to "efficiently aggregate dialogue within a specific subject domain, allowing users to contribute and view relevant content in one place" (Chiang, Vartabedian, & Spiegel, 2016). Hashtags were used in the discussion forums as labels or tags representing the powerups or prompts being addressed. For example, if a student chose to address the prompt *#create*, then they would label that

portion of their discussion post with *"#create"* before or after the paragraph to indicate the specific prompt they were addressing as shown in Figure 4.4 with label (b).

1.4. Purpose of this research

The aim of this study was to explain the design and implementation of the digital powerups instructional strategy for asynchronous discussions in a graduate level online course. Along with the intentional design decisions, this study aims to explain student engagement through the perceptions and behaviors of students engaging with the strategy in situ. This study considers how digital powerups impacted student engagement with course content, interactions with other students in online discussions, and interactions with the instructor. To effectively explain this case, two questions were established using the CoI framework. Question one addresses cognitive presence, and question two addresses social presence. The questions were first explored quantitatively, and then qualitatively, in a sequential manner, to allow for analysis, explanation, and to provide a complete case. Through the lens of CoI, the following research questions were addressed in this study.

1. How did student preferences of digital powerups and instructor presence impact student cognitive presence in online discussions?

2. How did the digital powerups strategy impact social presence in online discussions?

2. Methodology

2.1. Mixed-methods approach

This mixed-methods sequential explanatory research design (Creswell & Plano

Clark, 2011) followed a two-phase dependent case study approach as the data collected and analyzed in the first phase were used to inform the data and analysis in the second phase (Ivankova, Creswell, & Stick, 2006). An explanatory case presents a distinct approach to explaining a phenomenon, and specifically explaining the student experience (Fetters, Curry, & Creswell, 2013). In this particular case study, there is an intense focus on the digital powerups instructional strategy as a phenomenon that necessitates a clear boundary for the investigation and to distinguish between actual evidence and my own interpretation of the results (Harder, 2010). This empirical inquiry "investigate[d] a contemporary phenomenon in depth and within its real-life context" (Yin, 2009, p. 18) in order to illustrate a unique case (Creswell, 2012) that took place within an educational setting and that was bounded by both time and place (Stake, 1995). Specifically, this case study narrowly focused on one online course during one semester within the discussion forums where the digital powerups strategy had been implemented. Yazan (2015) specified that case studies must have clear boundaries, and this study utilized one of the most effective ways of bounding a case by using both time and activity as the boundary (Baxter & Jack, 2008). Therefore, this case study focused on the time in which learners specifically participated in the online discussion forums in which the digital powerups strategy had been implemented.

2.1.1. Data sources

The data for this study were collected within the Canvas LMS of a concluded online graduate course at a public university in the western United States and de-identified by an honest broker (Qayyum, Zipf, Gungor, & Dillon, 2019) to protect student

identity. Data collection and analysis followed a two-phase design (QUAN → qual). All quantitative data were collected and analyzed in the first phase. The data and analysis from the QUAN phase were used to inform the collection of the qual data in the second phase. Sampling in this study is convenient purposive (Creswell, 2012) and homogeneous in nature by targeting a sample of graduate students with a common occupation and common educational background (Patton, 1990). The course used in this case study is offered through an instructional leadership program that culminates in a master's degree in education and administrative licensure. Students in this course are in-service teachers or administrator professionals in primary and secondary schools in K-12 school districts. This convenient purposive sample was important factor in this study as the students in the course were especially knowledgeable about instructional practice and could provide detailed insights into their own learning processes and engagement strategies throughout the experience (Creswell & Plano Clark, 2011). Participants for the study included the 13 graduate students (made up of seven females and six males) in the course using a purposeful sample.

This study utilized de-identified archival data. Data collection sources included learning analytics of student behavior and participation in the Canvas LMS or trace data, midterm anonymous student survey results (Appendix 4A), and the digital powerups used within the boundaries of the 11 class discussion forums throughout the semester. The "trace data (also known as log data) [was] recorded by LMS contain[ing] time-stamped events about views of specific resources…or discussion messages viewed or posted" (Gašević, Dawson, Rogers, & Gasevic, 2016, p. 68) and can provide interesting insights

to the behaviors of students in an online learning environment. However, Stewart (2017) insists that these trace data do not tell the whole story, and additional context of the course, the teaching strategies employed, and the student perceptions of their experience should be used to triangulate findings. As the instructor for the course, I created the midterm survey as a means to receive student feedback and insight on the course, and the survey was not utilized as a validated instrument specific to data collection for a research study. I utilized the midterm anonymous survey as a qualitative data source, so questions 1, 3, and 6, were not used in this study given the liker-style nature of the questions. Specifically, I identified questions two, four, and five to be used in Phase 2 of the analysis as they pertained specifically to the digital powerups. I decided to exclude the other open-ended questions in this study (7 and 8) because they were more framed toward aspects of the entire course, and not specific to the digital powerups. In order to provide a rich description, this study also employs triangulation as "corroborating evidence from different sources [which was used] to shed light on a theme" (Creswell, 2012, p. 251). The use of multiple data sources in this case study to support the interpretation of findings provides triangulation to validate findings (Stake, 1995).

2.1.2. Data collection

The data were collected and analyzed in two main phases (QUAN ➔ qual) in a "quantitatively driven sequential design" (Johnson & Christensen, 2017, p. 478). As depicted in Figure 4.5, this study began with collecting and analyzing the quantitative data in Phase 1 for each of the research questions, then collecting and analyzing the qualitative data in Phase 2 for each domain, and finally inferences were made by

integrating and combining the data in the narrative provided in the results and discussion section of the paper. This sequential-dependent design appropriately allowed outcomes in Phase 2 to emerge from the results in Phase 1 (Onwuegbuzie & Johnson, 2006).
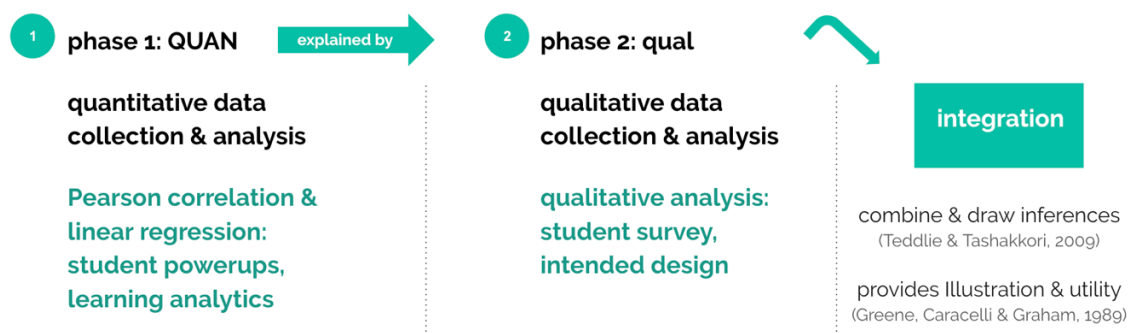
Figure 4.5. Data collection and analysis in two phase research design (QUAN ➔ qual).

In this study, descriptive statistics were used to report the use of digital powerups used by students in the discussion threads, and separated by those used in initial posts versus those used in comments to peers. The descriptive statistics or trace data were collected by an honest broker, and de-identified before I reviewed the data for analysis. Additional trace data of instructor interactions were also collected and displayed in a multi-variable graph, known as a bubble chart, which is visual combination of a scatterplot and a proportional area chart.

2.2. Data Analysis

2.2.1. Quantitative procedure: Correlation and regression

In Phase 1 of section 3.2.1., I used a Pearson correlation to see if a relationship

existed between the digital powerups used and earning a bonus from peers in the discussion forums. A Cohen's standard was used to evaluate the strength of the relationship, where coefficients between .10 and .29 represent a small effect size, coefficients between .30 and .49 represent a moderate effect size, and coefficients above .50 indicate a large effect size (Cohen, 1988). A Pearson correlation requires that the relationship between each pair of variables is linear (Conover & Iman, 1981). This assumption is violated if there is curvature among the points on the scatterplot between any pair of variables. I produced a scatterplot was produced and indicated no curvature and that the relationship between each pair of variables was linear. Skewness and kurtosis were also calculated to determine a normal distribution for the powerups (Westfall & Henning, 2013).

In addition, in Phase 1 of section *3.2.1.*, I conducted a linear regression analysis to test if using a particular powerup or total powerups used predicted earning a bonus from peers. I approached each question sequentially, therefore the qualitative data were gathered from the midterm evaluation and from the final metacognitive assignment addressing online discussions and student engagement. Given the explanatory nature of this study, I determined that a stepwise approach to the regression would provide the best opportunity for identifying a model of best-fit. The dependent variable for the analysis was an earned bonus (Bonus), and the eight independent variables were the seven individual powerups, and the total number of powerups used segmented by each student. Therefore, the 'stepwise' variable selection algorithm was chosen to determine the optimal combination of predictors to include in the regression model. The Akaike

Information Criterion (AIC) was used to indicate model fit (Posada & Buckley, 2004). The AIC statistic uses the maximized log likelihood value as a baseline for model fit, and adds a penalty for estimating additional parameters. A smaller AIC statistic indicates improved model fit.

Prior to conducting the linear regression, I examined the assumptions of normality of residuals, homoscedasticity of residuals, absence of multicollinearity, and the lack of outliers. Normality was evaluated using a Q-Q scatterplot (Bates, Mächler, Bolker, & Walker, 2014; DeCarlo, 1997; Field, 2009) comparing the distribution of the residuals. Homoscedasticity was evaluated by plotting the residuals against the predicted values (Bates et al., 2014; Field, 2009; Osborne & Walters, 2002), and the assumption was met as the points appear randomly distributed with a mean of zero and no apparent curvature. High VIFs indicate increased effects of multicollinearity in the model. VIFs greater than five are cause for concern, whereas VIFs of 10 should be considered the maximum upper limit (Menard, 2009); however, VIFs for *#remember* and *Total* were both calculated at 1.17 showing no cause for concern.

To identify influential points, studentized residuals were calculated and the absolute values were plotted against the observation numbers (Field, 2009; Stevens, 2009). Studentized residuals were calculated by dividing the model residuals by the estimated residual standard deviation. An observation with a studentized residual greater than 3.93 in absolute value, the .999 quartile of a *t* distribution with 12 degrees of freedom, was considered to have significant influence on the results of the model. The studentized residuals on all observations were less than two, and no data points were

identified as influential. Out of the available eight independent variables the stepwise

regression analysis resulted in a model with one independent variable (*#remember*)

explaining 46% of the variance in earning a bonus from peers in the discussions.

2.2.2. Qualitative procedure: Explanatory weaving narrative

Using the de-identified qualitative data from the open-ended midterm survey

questions (Appendix 4A) I analyzed and coded student responses for emerging patterns

and themes (Creswell, 2012). I analyzed the qualitative data from question two using

deductive category application (Mayring, 2004) based on common barriers and supports

that adult learners encounter in online courses from the literature. The coding scheme

included five common barriers; lack of time, lack of motivation, difficulty using

technology, lack of resources, and lack of technical support (Bonk, Lee, Kou, Xu, &

Sheu, 2015; Michinov, Brunot, Le Bohec, Juhel, & Delaval, 2011). The coding scheme

for supports was derived from the same literature with four common supports;

exploration of topics, abundant access to technology, choice and control over activity,

highly motivated, abundant technical support, abundant instructor support. After I coded

the data, I grouped the responses by theme, and I also analyzed student responses from

both questions two and four for specific exemplars that were also grouped by theme

(Bernard, Wutich, & Ryan, 2016). The coding scheme I used to analyze the data from

question four was based on the phase descriptors used to code student responses

(Garrison, Anderson, & Archer, 2001) from the CoI framework; triggering event,

exploration, integration, and resolution.

Question five allowed students to provide more freeform answers than questions

two and four, so I coded the data collected from question five inductively to allow for

emerging patterns from the student responses based on their online discussion

experiences (Bernard et al., 2016). This open coding approach of constant comparison of

the similarities and differences between student responses to question five is appropriate

for the explanatory and revelatory nature of this study (Berelson, 1952; Yin, 2009) to

better understand student perceptions as they participated in the emerging digital

powerups strategy.

The final source of qualitative data was the content from the discussion to get a

better sense of the social presence and peer-to-peer interaction that took place (Lee &

Bonk, 2016). I determined that the best way to explain or illustrate student use of the

digital powerups strategy in-situ would be to utilize the student post that earned the most

likes from peers, and by extension earned the bonus for the final discussion as the

exemplar post to be analyzed. In the final discussion, students were asked to address the

topic of "invigorating online discussions" while using the digital powerups strategy,

which revealed the efficacy of the digital powerups strategy from the student perspective.

This also situated students in a social presence environment encouraging meaningful

interactions, which has been found to demand high levels of learning and critical thinking

for online students (Garrison et al., 2001).

After I coded and grouped the qualitative data by themes, they were integrated

with the quantitative data in the results and discussion section using the narrative

weaving approach (Fetters et al., 2013). Specifically, addressing this type of mixed-

methods approach, Fetters et al. further describe integration using narrative weaving as

including the reporting of both quantitative and qualitative results together based on a particular concept or theme, which are "synthesized through narrative both in the results and discussion [section]" (p. 2147). Narrative weaving allows for an overarching theme, like community of inquiry, to serve as a guide for researchers to organize the sometimes messy complexity of explaining asynchronous social interactions and academic discourse in online courses. For example, a weaving narrative approach to integration allows for a researcher, as in the case of this study, who served as an instructor in the intentional planning and design of an online course can integrate "designerly ways of knowing" (Cross, 1982, p. 223) into the overall narrative of the results and discussion. This approach serves to present "an in-depth understanding of a case" (Cresswell, 2012, p. 98) to connect the dots between a variety of qualitative and qualitative data sources (Scammon et al., 2013).

The teacher presence aspect or the structure of the digital powerups strategy is an integral part of the overall study, and is explained in great detail in section 1.3. As an explanatory case study, it is fitting that the integration of the quantitative and qualitative data be reported in both the results and discussion sections of this paper, and that the selected domains of the CoI framework (cognitive presence and social presence) serve as the overarching themes to scaffold the results and discussion. Finally, this study is revelatory (Yin, 2009), because research on the digital powerups approach does not appear in the literature for online discussions, nor does it appear in the teaching and learning literature for higher education. This study aligns with Yin's definition of revelatory studies as the digital powerups strategy is currently emerging.

2.3. Illustration and utility

The meaningful integration of quantitative and qualitative methods is a centerpiece of mixed-methods research and allows for better illustration and utility in explanatory sequential research designs (Guetterman, Fetters, & Creswell, 2015). This methodological approach allows for a more complete understanding of the context of intentional course design decisions that were made before students participated, the implementation and facilitation of the digital powerups strategy by the instructor, and student perception of several features utilized within the Canvas LMS including liking, sort by liking, and embedded threads. The mixed-methods approach of this study is complementary because it seeks the illustration "of results from one method with the results from the other method" (Schoonenboom & Johnson, 2017, p. 110). After the two main phases (QUAN → qual) the mixing of quantitative and qualitative results took place in the final integration or inferential phase (Teddlie & Tashakkori, 2009) to provide illustration and utility which makes this study more useful for practitioners in both design and instruction (Greene, Caracelli & Graham, 1989; Schoonenboom & Johnson, 2017).

3. Results and Discussion

3.1. How did student preferences of digital powerups and instructor presence impact student cognitive presence in online discussions?

3.1.1. Students preferred to use the #remember and #connect powerups most often

To address question one in Phase 1 of the study, frequencies and percentages were calculated for each variable, and differentiated by powerups that were used in an initial

post and powerups that were used to respond to peers in the comments of the discussion

threads. None of the 13 students utilized every powerup, so percentages are

representative of those students who actually used the individual powerup throughout the

semester. As represented in Table 4.2, the most frequently observed powerups in initial

posts were *#remember* (110, 31%) and *#connect* (71, 20%). Nearly all of the students (*n*

= 12, 92%) used the *#remember* powerup most often in initial posts when engaging in

reflection, whereas in the comments the majority of students (*n* = 7, 54%) used the

#connect powerup most often.

Table 4.2

Summary of Descriptive Statistics for Digital Powerups in Initial Posts

Powerups	min	max	*n*	Total	%
#remember	5	12	13	110	31
#understand	0	9	11	44	13
#apply	0	12	11	38	11
#analyze	0	6	11	43	12
#evaluate	0	4	11	25	7
#create	0	5	10	21	6
#connect	1	11	13	71	20
Total	**23**	**38**	**13**	**352**	**100**

Note. Table represents digital powerups used by all students (*n* = 13) in initial posts over 12 discussions. Column "n" represents number of students attempting the powerup at least once.

As represented in Table 4.3, the most frequently observed powerups in comments

were #connect (56, 29%) and #remember (51, 26%). This is an interesting observed shift

in frequencies in a social constructivist framework, because there was a slight shift

toward preference of higher-order powerups in the comments, which is where students

tend to engage with peers to co-construct meaning (Joksimović et al., 2015). Students

were explicitly instructed in the directions for the discussions to try each powerup at least once in their initial posts over the course of the semester. However, just under half of the students ($n = 6$, 46%) actually used each of the powerups at least once in initial posts, and only one student attempted all of the powerups at least once in the comments.

Table 4.3

Summary of Descriptive Statistics for Digital Powerups in Comments

Powerups	min	max	n	Total	%
#remember	1	9	13	51	26
#understand	0	7	11	30	15
#apply	0	4	6	16	8
#analyze	0	3	12	19	10
#evaluate	0	2	7	9	5
#create	0	3	8	14	7
#connect	0	11	10	56	29
Total	**5**	**23**	**13**	**194**	**100**

Note. Table represents digital powerups used by all students ($n = 13$) in the comments over 12 discussions. Column "n" represents number of students attempting the powerup at least once.

In question five of the survey (Appendix 4A), students were asked to reflect on which powerups they were using most often, and which powerups were avoided most often. Responses were coded inductively and then integrated with the quantitative data presented in Tables 4.1 and 4.2, showing 85% ($n = 11$) of the students identified #remember as their most preferred of the powerups to use. This was not a surprising finding given that students tend to participate in discussions using the lower levels of Bloom's (Gao et al., 2013), but was a somewhat sobering finding because the powerups strategy was intended to mitigate this behavior. However, the responses for why students

chose to use #remember were coded inductively for emerging themes from experiences using digital powerups in online discussion. The reported student perceptions for using #remember were: ease of use ($n = 5$, 38%), way to label key points from the reading to remember for later ($n = 4$, 31%), and aligns with the way student studies and reflects on readings ($n = 2$, 14%). Similarly, student responses for why they avoided certain powerups were coded using constant comparison of the similarities and differences. The majority of students ($n = 7$, 54%) reported avoiding #apply, #analyze and #evaluate, which was supported by the descriptive statistics in Tables 4.2 and 4.3 as those three powerups were three of the least used in initial posts and comments. The majority of students ($n = 7$, 54%) reported having difficulty conceptualizing how to use those specific powerups, which shows that the mid-level or application level of the powerups were difficult for students to illustrate in practice. Only one student reported avoiding #create, which was also underutilized in the discussion forums but proved to be important for earning a bonus from peers.

3.1.2. Instructor presence focused on individualized interactions and assignment feedback

Next in Phase 1, the trace quantitative data from the learning analytics available in the Canvas LMS were collected to show instructor presence quantitatively. A bubble chart was intentionally created as a visualization of all instructor interactions with students across time of the semester and interactions in four domains of the course: announcements, discussion posts, Canvas inbox messages, and (Figure 4.6). Organizing the quantitative data in a visual format provides a quick reference to the sustained

interaction throughout the course. Figure 4.6 illustrates the volume and frequency of instructor communication with students across the semester via announcements, discussion posts, inbox messages and assignment comments. The larger a bubble appears, the more students were interacted with on that date and in that domain.

TOTAL INTERACTIONS WITH STUDENTS

Announcements	Discussion Posts	Canvas Inbox Messages	Submission Comments
33	43	317	414

Daily Interactions with Students
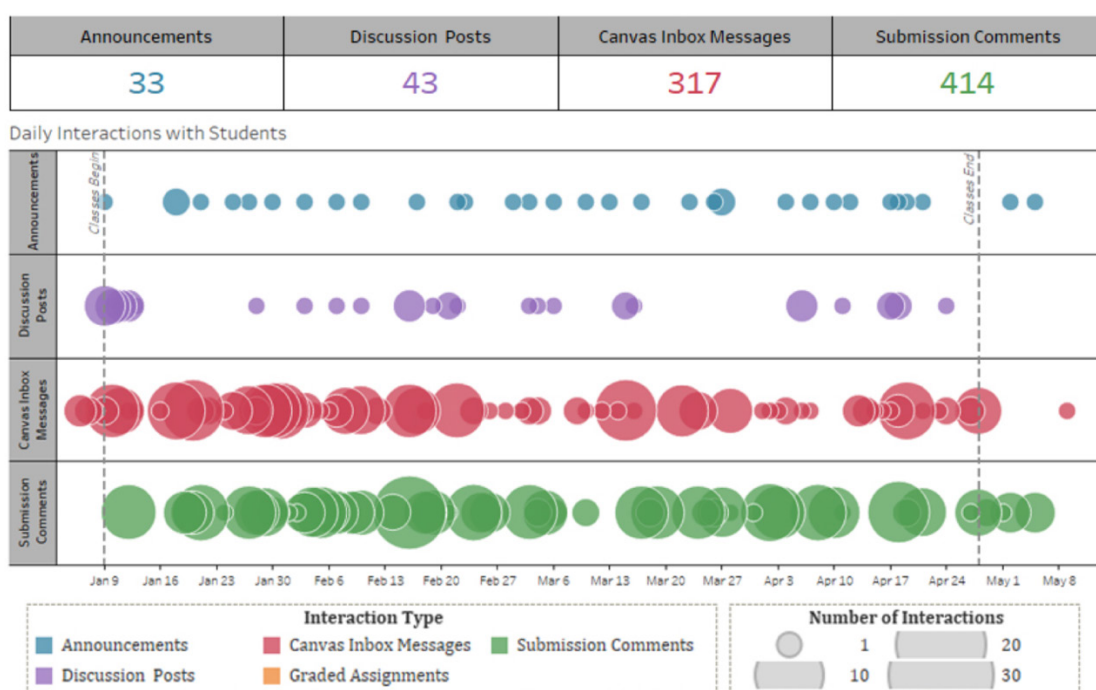
Figure 4.6. Instructor presence: Interactions with students using announcements, discussion posts, Canvas LMS inbox messages, and submission comments.

Of particular note were the interactions using the individualized Canvas messages, and the individual submission comments provided to students in each of the assignments. This was an intentional instructional decision because I viewed individual interactions with students as important in a CoI framework to keep communication lines open with students and provide timely feedback. My participation as the instructor in the

discussion forums was intentionally kept to a minimum, although individualized messages via the Canvas Inbox and submission comments were utilized much more often.

3.1.3. Cognitive presence was best supported by digital powerups and instructor presence

Phase 2 began with analyzing student responses in the anonymous survey to provide additional context. Students were asked to identify both their barriers and their supports in completing the discussions in this course in question two of the anonymous survey (Appendix 4A). Students identified their perceived barriers in an open-ended question format, and their responses were coded to reflect common themes among students. Student responses for barriers to completing the discussions included: lack of time or time constraints ($n = 8$, 57%), and difficulty using the LMS technology ($n = 6$, 43%). These results are consistent with common barriers reported by adult learners in online courses in the literature (Bonk et al., 2015; Michinov et al., 2011). Of particular interest were the supports identified because the majority of the students pointed to the discussion structures or digital powerups themselves as supports ($n = 8$, 57%), with the remainder of the students identifying instructor presence as their biggest supports ($n = 6$, 43%). Comments from students that were coded as exemplars for the assignment structures included:

> [The powerups] have challenged me in ways I never thought possible while still allowing my creativity to thrive.

> I have been inspired to step outside of my comfort zone, and [the powerups] have helped in that now I can apply new skills to support teachers, and student learning.

Comments from students that were coded as exemplars for instructor presence speak to

asynchronous communication between the instructor and the students, included:

> I appreciate [instructor] reminders and written personal responses…to help me know that I'm on the right track.

> I appreciate the one-on-one feedback and quick answers to questions as I work through the [discussions].

> I explored the concept of supports further using the student responses from

question four of the midterm survey. Students were asked specifically how the powerups

scaffolded the way they prepared for and engaged in the online discussions for the

course. The nine student responses to question four were coded deductively using the

way in which they approached cognitive presence: exploration or critical thinking ($n = 3$,

33%), resolution or application of content ($n = 3$, 33%), integration or construction of

meaning ($n = 2$, 22%). These are interesting results; however, it should be noted that in

CoI students often explore the various phases iteratively (Garrison et al., 2001) and do

not remain in just one phase or another. Further, the intended use of the digital powerups

was to support both cognitive and social presence by intentional and structured teaching

presence. Student comments coded as exemplars revealed additional insights that indicate

employing the digital powerups strategy impacted their cognitive presence:

> In some ways the powerups help me to engage more specifically with the content rather than just making vague references or going on my "gut" feelings or personal experiences.

> They add focus and intent. [The powerups] help eliminate most cheap, content-poor responses.

> [The powerups] allow me to make connections that are important to me, and relevant to me. They also help me to see different ways to consider topics.

> The powerups made me more aware of how I am learning, and I've had to do a lot more reflection on what I read. Honestly, I wasn't too excited about them at first, but I now know that they are increasing my learning capacity.

Each of these student comments point to the impact of cognitive presence when utilizing the digital powerups. These qualitative responses from students support some of the foundational findings of CoI from Garrison and Cleveland-Innes (2005) that instructors to student interaction, or the humanized elements of a course are vital in establishing cognitive presence. Further, approaching this question by mixing quantitative and qualitative results highlights ideas from Gašević et al. (2016), who concluded that utilizing data only from learning analytics provides shallow results because of variations in the approaches students take to utilizing technology, engagement patterns in the LMS, and overall cognitive presence. In the integration of the quantitative and qualitative data in this section I not only gained insights into how students were using the digital powerups, but found that the digital powerups strategy actually impacted the way students approached engaging in the content before they began interacting in the discussion form. This is a point that should be further explored in future studies.

3.2. How did the digital powerups strategy impact social presence in online discussions?

3.2.1. Correlation between using #create and earning bonus from peers

To address social presence using the digital powerups in Phase 1, I decided to first investigate whether there was a statistically significant relationship between the use of the different digital powerups and earning a bonus from peers. Therefore, the quantitative approach began with a Pearson correlation analysis which was conducted between each

of the digital powerups and the bonus from peers. The observations for Bonus had an average of 1.08 (SD = 1.04, SEM = 0.29, Min = 0.00, Max = 3.00). The analysis showed there was a statistically significant ($p < .05$) positive correlation between *#create* and bonus (rp = 0.56, p = .049). The correlation coefficient between *#create* and bonus was 0.56 indicating a large effect size (Cohen, 1988). This indicates that students who used the *#create* powerup more often, they had a higher chance of earning a bonus from their peers.

This is an encouraging finding because one of the goals of the digital powerups strategy is to move students out of the lower levels of Bloom's so that "higher-order learning emerges in a community of inquiry" learning environment (Garrison & Cleveland-Innes, 2005, p. 137). Higher-order student engagement is often referred to as *deep learning*, which is characterized by students internalizing the content and finding personalized meaning. Although it is common for students to put forth only minimal effort toward required outcomes when instructors adopt a non-individualized approach to instruction (Trigwell, Prosser, & Waterhouse, 1999), the results of this correlation highlight the concept of humanized learning. When students can incorporate relevant experiences and knowledge into their work and feel validated in doing so, students naturally tend to shift from surface level understanding to higher-order engagement.

3.2.2. Linear regression revealed use of #remember lowers chance to earn a bonus from peers

Also, in Phase 1, I conducted a stepwise linear regression analysis to understand the relationship between the dependent variable of earning a bonus from peers (Bonus)

and the independent variables of *#remember, #understand, #apply, #analyze, #evaluate, #create, #connect*, and the total digital powerups (Total) used as predictors. That is, for the regression analyses, the dependent variable was calculated as the Bonus earned from peers, and each individual powerup used per student and the total number of powerups used per student were processed as the predicting variables. The best-fit model from the regression only included *#remember*. The results of the regression model were significant ($t = -2.87$, $p < .05$), indicating that approximately 46% of the variance in Bonus is explainable by the use of *#remember*. However, of all the powerups, only *#remember* significantly predicted earning a bonus from peers. This indicates that, on average, a one-unit increase of *#remember* will actually decrease the value of Bonus by 0.35 units. This result indicates that the students who used *#remember* the most had a lower chance of earning a bonus from their peers. Interestingly, the total number of powerups used overall did not significantly predict earning a bonus ($t = 1.51$, $p > .05$). Based on this sample, a one-unit increase in total powerups does not have a significant effect on bonus from peers. Table 4.4 summarizes the results of the regression model for *#remember* and for total number of powerups used per post.

It should be noted that the #remember powerup was used in some of the posts that ended up receiving a bonus from peers. The result of this regression highlights the fact that the three students who used the #remember powerup the most throughout the semester were also the three students who did not receive a bonus from their peers in any of the weekly discussions. Causation of using the #remember and not earning a bonus is not being implied here. Rather, this finding suggests that students in this course found

value in peer posts that moved away from lower-level posts (like #remember) and toward

higher-order levels which is a finding that has also been confirmed in the literature

(Akyol & Garrison, 2008; Garrison et al., 2001).

Table 4.4

Best Fit Model Summary for Stepwise Linear Regression With #Remember Predicting Bonus

Variable	B	SE	95% CI	β	t	p
(Intercept)	1.77	1.48	[-1.53, 5.07]	0.00	1.19	.260
#remember	-0.35	0.12	[-0.62, -0.08]	-0.72	-2.87	.017
Total	0.08	0.06	[-0.04, 0.21]	0.38	1.51	.163

Note. Results: $F(2,10) = 4.23$, $p = .047$, $R^2 = 0.46$, $n = 345$.
Unstandardized Regression Equation: Bonus = 1.77 - 0.35*remember + 0.08*Total.

3.2.3. Students perceived digital powerups to support social presence and authentic engagement

Although there are a number of quantitative measures that are typically used in

discussion forum analysis including key words used, total words used, semantic analysis,

quality responses, etc. (Marra, Moore, & Kilmczak, 2004), I determined for this study

that the qualitative responses from students were much more meaningful for the

explanatory nature of this case study. The final discussion required students to engage in

a metacognitive exercise comparing their previous experience of engaging in online

discussions to the current semester and more specifically to this course utilizing digital

powerups. Therefore, Phase 2 led to qualitative analysis of the discussion post by the

student who earned the most likes from her peers, who will be referred to as Lucia to

protect her identity. Lucia prefaced her initial post to her peers by explaining that this

discussion topic intrigued her because she was taking two online courses concurrently,

and both courses relied heavily on the discussion forums as the space for students to interact and engage with each other. She explained that although this course utilized the digital powerups strategy, the other course focused heavily on each student answering the exact same question and then forcing students to comment on at least two other posts, which she perceived to create unauthentic and forced discourse. The approach to discussion in the other class that Lucia mentioned is addressed by Riggs and Linder (2016) when they explain that "When asked to line up and answer in this manner, very little is said—and in great, repetitive volume" (p. 7). Lucia further reflected on her experience with digital powerups in this course:

> "I am personally learning and growing by connecting with others. I feel that people's comments are more "real" in this class, in that there is an element of safety to say things the way they really are and admit when things are hard or beyond our current capabilities. I feel that our comments and contributions are authentic and that I have learned so much from the great things all of you are doing out in your classrooms, schools, and districts."

After sharing a few more of her perceptions of how she felt online course discussions should be presented to students, she succinctly shared her overall takeaways from the course. Like many of her classmates had done throughout the semester, Lucia chose to frame those takeaways using the *#create* digital powerup:

#create *How can I EMPOWER my students:*

Each opinion is important. Create ways for all voices to be heard.

Motivation is key to learning. Games, competition, and debate create motivation.

Participation that is meaningful is much better than participation that is required.

Online doesn't mean impersonal. Make online encounters engaging.

What works for one class or students may not work for all. Keep trying new things.

Emphasize the process, not the product.

Relinquishing some control to the learner is good teaching.

Lucia's acrostic creation on how to empower students in online discussions is not only a stellar example of using the *#create* powerup, but it is a meaningful culmination of her experience from the course content. Further, her final takeaway could be used as a guiding philosophy for future instructors interested in using the digital powerups strategy. Her response appears to have resonated well with her classmates given the number of likes and comments she received in response to her post. This final post was an ideal way to exhibit in how "the interactions related to social presence illustrate that the students were willing to share their experiences and encourage interactions that were related to the assignments given to them" **(**Annamalai & Tan, 2014, p. 12), and that "higher-order learning emerges in a community of inquiry (Garrison & Cleveland-Innes, 2005, p. 137).

4. Conclusion

This case study contributes to the literature on CoI and online discussions by focusing on an instructional strategy that employs a social constructivist approach to engaging students in online discussions by creating a humanized learning environment using scaffolds and hashtags. Although the current literature addresses the use of Bloom's revised taxonomy to improve questions and prompts in online discussions (Whiteley, 2014; Yang et al., 2010) and the use of CoI for student engagement in online courses (Garrison et al., 2010; Swan, 2005; Zydney, 2014), this study is the first to address the design and implementation of the digital powerups strategy in online discussions. The findings from this study contribute to practice (both design and instruction) by explaining an effective strategy for improving student engagement in

online course discussions. The intentional course design and instructor scaffolding inherent in instructor presence is vital to the successful implementation of CoI framed strategies like digital powerups (Garrison, 2009; Joksimović et al., 2015; Zydney et al., 2012).

4.1. Implications for practice

Online discussions can "allow students to participate actively and interact with students and faculty" (Baglione & Nastanski, 2007, p. 139); however, without proper course design and teacher presence, online discussions tend to only focus on "lower level of thinking and discourse" (Christopher et al., 2004, p. 170). Many factors contribute to this deficiency, but pushing students into higher-order thinking can be challenging and requires the instructor to provide appropriate scaffolding (Kanuka et al., 2007; Whitely, 2014).

Through the intentional design of the online discussions for this course, it was initially anticipated that using the digital powerups strategy would push students into the higher-order levels of engagement, but the *#remember* powerup ended up being used most often by students. At face value, this appears to be a disappointing finding; however, students were less likely to earn the bonus from their peers when using the *#remember* powerup. Students also identified that they chose to use *#remember* most often because it was easiest to use, it was a good way to label key points from the course readings, and it naturally fit with the way students engaged in cognitive presence. In other words, often students were reading for basic understanding. However, perhaps more importantly, it was identified that the *#create* (higher-order level) powerup was more

likely to earn a bonus from peers. Although this behavior could be attributed to peers recognizing the higher-order nature of *#create* and awarding a like, it is probably more because the *#create* posts included video, poetry, deliverables, and other media that were more appealing than written text and more personally applicable to the current practice of these students who are in-service K-12 teachers.

This study confirmed that instructor presence (Bradley, Thom, Hayes, & Hay, 2008; Mazzolini & Maddison, 2007; Rovai, 2007; Salmon, 2004) is a key factor in supporting student engagement in online discussions. I recommend that future implementations take a balanced approach to both structure and autonomy (Gilbert & Dabbagh, 2005; Jang, Reeve, & Deci, 2010) because "overall the design of the online space is the key factor to fostering and maintaining a functional community of inquiry" (Moore, 2011, p. 19). A balance of structure and autonomy can be achieved by using digital powerups and creating a humanized learning environment that provides explicit instructions and expectations but also allows for students to personalize their learning.

As evidenced in the results from question one, my pre-emptive investment in course design and additional supports I provided as the instructor appears to have positively impacted the overall student learning experience and positively impacted both cognitive presence and social presence for students. "To establish and maintain a community of inquiry requires a thoughtful, focused and attentive teaching presence" (Garrison et al., 2010, p. 32), and although digital powerups are one piece of the puzzle, it is also important to consider other humanizing aspects of the course that scaffold students toward success. I found in this study that the individual interactions with students were

perceived as important supports by the students.

In examining the results of student perceptions and use of the digital powerups strategy, it is perhaps most important to consider all of the ways in which online courses can be humanized. Humanizing a course can be done by designing for an architecture of engagement (Riggs & Linder, 2016), which centers on developing a sense of community in a virtual environment (Kilgore et al., 2018), and by intentionally planning for personalized communications from the instructor to students throughout the course (Pacansky-Brock, 2012). Finally, in question eight of the anonymous survey, in responding to what this course gets right, one student addressed the digital powerups approach, and profoundly responded that "Obviously, it is not lost on me that if I love [the digital powerups] so much my own students would also equally appreciate a change of pace once in a while." This student response speaks to the idea that humanizing instruction is truly about doing what is best for students.

The results from the study suggest that the implementation was successful in engaging most students at every level of Bloom's taxonomy in the discussion forums, and student perception of learning and engagement were high. This study provides a jumping off point for additional iterations of this strategy in higher education online courses and for future research on the digital powerups strategy. There are many ways the digital powerups strategy can be implemented in online or blended courses and with various approaches to instructor presence. Future research should continue to improve upon the initial implementation and results explained in this study.

4.2. Limitations and threats to validity

There are some limitations to the present study that need to be acknowledged. The importance of a subjective lens (Flick, 2014) is considered in all data and results produced from this study; however, I served as the instructor of the course in this study, and my interpretation of the intentional design results were an integral part of the overall study, so this must be taken into consideration when applying the strategies in a different context with a different instructor. Reactivity must also be considered as a threat to validity in this study because students may have responded in ways that avoided impacting their grades negatively. However, the midterm survey was provided in an anonymous format, and the identities of students were not at risk. Although considered a limitation, the convenient purposive sample (Creswell, 2012) was intentionally investigated in order to gain a better understanding and insight into this instructional strategy from the student perspective (Song, Singleton, Hill, & Koh, 2004). Also, the results come from only one course that included only 13 students, so findings from this study should not be considered to be generalizable. However, as a revelatory study (Yin, 2009) the results do provide a starting point for future research on the digital powerups strategy. The methodological decisions in coding and the coding schemes produced may have emerged differently from a different researcher and may have led to different findings. Finally, in the stepwise regression, although the data were cleaned to segment by student, I did not statistically account for the nested nature of the multiple powerups used by each student in initial posts and comments.

It is also worth noting that one criticism of the effectiveness of the digital

powerups strategy is that if a student makes the first post in a given week, every other student will see that student's post, so it could potentially earn the most likes simply by virtue of being the first post. To address this potential criticism, I conducted a Pearson correlation analysis between how early an initial discussion post was made and earning a bonus from peers. There were no statistically significant findings that connect posting early to earning a bonus from peers.

4.3. Future directions

Given the results of this study, future iterations or uses of the digital powerups strategy could provide additional incentives or structures for students to utilize one powerup from each of the levels of Bloom's (lower level, mid-level application, and higher-order) to ensure that every student is engaging in the mid-level and higher-order levels each week. Another way this could be facilitated could be giving differentiated point values for each of the three levels. For example, lower level powerup would earn one point, an application level powerup would be worth two points, and a higher-order level powerup would be worth three points. I see this strategy as still emerging, and therefore additional changes and modifications should be explored by other instructors.

Future studies could focus on evaluating if the digital powerups being used by students are actually engaging in the student in that level of Bloom's. For example, if a student uses the *#apply* digital powerup in their initial post, it would be interesting to identify whether or not the student is actually engaging in that mid-level range of Bloom's in their approach to the discussion. Because the digital powerups strategy was designed specifically to utilize Bloom's taxonomy, this study focused on higher-order

discussions; however, future studies may explore the how digital powerups engage students in the four categories of cognitive presence from the CoI framework, including triggering event, exploration, integration, and resolution (Rolim, Ferreira, Lins, & Găsević, 2019).

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Appendix 4A

Midterm Course Survey

1. Please rate your satisfaction with the course overall:
   a. Not Satisfied
   b. Somewhat Satisfied
   c. Satisfied
   d. Very Satisfied

2. What barriers have you encountered in completing your discussions for this course? What supports have helped you to complete the discussions for this course?

3. Please rate your satisfaction with the way the CIA discussions are structured.
   a. Not Satisfied
   b. Somewhat Satisfied
   c. Satisfied
   d. Very Satisfied

4. In what way(s) have the CIA powerups scaffolded the way you approach the discussions, and the way that you engage in the course content?

5. Which of the powerups do you find yourself using most often? Why?
   Which of the powerups do you find yourself avoiding most often? Why?

6. Please rate your satisfaction with the instructor:
   a. Not Satisfied
   b. Somewhat Satisfied
   c. Satisfied
   d. Very Satisfied

7. How can this course be improved? Please provide any suggestions or concerns you have with this class.

8. What does this course get right? Which aspect of this course would you recommend not changing at all?

CHAPTER 5

CONCLUSION

Architecture of Engagement Overview

To improve postsecondary student success, we must first acknowledge that what happens in the classroom is critical to the success of our students (Galey, 2019), and "student success is at the heart of institutional core goals" (Roberts, 2018, p. 141). To cultivate and sustain a culture of teaching excellence at postsecondary institutions, instructional leaders must start by creating an architecture of engagement. Creating an architecture of engagement requires a learning environment that enhances the culture of teaching excellence within an organization by providing appropriate structures of resources, services, and professional learning opportunities for instructors. In other words, a fully functional architecture of engagement "facilitates learning, builds community, and supports as well as influences both individuals and institutions" (Little, 2014, p. 358). An effective architecture of engagement must be autonomy-supportive in nature by valuing the learner and recognizing their presence, their perspectives, and their choices. An autonomy-supportive architecture of engagement requires both structure and autonomy, not one or the other (Reeve & Su, 2014).

Unfortunately, seventy percent of post-secondary instructors describe their institutional supports for instructional improvement as average or below average (Herman, 2012), which means that instructional leaders should find autonomy-supportive solutions to better support instructors. Caffarella and Zinn (1999) suggest that

instructional leaders can provide these supports through institutional structures and by finding ways to incorporate learning community relationships and the intellectual characteristics of individuals into existing structures. To better understand the needs of online instructors, we must first consider the challenge at hand: online student success.

Although overall post-secondary student enrollments have been consistently declining overall recently, student enrollments in distance and online courses have increased steadily for the last fourteen years primarily at public institutions. Indeed, of all students enrolled in post-secondary courses in the U.S., one-third, or 6.3 million students, are now taking at least one distance or online course (Seaman, Allen, & Seaman, 2018). Unfortunately, 15-30% fewer students complete their online courses compared their face-to-face counterparts (Angelino, Williams & Natvig, 2007; Hart, Friedmann, & Hill, 2018; Murphy & Stewart, 2017), and nearly three out of four instructional leaders are concerned about the retention of online students and believe that low student retention rates create a barrier to future enrollment growth (Allen & Seaman, 2015). The body of literature surrounding online teaching and online student success has established a "direct relationship between student engagement, student retention, and the role that faculty have in teaching an online course" (Estes, 2016, p. 66), and we understand further that this mentoring relationship developed between instructors and students not only improves student success, but also it can "foster a lifelong learning relationship between the learner and the institution" (Ragan & Schroeder, as cited in Nilson & Goodson, 2018, p. 196).

One way to authentically engage students is through embedding autonomy-supportive initiatives across the institution, such as high-impact practices (HIPs), which

have shown promise for improving student motivation and retention over time (Kuh, 2008). This overarching issue of student retention has been addressed by post-secondary institutions for decades by implementing HIPs to improve student success for face-to-face students (Kilgo, Sheets, & Pascarella, 2015). While HIPs for online learning are still emerging, they show promise in supporting online student success "especially when offered in a scaffolded way or as a progressive set of experiences" (Linder & Hayes, 2018, p. 213). The mentoring relationship between students and instructors is vital to post-secondary student success (Chambliss, 2014) and at the heart of the purpose of post-secondary institutions. Colver (2019) takes this a step further by advocating that implementing HIPs directly into the classroom is an effective way for instructors to cultivate student success.

As instructional leaders in the digital-age, we have an opportunity to shape the future through the success of post-secondary students. As students continue to take online courses we must focus our attention on making sure those who cultivate these vital relationships are adequately prepared to take on the challenge. The literature on instructional improvement is replete with studies like that of the Tracer Project, which identified direct and significant relationships between the improvement of teaching practice and the success of students in the classroom (Condon, Iverson, Manduca, Rutz, & Willett, 2016). Similar results have been seen for online teaching training focusing on both course design and course facilitation (Bowne, Wuellner, Madsen, Meendering, & Howard, 2018).

Multiple-Paper Dissertation

The three papers that comprise this multiple paper dissertation provided avenues to explore three key areas of instructional improvement and will lead to the creation of a conceptual model for future research. Scaffolding an architecture of engagement involves the intentional design and implementation of autonomy-supportive programming and resources for online instructors in post-secondary institutions. The term *architecture of engagement* implies interaction within a community of learners. Thus, instructional leaders must provide learner-focused environments "that center human lives within meaningful contexts of engagement" (Dotson, 2013, p. 140) and allow for "shared emotional connection among members develop[ing] from the frequency and quality of social interactions as well as experiencing shared events and feeling as if they and others are personally invested in the group" (p. 145). Learning communities are social-constructivist in nature and can take shape from a number of different perspectives in instructional improvement contexts ranging from faculty learning communities or learning circles to a learning community of students within an online course. In this multiple-paper dissertation, I explored autonomy-supportive structures to improve online teaching in three specific areas, including: instructional development, instructional design, and instructional practice.

Instructional Development

A community of learners, as described in Chapter 2, typically involves instructors, instructional leaders, and instructional designers. Instructional development (sometimes referred to as faculty development or professional development in the literature) should

provide learners with opportunities for personalization to focus on topics that are most

important and relevant to them. The term learner, in this context, refers to a post-

secondary instructor engaging in professional learning or instructional development. To

create an architecture of engagement, instructional leaders must create cohesive

instructional programming that allows ongoing improvement and learner reflection,

which are both vital for instructors to improve their pedagogical strategies to improve

student success (Bowne et al., 2018). This chapter engaged an instructional leadership

lens with self-determination theory as the theoretical framework and went a step further

to apply SDT to the structures of an instructional development microcredentialing

program (Gamrat, Zimmerman, Dudek, & Peck, 2014).

The chapter concluded with practical recommendations for instructional leaders

looking to plan and implement an instructional development program scaffolded using

microcredentials including the use of a three-tiered system of badging. Instructional

leaders in instructional development not only have the opportunity to teach instructors

how to implement autonomy-supportive teaching strategies in their classrooms, but also

these same autonomy-supportive strategies can be modeled in instructional development

programming when engaging instructors as professional learners (Procee, 2006). Using

digital badges or microcredentials instructional leaders can connect workshops, seminars,

and teaching conferences by providing a mechanism to document teaching improvement

activities. Further, badging programs should be structured in a way that "encourages

participants not only to learn from the community, but to also contribute back to the

community" (Thurston & Schneider, 2019, p. 148). In this way, individual learners can

contribute to the culture of teaching excellence at the institution within the architecture of engagement.

Instructional Design

In Chapter 3, I considered aspects of instructional design in an effort to improve student interest and motivation in the online course using autonomy-supportive instructional design. This chapter explores the "designerly ways of knowing" (Cross, 1982, p. 223) of engaging in course redesign, and follows the development and implementation process I followed as the instructor. This paper utilizes the application of the ARCS Model for motivational design (Keller, 1987) and the Four-Phase Model of Interest Development (Hidi & Renninger, 2006). These two models were explored to intentionally build student interest in course content that could otherwise be considered uninteresting, because interest development is critical in building intrinsic motivation (Schraw, Flowerday, & Lehman, 2001; Shroff & Vogel, 2010). I also addressed in this paper the need for online courses to be designed in a way that appeals to learning needs of digital native students.

Conceptually, in the architecture of engagement, this paper provides a frame for considering how instructional design is a key aspect of instructor presence in the literature (Garrison, Anderson, & Archer, 2000). Supporting the development of online teaching skills in instructors is "paramount to the successful design and implementation of online and hybrid courses" (Johnson, Powell, & Baker, 2018, p. 44), which can take the form of direct instructional design training, or strategic partnerships between instructors, instructional designers, and students. Könings, Seidel, and van Merriënboer

(2014) describe this type of a partnership as a participatory model to design and develop

appropriate learning environments, while Felten (2013) would refer to this as making

students partners in the scholarship of teaching and learning (SoTL). This study builds

toward the final paper which models how instructional development and instructional

design build specifically into instructional practice.

Instructional Practice

In Chapter 4, **t**his paper engages the concept of collaborative learning through the

digital powerups strategy which serves to scaffold student engagement and interactions in

online discussion. Keywords from Bloom's taxonomy were used as hashtags, and were

used to tag or label corresponding prompts as students engaged in weekly discussion.

Students chose which of the powerups they wanted to use for each initial post, and

commented to peers using a digital powerup prompt as well. This strategy also allowed

for personalization, which served as an autonomy-supportive way for students to engage.

In responding to their peers, students also engaged in curating the discussion forums

using the Canvas LMS "like" feature.

This study utilized the Community of Inquiry (CoI) framework, which has been

described as "a comprehensive theoretical model that can inform both research on online

learning and the practice of online instruction" (Swan et al., 2008, p. 1). Utilizing the CoI

framework, this study specifically engaged the interplay between social presence,

teaching presence and cognitive presence as applied in online discussion activities. Many

studies using CoI tend to limit the framework to only considering social presence,

however online discussions can engage all three aspects of CoI through collaborative

learning. Research questions explored student perceptions of the digital powerups, how students used the various hashtags in the discussions, and the perceived supports and scaffolds that students relied upon throughout the semester. Pearson correlation was conducted to identify relationships between types of powerups used and earning a bonus from peers. A linear regression was used to predict earning a bonus based on the use of a particular powerup. Qualitative analysis explored how the use of this teaching strategy impacted the overall student approach to studying and engaging in the collaborative online discussion forums.

Theoretical Foundations of Architecture of Engagement

An appropriate foundation for framing an architecture of engagement is Self-Determination Theory (SDT). As a macro-theory of motivation, SDT relates to the psychological needs of individuals, which are autonomy, competence and relatedness as foundational needs of every human, and indeed every learner (Deci & Ryan, 2014). SDT is helpful in framing the importance of intrinsic motivation and helps to explain in part why instructors who participate in teaching improvement for intrinsically motivating reasons have better outcomes than those who are forced to participate (Pesce, 2015). A number of factors can contribute to this intrinsic motivation. Instructors at post-secondary institutions are not necessarily engaging in teaching improvement activities or instructional development for purely intrinsically motivated or self-determined reasons. Feldman and Paulsen (1999) identified some of these intrinsically motivating factors including wanting to make a difference for students, feeling satisfaction in building

mentor relationships with students, and feeling a sense of competence in pedagogical skill and knowledge.

These factors align with SDT in that "intrinsically motivated behavior is by definition self-determined. It is done freely for the inherent satisfactions associated with certain activities and with undertaking optimal challenges" (Deci & Ryan, 1987, p. 1033). As instructors internalize the desire to improve teaching they can identify intrinsic relevance (Hidi & Renninger, 2006). Rather than operating on the extrinsic or controlling motivators that some institutions force, instructors can instead build intrinsic motivation and interest to improve. From the literature on student motivation, we understand that "The driving force behind [intrinsic motivation] is enjoyment, curiosity, fascination...or a sense that the task or subject matter is relevant" (Nilson & Goodson, 2018, p. 109), which is also confirmed in seminal work on adult learning theory (Knowles, 1986). Instructors cannot be forced to be intrinsically motivated (as force or control can equate to an extrinsic motivator); therefore, immersion in autonomy-supportive learning environments or a culture of teaching excellence can provide the elements necessary to support instructors toward developing authentic interest and becoming intrinsically motivated to improve teaching (Gagné & Deci, 2005).

Future Research

Architecture of Engagement in Practice

Implementing the concepts of instructional development, instructional design, and instructional practice into an architecture of engagement requires first that instructional

leaders place value on the continuous improvement of teaching. To encourage continuous improvement, a culture of teaching excellence must be present to support instructors to critically reflect on their own teaching. Reflection on teaching "entails a process of contemplation with an openness to being changed, a willingness to learn, and a sense of responsibility for doing one's best" (Jay, 2003, p. 1). Thus, we cannot allow deficit thinking to drive teaching improvement, or the notion that our ill teaching must be diagnosed and remedied by someone else. Teaching excellence requires continuous improvement through the iterative process of trying out an evidence-based teaching strategy, evaluating the effectiveness by considering student perspectives and performance, and reflecting on the experience. Indeed, "the most effective teachers may likely be those who constantly reflect not only on their personal teaching experience but on the extent to which educational theory explains their experience" (Kreber, 2002, p. 11). Providing institutional structures to support this type of professional activity for postsecondary instructors requires the building and sustaining of a culture of teaching excellence. Future studies in this area will focus on aspects of professional and organizational development at the institution to create an architecture of engagement.

Empower professional mastery through teaching expertise. Barnes (2016) explains that most postsecondary instructors do not have any formal teaching training because most of their time is spent developing content knowledge as part of a terminal degree. Although content knowledge is important, learning to apply content in the classroom through the art and science of teaching is not just a walk in the park, or an on-the-job skill that can be quickly picked up (Baum & McPherson, 2019). As instructors,

we can build our competence and professional mastery through "our awareness of how our work-based choices have paid off for us and the organization we serve" (Colver, 2018, p. 7). In other words, Kreber (2002) explains that teaching expertise is often developed as instructors go beyond mere teaching effectiveness and strive for expertise by identifying patterns of competence through "develop[ing] problem solving strategies that are even more effective" (p. 13). This process requires active and ongoing professional development on teaching to build expertise. Expert teachers are often times excellent teachers; however, "excellent teachers are not necessarily experts" (Kreber, 2002, p. 13). Teaching expertise is achieved first through emulation of evidence-based practices and implementing them into the classroom; second, through the ongoing evaluating of student perceptions and student learning; and third, through reflection and synthesis of this iterative process. In this sense, the combination of teaching expertise and teaching excellence are less like a peak that one summits, and rather, the ongoing struggle of setbacks and brief vistas while traversing the mountain ridge. In other words, emphasis for teaching expertise should be centered on process, not product. Future studies in this area will focus on the impacts on student success in the classrooms of instructors who have participated in formalized training opportunities that allow for capacity building and ongoing individualized instructional development to improve student learning.

Empower professional agency through teaching excellence. Empowering professional agency requires a practical application of autonomy from SDT directly into the workplace. Empowerment in this sense requires a culture at the institution and among instructional leaders that allows instructors to choose how to teach, allowing for the

possibility of failure as a means of learning, and providing constructive, growth-oriented feedback (Gilbert & Kelloway, 2014). Those who are "excellent teachers are seen as those who know how to motivate their students, how to convey concepts, and how to help students overcome difficulty in their learning" (Kreber, 2002, p. 9). Teaching excellence is therefore centered on student success and the performance of teaching, not necessarily on an instructor having expertise in teaching. Future studies in this area will explore aspects of teaching excellence in situ both in traditional face-to-face and online courses with instructor presence in the CoI framework and focus on the impacts to student success.

Empower professional accountability through scholarship of teaching and learning. Instructional leaders must create an inviting learning environment that allows individuals to engage in a learning community to develop skills and knowledge of teaching and learning that can be directly applied into the classroom and then provide appropriate avenues to publicly share findings. SoTL programming should focus inquiry projects on student learning, ground them in context, and be conducted in partnership with students (Felten, 2013). "SoTL aims to understand how student learning has been developed and to share that knowledge with other practitioners" (Bright, Eliahoo, & Pokorny, 2016, p. 215). By allowing instructors to feel a sense ownership over SoTL programming, they must be immersed in a culture that allows them to authentically share their successes and failures in teaching with other instructors, and in turn, learn about new strategies that others are using for future emulation (Colver, 2018). This requires autonomy-supportive institutional structures to provide for both formal and informal

documentation that encourages peer review among participants (Mårtensson, Roxå, & Olsson, 2011). Documentation and opportunities for collaborative sharing are realized in an architecture of engagement and can in part be facilitated through the implementation of digital badges to unite formal learning experiences across a program (Thurston & Schneider, 2019). Future studies in this area will consider two main areas: program evaluation of SoTL programs at the institution level and specific and highly-contextual classroom inquiry projects.

Developing an Architecture of Engagement
Framework

When I initially embarked on this multiple paper dissertation I envisioned a framework for educational development that was supported by the three crucial elements that ended up being the three threads of this dissertation: instructional development, instructional design, and instructional practice. As shown in Figure 5.1. while these three elements are indeed crucial supports; they are perhaps better situated as three structural trusses that fill the gaps between the three overarching concepts for the structure of the framework.

The three overarching concepts of engage, implement, and contribute that create the structure of the architecture of engagement are strengthened by the three trusses of instructional development, instructional design, and instructional practice to complete the architecture. These elements are the structure, but as Dotson (2013) states, an architecture of engagement should "center human lives within meaningful contexts of engagement" (p. 140) and allow for "shared emotional connection among members develop[ing] from

Figure 5.1. Three trusses: Instructional structures serve as supports to the framework.

the frequency and quality of social interactions as well as experiencing shared events and feeling as if they and others are personally invested in the group" (p. 145). In other words, while the design of the support structures is necessary, they are only meaningful if instructional leaders then utilize the structure for individuals and groups to authentically engage and connect with each other in meaningful ways within those structures. That is the engagement. An architecture of engagement is only complete if individuals engage in learning communities within the intentionally constructed structures. Similar to learning communities being a high-impact practice for students learning, so too are learning communities a vital component of educational development as detailed in Figure 5.2.

     Engagement with students. The engagement of learning communities within an architecture of engagement begins first with the vital relationship built between
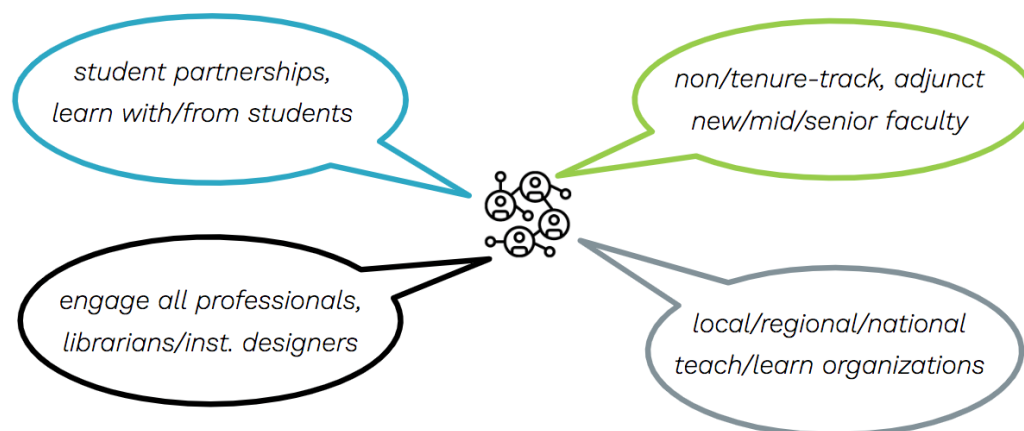
Figure 5.2. Learning communities—professionals, instructors and students should all be involved.

instructors and students. Instructors should seek to create partnerships with students to gain valuable insights on the teaching and learning process. Engaging in effective teaching practice is centered on the outcome of student success, and therefore, students should be considered the most important stakeholders in this process. In addition to traditional end of semester teaching evaluations, instructional leaders should encourage students to provide informal feedback in mid-semester surveys, and even consider how to include students in projects on the scholarship of teaching and learning to provide detailed contexts from students.

Engagement across the professoriate. Instructional leaders should seek to engage instructors across the professoriate. Regardless of whether instructors are tenure track, adjunct, senior faculty, or graduate students who teach courses, the support structures remain the same. There should be opportunities for these populations to collaborate in small group development projects, like learning circles or workshops, and there should also be opportunities for these populations to engage in instructional

development on their own as needed. For example, adjunct instructors have different needs than tenure-track instructors. Similarly, senior faculty may feel comfortable learning about knew educational technology and digital pedagogies without their junior colleagues present. Instructional leaders should be empathetic to the needs of these various groups both individually and collectively.

Engagement in teaching and learning organizations. While many instructional leaders are involved with teaching and learning organizations it's important to find ways to engage instructors in these various organizations as well. Instructors can be connected with helpful teaching resources, and in many cases these organizations also host annual conference and publish academic journals. Instructional leaders should consider how participation in these organizations can lead to the improvement of teaching and learning, and also consider how instructors and professional staff can contribute to these organizations in meaningful ways as well. For example, the Professional and Organizational Development Network (POD) provides opportunities for individuals to develop their own expertise in teaching, and facilitates collaborative improvement across institutions. There are other regional or state-level organizations that host conferences where instructors can present about their teaching practice, and their scholarship of teaching and learning projects.

Engagement with all professionals. Instructional leaders realize the expertise of librarians, instructional designers, technologists, and other learning professionals cannot be understated. As more institutions continue shifting to online and asynchronous learning options these professionals will be essential to support and collaborate with

instructors. The burden of building instructor capacity in critical digital pedagogies often falls onto the shoulders of professional staff. Therefore, engaging instructional designers and librarians in the daily rhythms of teaching and learning will be vital as institutions increase the use of open educational resources and more broadly implement educational technologies to support student learning.

Moving Forward

As Beach, Sorcinelli, Austin, and Rivard (2016) suggest, when properly empowered, online instructors will employ autonomy-supportive strategies to turn "students into cocreators of knowledge and agents in their own learning" (p. 146). So too will digital-age instructors be empowered by instructional leaders to engage in continuous instructional improvement, ongoing reflective teaching practice, and accountable participation in a learning communities focused on teaching and learning.

While the literature on both HIPs and autonomy-support are robust, a gap remains in the literature on how instructional leaders can provide autonomy-support to improve instruction, especially for instructors and students in the digital-age. Building on the findings in this multiple-paper dissertation, supported by self-determination theory (SDT) and the community of inquiry framework (CoI), and concepts of developed by Colver (2018) and Kreber (2002), and as depicted in Figure 5.3. my future research will move forward on the further development of the *Architecture of Engagement: A Structural Framework for Educational Development* including the following three areas of the architecture of engagement in practice:

- Empower professional mastery through teaching expertise
- Empower professional agency through teaching excellence
- Empower professional accountability through scholarship of teaching and learning
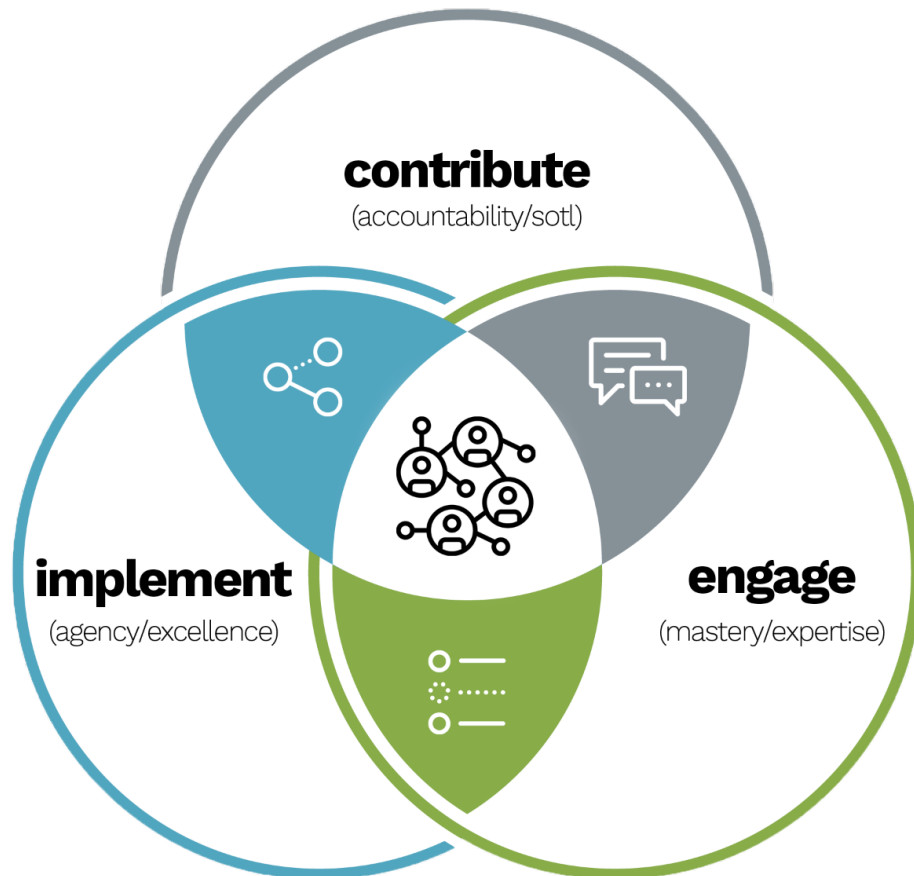
Figure 5.3. Architecture of engagement: A structural framework for educational development.

My future research will contribute to the body of literature on academic and educational development, critical digital pedagogies, the and scholarship of teaching and learning. Specifically, I would like to explore how the "designerly ways of knowing" (Cross, 1982, p. 223) can further embed the expertise of professional practitioners in the

field and contribute to the highly contextual nature of studies in the discipline. Studies on instructor presence using the CoI framework will also address how instructors can design and facilitate courses to be more humanized. Together these studies will contribute to the developing body of literature focused on the development and research of HIPS for online instruction.

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10/2017

CURRICULUM VITAE

TRAVIS N. THURSTON

EDUCATION

2020   **Ph.D. in Education: Curriculum & Instruction**
        Utah State University
        Concentration: Instructional Leadership
        Dissertation: *Architecture of Engagement: Autonomy-Supportive Leadership for
                Instructional Improvement*

2012   **Master of Educational Technology (M.E.T.)**
        Boise State University
        Graduate Certificate: Online Teaching

2009   **Bachelor of Arts: History Teaching**
        Utah State University
        Minor: Physical Education & Coaching

UNIVERSITY TEACHING

Visiting Professor

- Virtual Learning Environments - *Summer 2019 & 2020*
  Master of Pedagogy, Universidad Casa Grande

Graduate Level Adjunct Faculty

- TEAL 6280: Instructional Strategies for Diverse Learners - *Spring 2017*
  School of Teacher Education and Leadership, Utah State University
  *Awarded Graduate Student Teacher of the Year 2018

- SCED 6270: Intro to Methods, Planning, Assessment, and Technology - *Spring 2015*
  School of Teacher Education and Leadership, Utah State University *(co-teacher)*

- ITLS 6265: Internet Development - *Summer 2014*
  Instructional Technology and Learning Sciences, Utah State University

Assistant Instructor

- TEAL 6280: Instructional Strategies for Diverse Learners - *Summer 2016*
  School of Teacher Education and Leadership, Utah State University

- TEAL 6540: Data Based Decision Making for School Leaders - *Summer 2016*
  School of Teacher Education and Leadership, Utah State University

Guest Lecturer

- ITLS 6520: Instructional Design Process – *March 2019*
  Designing Online Courses in Higher Education, Utah State University

- ITLS 6245: Interactive Multi-Media Production – *February 2019*
  Designing a Coherent Online Course, Utah State University

- ITLS 6245: Interactive Multi-Media Production – *January 2019*
  Impacts of Instructional Design on Instructional Video Production, Utah State University

- ITLS 6205: Computer Applications for Instruction – *November 2017*
  Connectivism and Social Media in Online Learning, Utah State University

- ITLS 6870: Games and Learning – *June 2017*
  Motivational Design: Using ARCS Model for Gamification, Utah State University

- EED 6090: Curriculum Development in Engineering Education – *May 2015*
  Instructional Design Standards in Online Courses, Utah State University

- PEP 6490: Advanced Exercise Physiology – *April 2015*
  Type 1Diabetes and Exercise, Utah State University

- ID 6500: Instructional Design Seminar – *October 2014*
  Professional Experience in Instructional Design, University of Central Missouri

SECONDARY TEACHING

History & PE Teacher

- Bear Lake High School (*2009-2011*)
  US History 1, US History 2, World History, Fitness for Life, and Advanced Weightlifting

- Pleasant Grove High School (*2008-2009*)
  US History 2, World Civilizations 1, World Civilizations 2, and Lifetime Activities

PROFESSIONAL POSITIONS

Assistant Director   *2020-Present*
Office of Empowering Teaching Excellence
Utah State University

Instructional Consultant   *2020-Present*
Lambda School

Empowering Teaching Excellence Coordinator & Senior Instructional   *2017-2019*
Designer
Center for Innovative Design & Instruction
Utah State University

Senior Instructional Designer   *2015-2017*
Center for Innovative Design & Instruction
Utah State University

Instructional Designer   *2013-2015*
Center for Innovative Design & Instruction
Utah State University

eLearning Instructional Designer   *2012-2013*
Department of Human Resource Management
State of Utah

PRESENTATIONS OF NOTE

Thurston, T. N. (Presenter), (May 16, 2019). Analytics for Teaching and Learning. Presentation at Utah
State University, Summer Analytics Academy, Breakout Session, Logan, UT.

Brown, D. (Presenter), Thurston, T. N. (Co-Presenter), (April 4, 2019). Engaging Students in Collaborative
Learning using the Museum. Presentation at Utah State University-Eastern, RC Faculty
Workshop, Breakout Session. Price, UT.

Thurston, T. N. (Presenter), Wadsworth-Anderson, E. (Co-Presenter), (July 25, 2018). Digital #Powerups:
Scaffolds and Hashtags for Student Engagement in Online Discussions. Presentation at
InstructureCon, Breakout Session, Keystone, CO.

Thurston, T. N. (Presenter), Wadsworth-Anderson, E. (Co-Presenter), (March 15, 2018). Empowering
Teaching Excellence – Implementing Digital Badges for Faculty Development. Presentation at
UPCEA Annual Conference, Breakout Session, Baltimore, MD.

Thurston, T. N. (Presenter), (October 28, 2017). Scaffolds and Hashtags for Deeper Engagement in Online
Discussions. Presentation at 42nd Annual POD Network Conference, Concurrent Session,
Montreal, QC, Canada.

Stewart, C. (Presenter), Thurston, T. N. (Co-Presenter), (February 8, 2017). Online Learning Paths in
Higher Education: A Self-Directed Learner Centered Online Course Delivery. Presentation at the
International Self-Directed Learning Symposium, Concurrent Session, Cocoa Beach, Florida.

Thurston, T. N. (Presenter), (April 8, 2016). Creating Effective Instructional Design Teams. Presentation at
HEeD Think Tank, George Washington University, Washington D.C., USA.

PUBLICATIONS

Thurston, T. N. & K. Schneider (2019). Structuring Personalized Faculty Development Programming with
Autonomy-Support and Microcredentials. In A. Elci, L. Beith, & A. Elci (Eds.), *Handbook of
Research on Faculty Development for Digital Teaching and Learning*. Hershey, PA: IGI Global.

Thurston, T. N. (2018). Design Case: Implementing Gamification with ARCS to Engage Digital Natives.
Journal on Empowering Teaching Excellence, 2(1), 23-52.

Esplin, N., Stewart, C., Thurston, T. N. (2018). Technology Leadership Perceptions of Utah Elementary
School Principals. *Journal of Research on Technology in Education*, 1-14.

Thurston, T. N. (2017). 3 Keys to Becoming a Champion for Individualized PD. *Impact Journal*, 18(1) 17-
22.

Lee, V., Thurston, T. N., Thurston, C. (2017). A Comparison of Discovered Regularities in Blood Glucose
Readings across Two Data Collection Approaches Used with a Type 1 Diabetic Youth. *Methods of
Information in Medicine*. 56(3).