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**PEDAGOGICAL PERSPECTIVES OF FACULTY WHO GAMIFY:  
A GROUNDED THEORY APPROACH**

A Dissertation in

Higher Education

by

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## Abstract

This dissertation applied a grounded theory methodology to understand how and why faculty make the pedagogical decisions they do when using gamification (the use of game thinking or game mechanics in non-game situations) as a pedagogical tool. Data gathered from participants was analyzed against a backdrop of academic culture, and in context of their personal educational philosophies. The findings captured a range of experiences and beliefs, from which several commonalities emerged. The themes that emerged from these analyses indicated that *faculty who gamify* tend to be (dis)satisfied with educational experiences to varying degrees, and they shared a willingness to innovate their pedagogical approach through gamification. Interviewees shared three common, often intertwined goals for gamifying, as well: to create a positive learning experience, to introduce new or difficult material, and to make learning experiences “real” or “meaningful” for students. Participants described an iterative process through which they sought to move the needle towards greater satisfaction with their students’ learning experiences. This study presents the theory of pedagogy, grounded in participants’ responses, along with theoretical and practical implications for the theory and the model as well as suggestions for future research.

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## Chapter 1: Introduction

I was curious to understand the process by which faculty in higher education implement particular pedagogical approaches. More specifically, I wanted to explore gamification as a pedagogical tool—why faculty may choose to use it, what they mean by gamifying a course, impressions regarding its comparative effects, and what sources they read or interact with to learn about gamification. Though there is a wealth of research on student learning, there is comparatively far less research on how professors implement new pedagogies (“new” meaning both new to them and novel or innovative modes of teaching). It is not that no one has been urging faculty to consider their choice of pedagogy, including new ones. For example, the journal *New Directions for Teaching and Learning* has run continuously since 1980, and Halpern (1994) argued over two decades ago that “[c]hanging technologies and demographics require that the way teaching and learning are achieved must also change” (p. 3).

I chose to examine the process by which educators implement gamification because, as an emergent pedagogy that typically includes a technology component, it shows potential for becoming the kind of “new model of learning for the twenty-first century” that researchers, educators, and policy makers increasingly see as an important pedagogy for “supporting [the] acquisition of twenty-first century skills” (Scott, 2015, p. 1). Further, for those interested in the relative impact of pedagogical choices for student engagement (Pascarella & Terenzini, 1991), gamification shows potential for increasing student engagement by reflecting the design thinking and game elements that keep players engaged with games for hours on end.

Over the past decade or so, gamification has emerged as a useful approach in a number of industries, including business, marketing, banking, health, and, to an arguably lesser extent, higher education. These industries may be trying to cash in on a global movement toward

embracing games: seven years ago, game designer Jane McGonigal (2011) noted that “97 percent of youth play computer and video games” (p. 11) and globally, we spent over three billion hours *each week* engaged with games (p. 51). She noted that for some, the time spent on playing games was equivalent to a part-time job. Based on data collected by the Nielsen Group, “[t]he average U.S. gamer age 13 or older spent 6.3 hours a week playing video games during 2013...which was up from 5.1 hours in 2011” (Aamoeth, 2014, para. 1). As of early 2016, the video game industry was valued at \$99.6 billion (Minotti, 2016), with total revenues within the U.S. hitting \$23.5 billion (Morris, 2016). Games are big business, and game designers know how to keep their audiences engaged. Some educators have begun to take a page from the game designers’ playbook, perhaps as an effort to replicate that kind of engagement in the classroom by adopting gamification as a pedagogical tool, or perhaps for pedagogical variety, or perhaps for other rationales. This study is an effort to learn more about these pedagogical decisions.

This first chapter introduces the context and purpose of the study, the guiding research questions, and the significance of the study. Chapter 2 provides a brief discussion of the relevant literature, particularly regarding academic culture, pedagogy and higher education, faculty choice of pedagogy, some of the important concepts behind gamification, and a look at the research regarding gamification in education. Chapter 3 elaborates on the methodology, intention, ethical considerations, and limitations of this study. Chapter 4 provides a detailed examination of this study’s findings, and Chapter 5 offers discussion and conclusions.

### **Context of the Study**

The pedagogies faculty choose to implement in the classroom are important. But to what extent do faculty intentionally consider their choices of pedagogy? In “Confessions of a Converted Lecturer,” Mazur (2009) explained,

When I started teaching at Harvard...I never asked myself, “How am I going to teach this course?” I mean, normally when you start doing something new in your life, the first question you should ask yourself is “How am I going to do it?” That question did not even come up in my mind...I decided simply in terms of the approach to teaching, without even thinking about it, that I was going to do what had been done to me: lecture.

(2:05)

My own experiences as a novice English instructor matched Mazur’s; I defaulted to a lecture format without consideration because I had known nothing else as a student. Notably, none of the departments within which I taught before I began my doctoral studies provided any pedagogical support, incentives, encouragement, or professional development for deviating from one pedagogy: lecturing. I suspect that Mazur and I are not alone in these regards.

Implementing a pedagogy one is unfamiliar with can be a difficult and daunting process (Golter, Thiessen, Van Wie, & Brown, 2012; Grimes & White, 2015). It is much easier for faculty to stick with what they know than to venture into uncharted territory, especially when there are often no real incentives for faculty to do so (Bok, 2006; Corwin, Tierney, Fullerton, & Ragusa, 2014; Hou & Wilder, 2015; Lattuca & Stark, 2011; Mellow, Woolis, Klages-Bombich, & Restler, 2015). In *Our Underachieving Colleges*, Bok (2006) claimed the competition for rankings, often driven more by quantity of research publications than by quality of undergraduate education, means that “there is no compelling necessity to reexamine familiar forms of instruction and experiment with new pedagogic methods in an effort to help...students accomplish more” (p. 32). Various researchers have suggested such resistance to pedagogical change may stem from the lack of pressure or incentives to change teaching methods, particularly away from the lecture format (Beyer, Taylor, & Gillmore, 2013; Bok, 2006;

Brownell & Tanner, 2012; D'Avanzo, 2009; Hou & Wilder, 2015); faculty's perception of the time needed to develop and implement a different pedagogy than they have used in the past (Beyer et al., 2013; Brownell & Tanner, 2012; Fairweather, 2008; Grimes & White, 2015); a lack of necessary training or knowledge (Beyer et al., 2013; Brownell & Tanner, 2012; Judson & Leingang, 2016); a lack of institutional support or resources for developing courses around non-lecture formats (Brownell & Tanner, 2012; D'Avanzo, 2009); the amount of risk faculty felt they were taking in experimenting with a different pedagogy (Beyer et al., 2013; Grimes & White, 2015); and how much course content may have to be cut back to accommodate a different pedagogy (Beyer et al., 2013).

The substantive theory that will result from this study intends to directly address the lack of knowledge concern noted by Brownell and Tanner (2012) and, to a lesser extent, the risk concerns noted in Beyer, Taylor, and Gillmore (2013), as learning more about the process of pedagogical choices may help faculty to identify and mitigate potential risks. It will also indirectly address the institutional support concern noted by Brownell and Tanner (2012) and D'Avanzo (2009) in that the results of this study can inform academic units about what supports faculty may find useful, including what faculty who gamify courses may find useful. The results of this study may also indirectly address the time concern by providing guidance for those who are attempting to figure out how to gamify their own course(s).

### **Purpose of the Study**

The purpose of this study was to investigate the experiences of faculty in higher education who chose to implement gamification as a pedagogical tool in a brick-and-mortar classroom. This study did not intend to test the efficacy of gamification, nor did it intend to link gamification to student learning. Rather, this study intended to contribute to developing bodies

of literature surrounding both active pedagogy and gamification by studying the process of using gamification in the classroom as a pedagogical tool. Gamification as a pedagogy in higher education seems to be an emerging practice, and while many educational researchers are studying the effectiveness of gamification in educational settings (see Chapter 2 for a review of the literature on gamification in education), substantially less attention has been paid to faculty experiences in implementing gamification as a pedagogy. It is important to understand how and why faculty choose to implement gamification as a pedagogical tool for two reasons: 1) faculty who want to gamify their courses can gain an understanding of potential pitfalls if they consider how others have approached the pedagogical decision-making process, and 2) departments or academic units that want to encourage innovative or active pedagogies can tailor professional development and support efforts if they understand the experiences and potential obstacles faced by faculty who are intentionally utilizing gamification as a pedagogy in their course(s).

For this study, I interviewed higher education faculty who have chosen to implement gamification as a pedagogical tool in brick-and-mortar classrooms. Through in-depth, semi-structured interviews, I learned about how they approached using gamification pedagogically, how and why they made the decisions they made, and any difficulties and/or supports they may have experienced along the way. A grounded theory approach allowed me to examine faculty experiences, in their own words, to develop a substantive theory that explains how faculty make pedagogical choices in general and the process of gamifying a course in particular. I wanted to better understand how faculty experience the process of gamification (both in deciding to implement gamification and in designing a gamified course) as I intend to spend my career advocating for the adoption of active pedagogies, educational games and gamification in

particular, and this knowledge will help me address the pedagogical choices of faculty, including their pedagogical choice to adopt gamification.

### **Guiding Research Questions**

This study is exploratory in nature, so I am primarily interested in answering the questions:

1. What do we learn about gamification as a pedagogical tool from faculty who implement it in the classroom?
2. What do we learn about pedagogy from faculty who gamify their courses?
3. To what extent does disciplinary pedagogical knowledge affect choices that faculty make, particularly regarding gamification as a pedagogical tool?

### **Significance of the Study**

This study intends to contribute to an ongoing discussion about the process of implementing a pedagogy—in this case, an active pedagogy called gamification. Pedagogical choices are the prerogative of college and university faculty. But, how and why do faculty make the choices that they do? To what extent are they intentional choices? To what extent are they aware of the variety of pedagogical choices available?

Fairweather (2008) argued, regarding the adoption of active pedagogies, that we need “sufficient formative assessment or a description of implementation steps to help potential adopters put the innovative programs or practices in place” (p. 19). This study intends to contribute to the conversation of gamification in the classroom by creating a substantive theory, backed by a rich description of how and why the pedagogical choices and gamification processes occur, with an intended audience of faculty members who teach in brick-and-mortar classrooms and who want to learn more about pedagogical choices in general and the pedagogy of

gamification in particular. By making such information available to the faculty, I intend to at least partially remove some of the barriers to implementing a new pedagogy that were noted earlier—the lack of knowledge barrier (Brownell & Tanner, 2012) in particular.

Developing a body of literature that chronicles the efforts of faculty as they gamify and catalogues the pitfalls to be avoided can help pave the way for future educators who wish to embrace innovative and active pedagogies, particularly gamification. Examining how educators implement new and innovative pedagogies like gamification should give departments or academic units some insight into how to support faculty who wish to customize their pedagogical toolboxes. It may also suggest adjustments to policies regarding the instructional culture, particularly when hiring new faculty into a department or academic unit (i.e., when new faculty are hired, how are they taught how to teach, and what are they told about the institution's culture regarding pedagogy?). This study intends to take one step toward building such a body of literature.

## Chapter 2: Literature Review

This literature review is somewhat constrained by the chosen methodology, as many grounded theorists, particularly in the Glaser camp<sup>1</sup>, advise researchers to ignore the existing literature until after data has been collected and analyzed, since the goal of grounded theory is to see what emerges from the data (Charmaz, 2014; Corbin & Strauss, 2015). Grounded theorists who follow Glaser's method argue that looking at the existing literature before data collection and analysis can influence what the researcher may find in the data, while those who follow Strauss's method claim that a brief, not in depth, perusal of existing literature in a given area can help to sensitize the researcher to words or ideas that might become important concepts (Charmaz, 2014; Corbin & Strauss, 2015). Since I used a Straussian approach to grounded theory, I conducted a brief literature review in drafting the proposal for this dissertation, and I returned to the literature on pedagogy and gamification after I collected and analyzed the data.

Since pedagogical decisions occur within the culture of academia, a brief discussion about academic culture will serve as a helpful backdrop. This will be followed by an overview of pedagogy, including what research suggests may discourage faculty from trying different pedagogies, how faculty learn about pedagogy, and how they choose what pedagogy(-ies) to implement. Additionally, a brief discussion of the relevant psychological underpinnings behind the use of gamification and a review of the existing literature on gamification in education will demonstrate current understandings of how gamification might be implemented as a pedagogical tool.

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<sup>1</sup> Differences between Glaser's and Strauss's takes on grounded theory will be explored in more detail in Chapter 3.



## Academic Culture

All organizations and institutions develop their own cultures over time, and that culture tends to be shaped by the history of the institution and the values of the people associated with it (Bok, 2006; Hendrickson, Lane, Harris, & Dorman, 2013; Lattuca & Stark, 2011; Tierney & Bensimon, 1996). Austin's (1994) definition of culture is helpful here:

faculty cultures include the culture of the academic profession, the culture of the academy as an organization, the cultures of particular disciplines, the cultures of institutional types, and the culture of the particular department or unit where the faculty member has a position. (p. 48)

Hendrickson, Lane, Harris, and Dorman (2013) echoed and extended this perspective, noting that “the distinctive cultural aspects of academic organizations rest primarily in the value system of the faculty” (p. 34; emphasis added). Further, Lattuca & Stark (2011) claimed “[r]esearch on teaching styles...suggests that individuals’ beliefs about teaching are deeply held and enduring, even when those beliefs are contradicted by reason, experience, time, and schooling” (p. 184; emphasis added). Hypothetically, then, what might happen if a junior faculty member who believes in the potential of gamification is in conflict with a more senior faculty member or department chair who defends the rigor of the academic lecture? As suggested by the research of Virick and Strage (2016), such cultural tensions may act as disincentives for younger faculty, particularly those without the protections afforded by tenure, to experiment with innovative pedagogies like gamification. Neumann (2009) suggested that newly post-tenure professors may encounter a departmental or administrative culture that requires them to teach larger classes, take on additional committee obligations, or advise additional students, thereby leaving them less time to develop their professional skills and knowledge.

In a related treatment of the relative power of particular academic cultures, Halpern (1994) claimed, “[o]f the many obstacles to moving teaching ahead, the anti-teaching prejudice that pervades higher education is the most pernicious. This prejudice is particularly deleterious because it confers second-class citizenship on professors who work ‘too hard’ on their teaching” (p. 4-5). Though Halpern penned these lines over two decades ago, some continue to suggest that much of academic culture continues to give primacy to research skills over teaching skills. This primacy of research over teaching is evident in the language we use to refer to teaching, particularly “the derogatory label ‘teaching load’” (Anderson et al., 2011, p. 152). It is also evidenced in the fact that faculty can be released from teaching responsibilities to free up more time for their research (Anderson et al., 2011), though I have not seen evidence of the opposite in existing research (i.e., faculty getting bought out of their research duties to focus more on teaching). Additionally, all doctoral candidates must conduct their own research in order to earn their degree, but few if any are required to demonstrate their ability to teach. Terenzini and Pascarella (1994) noted over two decades ago that there is a persistent myth that being a good researcher makes one a good teacher, and “[t]his faith in the instructional benefits of research is, of course, reflected in our faculty reward structures” (p. 30). This soft-pedaling of teaching, combined with a so-called publish or perish dictum, may mean that the importance of research skills is constantly reinforced throughout the academy while significantly less attention is given to teaching skills or pedagogy (Anderson et al., 2011; Bok, 2006; Gallup, Jr. & Svare, 2016; Mellow et al., 2015). Depending on the culture (professional, institutional, departmental, disciplinary, etc.) in which she is situated, a faculty member wanting to explore pedagogical options may have inadequate support or professional development to do so. It should also be noted that academic culture can vary widely from one institution to the next based on factors

such as institutional type, institutional mission, geographic location, student body composition, and so forth, so discussion of academic culture throughout this dissertation is not intended as a generalization of the concept across all institutions, but a description of what faculty may experience at any institution.

### **Pedagogy and Higher Education**

Pedagogical studies are extensive and involve numerous aspects of the topic, some of which are conducted within a particular academic field, among a particular subpopulation of students (i.e., first-generation college students, international students, etc.), or regarding a specific intervention or technique. In this subsection, I will offer brief comments on several components of pedagogical inquiry, all of which I believe have some relevance for my study.

**What is pedagogy?** Anderson (2009) defined pedagogy as “the professional knowledge of the teacher, and the enacted practice of teaching” (p. 2) situated within a theoretical, cultural, political, social, and intellectual context. Alternately referred to as *teaching methods* (cf. Bok, 2006; Lattuca & Stark, 2011), or *instructional approaches* (cf. Pascarella & Terenzini, 1991), at the personal level pedagogy influences and is influenced by educators’ epistemological beliefs and how they view their role as an educator (Anderson, 2009; Lattuca & Stark, 2011), and at the institutional level by academic culture (Lattuca & Stark, 2011; Virick & Strage, 2016). Fives and Gill (2014) noted that decisions regarding the content to be taught, the organization and structure of the course, the readings and assignments to be completed, and the tone of the classroom all fall under the purview of pedagogy. Huba and Freed (2000) suggested that assessment is also a component of instructional approaches. Pedagogy is a critical part of the educational experience because it serves as a guiding principle that shapes a course.

**The ubiquitous lecture pedagogy and the rise of “active” pedagogies.** Throughout much of the history of American higher education, the lecture has held a place of prominence as the main pedagogy employed by a majority of the professoriate, across all institutional types, and a majority of the time (Lattuca & Stark, 2011; Russell et al., 2016; Terenzini, 1999; Terenzini & Pascarella, 1994). Lattuca and Stark (2011) argued that “despite the emphasis on active learning in discussions of teaching, lecture is the most common instructional process used in college and university classrooms; more than half of all instructors use ‘extensive lecturing’ in their courses” (p. 183). In short, the traditional lecture apparently continues to be the accepted pedagogical norm in higher education (Golter et al., 2012; Grimes & White, 2015; Henderson & Dancy, 2007; Lattuca and Stark, 2011; Macdonald, Manduca, Mogk, & Tewksbury, 2005).

To some extent, the continued prevalence of the lecture format (and potentially other passive learning formats) may stem from difficulties in propagating educational research to educators whose main field of study is not education. Terenzini (1999) identified “‘belief-evidence’ disjunctions” regarding student learning, teaching, and institutional organization as “the most significant—and counterproductive—gaps” between knowledge gained from educational research and what educators actually do in the classroom (p. 33-34). Anderson et al. (2011), Handelsman et al. (2004), and Henderson, Dancy, and Niewiadomska-Bugaj (2012) claimed this is particularly troublesome in science, technology, engineering, and mathematics (STEM) fields, where faculty are often un- or undereducated about educational research and tend to make pedagogical decisions based on tradition, intuition, or belief rather than evidence or data.

More recent decades have seen the appearance of a variety of active pedagogies, such as the flipped classroom, problem based learning, service learning, community based learning, and

gamification. These pedagogies are referred to as “active” in that they tend to emphasize a student-centered perspective, rather than a professor-centered perspective (cf., lecture). I informally charted the increasing focus on active pedagogies and student centered learning using Google’s NGram Viewer, which is a statistical tool for examining how often words and phrases (and the concepts they represent) appear in printed books over time (Michel et al., 2010). The chart below indicates that both “active pedagogy” and “student centered learning” have become more common in the literature (the most recent available data stops at 2008):

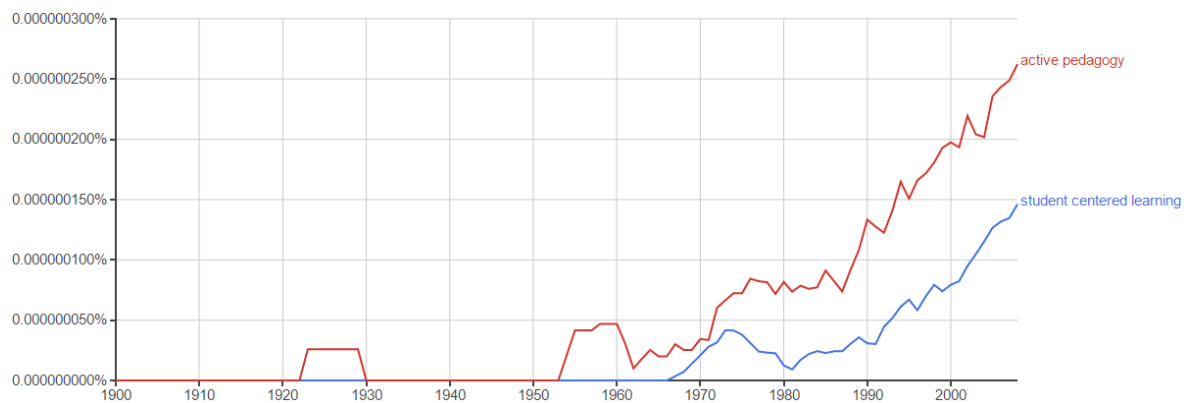


Figure 2.1. Relative frequency of “active pedagogy” and “student centered learning”

Researchers and educators often couch conversations about what happens in the classroom in the language of active learning, which may serve as an umbrella term for any instructional approach or pedagogy that attempts to engage students in the learning process through a variety of activities in lieu of sitting as passive receptors of information (McManus, 2001). I added “active learning” to the search and superimposed it with the previous findings, which shows a different story:

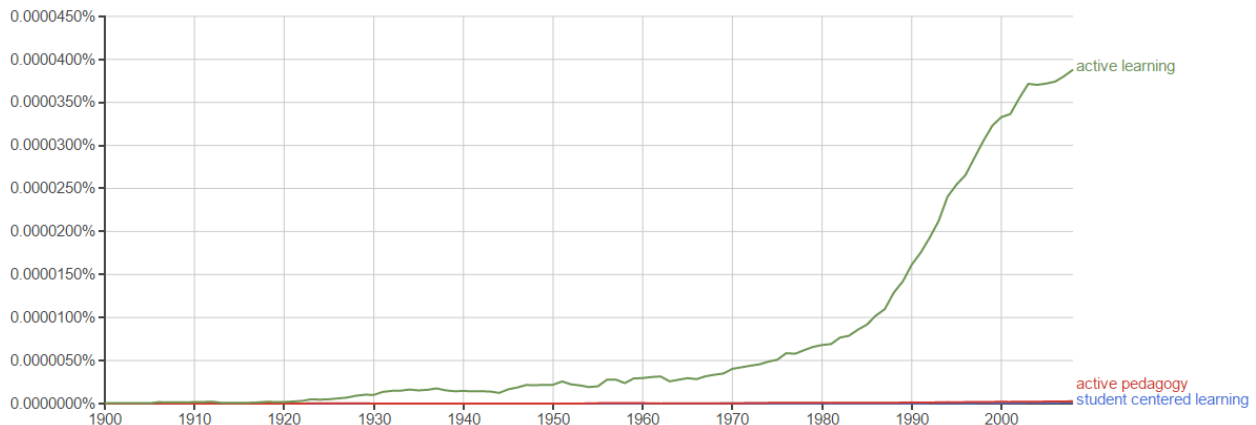


Figure 2.2. Relative frequency of “active learning,” “active pedagogy,” and “student centered learning”

For the sake of comparison and to provide a broader sense of the whole conversation around pedagogy and learning, I added search terms for several other pedagogies (“gamification” and “flipped classroom” did not return enough results to appear on the graph):



Figure 2.3. Relative frequencies of several pedagogical terms

This description is certainly not intended to be a scientifically rigorous depiction (limitations include the scope of books Google has access to, and to the best of my knowledge NGram Viewer does not search other media like journal articles), but it does offer a cultural snapshot: while conversations around active pedagogy and student centered learning are on the rise, they are not nearly as common as conversations around active learning, and there are very clear orders of magnitude differences between various active pedagogy/active learning options and the lecture.

**Active learning and active pedagogy.** The language we use to talk about concepts is important. Some educators may prefer the term “active learning” because it captures how they want the student experience to unfold and reinforces the importance of a student-centered approach. Others prefer the term “active pedagogy” because it suggests that the instructor is mindful to deliberately create a student-centered learning environment—one with which students *want* to engage. This, of course, lies at the heart of this study—I want to examine the relative deliberativeness of higher education faculty in their pedagogical choices, including the choice to gamify courses. I should also mention that active learning is less likely to happen without the instructor intentionally designing educational situations that support students’ active engagement (Kuh, 2008). Said another way, pedagogy and student learning are inextricably intertwined since they are two perspectives on the same process.

**Pedagogical content knowledge.** Finally, a brief overview of pedagogical content knowledge should prove informative in light of the focus on pedagogy. Educational psychologist Lee Shulman (1986) developed the pedagogical content knowledge (PCK) construct, which is specifically “subject matter knowledge *for teaching*” (p. 9; emphasis in original). PCK “represents the blending of content and pedagogy into an understanding of how particular topics, problems, or issues are organized, represented, and adapted to the diverse interests and abilities of learners, and presented for instruction” (Shulman, 1987, p. 8). Knowing the difficulties students may encounter when learning material, having a repertoire of representations for the content to be taught, and being aware of students’ various backgrounds and levels of ability are all forms of PCK (Shulman, 1986). Teachers generally develop PCK through their own educational experiences, through teacher education programs, and through reflection on their own teaching experiences (Friedrichsen et al., 2009). Although teachers must

have subject-specific content knowledge before they can develop PCK (Friedrichsen et al., 2009), simply knowing a subject well is not a guarantee that a teacher will develop strong PCK (Lee, Brown, Luft, & Roehrig, 2007). This is an especially salient point for educators at the tertiary level, as most colleges and universities do not require that professors have any training in teaching or pedagogy.

### **Choice of Pedagogy**

Though most professors see research as a main mission of higher education institutions, “pedagogy is rarely discussed” (Freedman, 2009, p. 118), and “it is unusual for professors to look at their own profession as a legitimate topic of study,” resulting in a general lack of a critical, inward-looking eye (Mellow et al., 2015, p. 6). Lattuca, Terenzini, Harper, and Yin (2009) found that the behaviors, attitudes, and beliefs of faculty are shaped by their personality type, their academic field, and the culture of their campus. Beyer, Taylor, and Gillmore (2013) and Bok (2006) argued that by and large, faculty have not been trained, incentivized, or pressured to change their teaching, so how they teach (and ways to improve their teaching) has taken a backseat to their research. Cox, McIntosh, Reason, and Terenzini (2011) suggested that this was not necessarily due to a lack of administrative effort to encourage a “culture of teaching” (p. 809), but other factors such as an institution’s Carnegie classification and selectivity possibly have more influence over faculty’s perceptions and expectations than administrative policies do. Brownell and Tanner (2012) suggested the “tensions between...[one’s] professional identity and the call for faculty pedagogical change” are often overlooked as a source of resistance to change, as well (p. 339). Additionally, Mellow et al. (2015) noted an “isolation among faculty, with few viable avenues of support in advancing



teaching expertise” (p. 3), a problem sometimes exacerbated by “the huge variety of disciplines represented on a campus and the lack of sharing across fields” (p. 3).

Some institutions are starting to focus on faculty professional development as a means of influencing pedagogical decisions; these professional development opportunities tend to appear during new faculty orientation sessions or via a teaching and learning center on campus (Bok, 2006; Scott, Lemus, Knotts, & Oh, 2016). However, Scott, et al. (2016) noted that only some—not all—new faculty orientation (NFO) programs at various colleges and universities emphasized a learner-centered approach. They argued that NFOs “serve as platforms to assimilate faculty to the university’s culture...and expectations about teaching,” but noted that “[o]ften, traditional NFOs fail to model a learner-centered philosophy” (p. 15). Thus, newly-hired faculty who attend a traditional NFO may be less encouraged to adopt active pedagogies like gamification since they are likely to perceive the institutional culture as being one of tradition rather than innovation.

D’Avanzo (2009) explained the difficulty teaching and learning centers can face when trying to get faculty to try new pedagogies without an incentive structure in place to support such efforts. More recently, Lavis, Williams, Fallin, Barnes, Fishback, and Thien (2016) detailed the nearly two-year long efforts at institution-wide faculty development at Kansas State University. The goal of the faculty development program was to help faculty learn about pedagogies supported by modern cognitive science and workshop how to apply that knowledge to their classes. Though the researchers noted that “institution-wide impact was significant” (p. 57), they also noted the challenge of “mov[ing] beyond ‘preaching to the choir’ and engag[ing] the broader academy” (p. 66). Their study offered no suggestions for why many faculty chose not to

participate in the development effort; this suggests a gap in the literature on faculty's choice of pedagogy that future work may explore.

A recent report titled *U.S. Postsecondary Faculty in 2015* (2015) attempted to address the question, How do faculty choose their pedagogical approach? The report claimed, "faculty are goal driven" (p. 28) and will adjust course activities to meet educational objectives. However, one considerable shortcoming with this report is that it seems to blur the lines between pedagogy and educational activity (see the definitions in Appendix B for a discussion of the difference between these terms). The result is that the report does not quite answer the question it poses, as some of the data provided really reflect how faculty choose which educational activities to implement or how faculty choose what courseware (either free or paid) to use as a course complement. There is a considerable difference in planning, preparation, and resources needed between turning a lecture course into a flipped classroom (i.e., implementing a different pedagogy completely) versus adding clickers to a lecture course (adding an educational activity that does not necessarily deviate from the current pedagogy), yet the report seems to treat these as similar choices.

Additionally, faculty's choice of pedagogy may be determined, at least in part, by their philosophy on the educational process and how they view their role as an educator. Kember and Gow (1994) suggested educators had two orientations in this regard: learning facilitation and knowledge transmission. Educators who saw their role as one of learning facilitation accepted the need to motivate students in an interactive environment in order to guide students toward understanding. On the other hand, those who were oriented toward knowledge transmission perceived disciplinary or subject knowledge as having primary importance, and their goal was to

present or transmit that knowledge to students. As Lattuca and Stark (2011) noted, these orientations are often deeply held and difficult to change.

Additionally, some of the literature on pedagogy addresses changing from one pedagogy to another, though most of the published articles seem to focus on STEM fields. For example, Golter et al. (2012) published a single-case study that chronicled the adoption of a non-lecture pedagogy in a chemical engineering course. Hou and Wilder (2015) investigated the barriers faculty faced when attempting to implement a service-learning pedagogy and explained the strategies those faculty used to cope with the barriers. Grimes and White (2015) described an apprenticeship type of model where a biochemistry professor nearing retirement coached and mentored a new faculty member in the field to aid in the adoption of active pedagogies. Another study examined the effects of transforming a large-format, traditional lecture-style introductory course in geoscience to a student-centered format involving a technology component (Russell et al., 2016). The researchers gathered quantitative and qualitative data throughout the semester; statistical analyses indicated significant improvement in student preparation for class, student engagement during class, and student satisfaction with the course when compared to the traditional course, and students in the transformed course also scored roughly three-fourths of a letter grade higher in the course.

Recently, an article published in the *Journal of STEM Education* spoke directly to the lack of training for teaching skills throughout graduate education; the researchers conducted a study using qualitative interviewing techniques to gain a better understanding of how graduate teaching assistants “develop[ed] their ability to understand student thinking” in a calculus class (Judson & Leingang, 2016, p. 37). The researchers distinguished between two types of knowledge that educators should have: subject matter knowledge, or knowing the concepts they

intend to teach, and pedagogical content knowledge (PCK), or the ability “to predict the different problem-solving strategies that students will employ, or the difficulties that they will encounter when dealing with a new...concept” (p. 37). Judson and Leingang (2016) concluded that “a strong pre-service teaching program should acquaint graduate students with the need for PCK in the classroom before their first teaching experience” (p. 42). However, not all graduate students are teaching assistants, meaning they may not have the opportunity to work with a pre-service teaching program, and this discussion also omits faculty who come to teaching through different routes (e.g., someone with years of industry experience being hired as an adjunct may also miss this kind of opportunity to develop his/her pedagogical understanding). While these are efforts in the right direction for improving pedagogy across the board, they do not go far enough because they address only one route to becoming faculty.

### **Psychological Concepts behind Gamification <sup>2</sup>**

Before examining the relevant literature on gamification in education, it is worthwhile to establish some of the psychological underpinnings that gamification design often intends to draw upon. Game designers and gamification experts generally rely on the concepts of flow, Self-Determination Theory, and a growth mindset to engage and motivate players (Kapp, 2012; Koster, 2005; McGonigal, 2011; Schell, 2008; Sheldon, 2012; Zichermann & Cunningham, 2011). Therefore, a brief overview of these areas is necessary for understanding why games are often engaging and why educators may see potential in gamifying their courses.

**Flow.** In *Optimal Experience*, American psychologist Mihály Csíkszentmihályi (1988b) argued, “[t]hose activities and experiences that are most enjoyable will have a greater chance of

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<sup>2</sup> See Appendix B for varying definitions of gamification found in the literature.

being remembered” (p. 34)<sup>3</sup>, and this is one of the capacities of a flow perspective that game designers and educators intend to highlight. Earlier, in 1975, Csíkszentmihályi’s groundbreaking study *Beyond Boredom and Anxiety* developed the concept of flow, which he described as “the satisfying, exhilarating feeling of creative accomplishment and heightened functioning,” often accompanied by losing one’s sense of self and sense of time while participating in a particular activity (p. xiii). Flow is most likely to occur when a person has a clear goal and knows how to progress toward that goal, when feedback is clear and immediate, and when there is a compelling balance between the perceived challenges and the person’s perception of his/her skills for meeting that challenge (Csíkszentmihályi, Abuhamdeh, & Nakamura, 2005). Csíkszentmihályi (1975; 1988b) noted that games, more than real life, offered people the opportunity to experience flow, which he considered a state approaching the optimal human experience. Game designers rely on this concept to ensure that games continue to engage players. Using the graphic below, taken from Schell’s (2008) *The Art of Game Design*, Schell explained the importance of keeping players within the flow channel (positions A<sub>1</sub> or A<sub>4</sub>) and avoiding situations that would present too difficult of a challenge for the player’s skill level (A<sub>3</sub>) or not enough challenge for the player’s abilities (A<sub>2</sub>):

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<sup>3</sup> Csíkszentmihályi explained that this idea derives from the work of Johan Huizinga, a cultural historian best known in play and game design circles for his book *Homo Ludens: A Study of the Play Element in Culture* (1950). Huizinga’s work is relied upon by well-known educational researchers working with the concepts of play and games in education (Nicholson, 2015; Salen & Zimmerman, 2004; Tulloch, 2014).

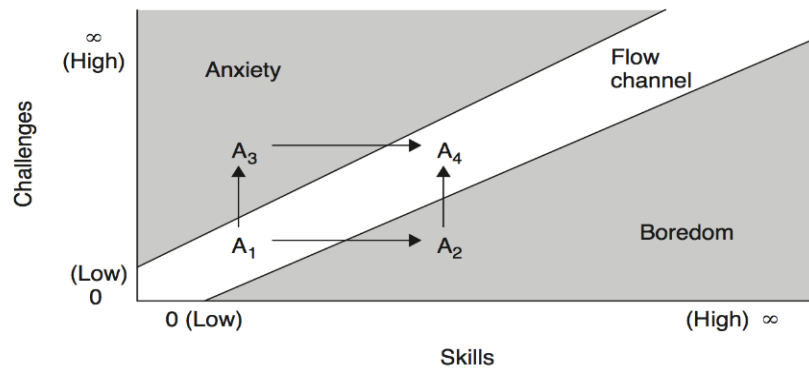


Figure 2.4: Flow diagram (Source: Schell, 2008, p. 119)

Csikszentmihályi and Csikszentmihályi (1988a) noted,

The practical consequence of this perspective [flow] is to open up the possibility of improving the quality of experience *in situations that previously were seen to be naturally boring or stressful, such as work or study*. If it is true that in principle any activity can be made enjoyable, there is no excuse for resigning oneself to a boring life.

(p. 85, emphasis added)

Another capacity of the flow perspective that is helpful here is the connection between cognitive function and affect. For example, Larson (1988) discussed the results of two studies examining adolescent students as they worked on a 6-10 page research paper. In both studies, the students' research papers were evaluated by an English faculty member at the University of Chicago who was not informed of the students' emotional experiences. By comparing this feedback to data regarding students' emotional experiences gathered throughout the process, Larson was able to differentiate the students in these two studies into one of three groups: overarousal (anxiety), underarousal (boredom), and optimal arousal (enjoyment). He found that, regardless of the students' preparation for the assignment or their level of writing ability, students' cognitive performance was shaped by their emotional states throughout the 6-9 weeks the students were given to work on the assignment. Other researchers have also noted the

importance of considering both cognition and emotion in educational settings (Hofer, 2001; hooks, 1994; Isen & Reeve, 2005; Neumann, 2009; Neumann, 2014; Reeve, 2002).

**Self-Determination Theory.** Self-Determination Theory (SDT), developed by Deci and Ryan (1985), claims that autonomy (the ability to make decisions for oneself), competence (having the necessary skills and knowledge to complete a task), and relatedness (feeling connected to other people) are three key psychological needs that, when met, can aid students in becoming intrinsically motivated and persistent. Deci and Ryan (1985) noted that “all too frequently, educators, parents, and policymakers have ignored intrinsic motivation and viewed education as an extrinsic process, one that must be pushed and prodded from without” (p. 245), though being intrinsically motivated to learn is associated with increased curiosity, and students’ “interest [can] energize their learning” (p. 245). Deci and Ryan argued that there is a disconnect between the traditional content and expectations of academic settings and what we currently understand to be true about the connection between motivation and learning.

Csikszentmihályi’s concept of flow and Deci and Ryan’s SDT are fairly compatible lenses for discussing motivation. Csikszentmihályi (1988), for example, argued that “[t]he universal precondition for flow is that a person should perceive that there is something for him or her to do, and that he or she *is capable of doing it*” (p. 30; emphasis added). Additionally, Csikszentmihályi and Csikszentmihályi (1988a) claimed, “This optimal interaction [flow] is more typical of conditions when people *voluntarily* become involved in activities *designed* to be enjoyable, such as sports, games, spectacles, and artistic or religious performances” (p. 85; emphasis added). These two quotes speak directly to competence and autonomy of SDT: being “capable of doing” something is synonymous with competence, and “voluntarily” choosing to participate in an activity is an expression of autonomy. Researchers investigating gamification in

education have relied upon the concepts of flow (Cassells, Broin, & Power, 2015; Deterding, Dixon, Khaled, & Nacke, 2011; Domínguez et al., 2013; Eleftheria, Charikleia, Iason, Athanasios, & Dimitrios, 2013), SDT (Banfield & Wilkerson, 2014; Barata, Gama, Jorge, & Gonçalves, 2013; Brull & Finlayson, 2016; Fotaris, Mastoras, Leinfellner, & Rosunally, 2015; Hanus & Fox, 2015; Lamprinou & Paraskeva, 2015), or both (Knaving & Björk, 2013; Seaborn & Fels, 2014) to help frame a variety of empirical and exploratory research studies.

**Mindset.** The influential psychology researcher Carol Dweck (2006) claimed that people generally espouse either a fixed mindset or a growth mindset. If people have a fixed mindset, they believe that personal qualities are immutable, that “you only have a certain amount of intelligence, a certain personality, and a certain moral character” that cannot be substantially altered throughout your life (p. 6); people with a fixed mindset generally put effort into proving or documenting their intelligence or abilities rather than tackling challenges that might call their intelligence or abilities into question. People with a fixed mindset feel their identity is negatively redefined by failure, seeing themselves as “an idiot...a loser...worthless and dumb,” and the idea of *I have failed an exam* becomes internalized as “I’m a total failure” (Dweck, 2006, p. 8).

People with a growth mindset, however, tend to be more willing to take risks and do not allow failure to redefine their self-image (Dweck, 2006). Instead, they see failure as an opportunity to learn or improve, as feedback not about them, personally, but about the actions they have taken. Dweck (2006) noted that students with a growth mindset who received a lower grade than expected responded with statements like, “I need to try harder in class” or “I’d start thinking about studying harder (or studying in a different way) for my next test in that class” (p. 9). Dweck explained, “those people with the growth mindset were not labeling themselves and



throwing up their hands. Even though they felt distressed, they were ready to take the risks, confront the challenges, and keep working at them” (p. 9).

Gaming contexts often support a growth mindset in a way that educational contexts may not, largely because failing during most games (excluding high-stakes betting games like World Series Poker, for example) is not a big deal, but failing at academics is. In many video games, for example, if the player’s avatar or character dies, it gets respawned, and the player can try again, meaning failure is not final. Instead, players are motivated to “try, try again,” as the adage goes, to eventually overcome whatever obstacles a game puts in their path. Often, these types of video games have main characters who can gain experience points (often abbreviated Exp. or XP) and level up; a player seeing her character get continually stronger throughout the course of the game is inherently supportive of a growth mindset, as well.

### **Gamification in Education**

The existing literature on gamification in education includes books and articles that serve as broad discussions of gamification or explanations of game mechanics (Brigham, 2015; Bruder, 2015; Deterding et al., 2011; Erenli, 2012; Gibson, Ostashewski, Flintoff, Grant, & Knight, 2013; Kapp, 2012; Yunyongying, 2014), examine the effectiveness of game mechanics or gamified courses (All, Castellar, & Van Looy, 2015; Attali & Arieli-Attali, 2015; Banfield & Wilkerson, 2014; Barata et al., 2013; Cassells et al., 2015; Christy & Fox, 2014; Domínguez et al., 2013; Fotaris et al., 2015; Frost, Matta, & MacIvor, 2015; Hakulinen, Auvinen, & Korhonen, 2015; Hanus & Fox, 2015; Ibanez, Di-Serio, & Delgado-Kloos, 2014; Mitchell, Danino, & May, 2013), or share anecdotal descriptions of gamified courses (Drace, 2013; Sheldon, 2012). Flaws or shortcomings in the existing literature include the misattribution of engagement to the technology component of video games rather than to game mechanics (Brigham, 2015; Goehle,

2013); a misunderstanding of how game mechanics work or the application of mechanics in a way that runs counter to accepted educational theory (Attali & Arieli-Attali, 2015; Hanus & Fox, 2015); a focus on gamification in e-learning environments, learning management systems, or massive open online courses (MOOCs) rather than brick-and-mortar classrooms (Azmi & Singh, 2015; Campos, Batista, Signoretti, Gardiman, & Madeira, 2015; Chang & Wei, 2016; De-Marcos, Domínguez, Saenz-De-Navarrete, & Pagés, 2014; Domínguez et al., 2013; Frost et al., 2015; Lamprinou & Paraskeva, 2015; Liu & Peng, 2013; Mozelius, Collin, & Olsson, 2015; Sanchez, Young, & Jouneau-Sion, 2016; Su & Cheng, 2015; Urh, Vukovic, Jereb, & Pintar, 2015); a narrow focus on a specific field or area of study (Barata, Gama, Jorge, & Gonçalves, 2015; Campos et al., 2015; Felker, 2014; Goehle, 2013; Hakulinen et al., 2015; Moncada & Moncada, 2014; Yunyongying, 2014); a focus on K-12 rather than postsecondary educational environments (Boticki, Baksa, Seow, & Looi, 2015; Kingsley & Grabner-Hagen, 2015; Martinovic et al., 2013; Simoes, Redondo, & Vilas, 2012); or a discussion of actual games, not gamification (Cheng, Su, Huang, & Chen, 2014; Corwin, Tierney, Swensen, Bouchard, & Fullerton, 2012; Martinovic et al., 2013; Mokadam et al., 2015; Sanchez et al., 2016).

Of the extant studies, Kapp's (2012) book provides a broad discussion of gamification and the educational theories behind it, and offers general advice and suggestions for gamifying, but does not develop a model of gamification. Urh, et al.'s (2015) study presents a model of gamification for e-learning in higher education, but does not extend the model to brick-and-mortar classrooms and focuses on the impact gamification can have on students rather than professors' experiences in gamifying a course. Additionally, Nicholson (2015) offers the RECIPE (play, exposition, choice, information, engagement, and reflection) model for gamifying based on Self-Determination Theory; however, this article only offers fairly general suggestions

about how one might gamify—it does not examine educators’ experiences in gamifying their courses, nor does it attempt to explore any connection between *why* faculty choose to gamify and *how* they implement gamification.

Several researchers studying gamification in education have noted the lack of solid empirical research in this area (de-Marcos, Domínguez, Saenz-de-Navarrete, & Pagés, 2014; Hanus & Fox, 2015). This paucity of research, unfortunately, still seems to be the case, though it does take time to develop a significant body of research in a nascent field. Some of the empirical studies showed mixed but slightly positive results. For example, Barata, Gama, Jorge, & Gonçalves (2013) developed a gamified system for teaching a Multimedia Content Production (MCP) course. The first version of this gamified system (MCP 1.0) applied the mechanics of experience points, progression levels, a leaderboard, badges, and challenges. Based on student feedback, the researchers modified their gamified platform (now MCP 2.0). Using MCP 2.0, the researchers found that students attended more lectures, downloaded more supporting materials, and were more active in the course’s online forum, but that there was no change in their final course grades (though they did find a strong correlation between the number of posts a student had written online and that student’s final grade).

Extrinsic rewards like trophies and leaderboards are common elements examined in empirical studies. For example, de-Marcos et al.’s (2014) study examined a gamified system incorporating rewards, trophies, and a leaderboard in comparison to a social networking format and a traditional learning format. They reported that, for skill assignments, students in both the gamified and the social networking formats outperformed students in the traditional format, but for overall participation and for the final written exam, students in the traditional format did better. Domínguez et al. (2013) also applied rewards, trophies, leaderboards, and competition to

an e-learning environment and noted that the students in the gamified class earned higher overall scores and seemed more motivated, though they also demonstrated lower levels of participation and scored lower on writing assignments.

Hanus and Fox (2015) intended to examine the effects that game elements like badges have on student motivation, among other things. The researchers chose two communications classes into which 80 students voluntarily enrolled. One of the two classes was gamified with a badge system and a public leaderboard; the other class served as a control. For the gamified section, students were required to earn all 22 of the badges the researchers created. Students also had the option of earning coins, which they could spend for things like an extension on a paper.

Hanus and Fox (2015) used Self-Determination Theory to justify some of their choices for the study, particularly regarding intrinsic vs. extrinsic motivation, arguing that “using rewards, badges, and other incentives to perform in class may backfire and decrease intrinsic motivation” (p. 154) for some students. Though they acknowledged the potential harm of badges, they still chose to use them *not* because badges made sense for their students and their context, but because “they are elements that tend to be used frequently in classroom gamification” (p. 152). Additionally, despite choosing a Self-Determination Theory perspective for this study, they undermined students’ autonomy by requiring students to earn all of the badges. In these regards, there is a disparity between what Hanus and Fox claimed their intention was and the actual research design decisions they made.

Gamification can take numerous forms, and studies that examine only the more visible (and in many ways more superficial) game mechanics can paint a misleading picture of the potential of games (Bogost, 2011; Kapp, 2012; Koster, 2005; Radoff, 2011; Robertson, 2010; Schell, 2008; Sheldon, 2012). With gamification, educators can use game thinking to approach

assessment and grading from a perspective that better supports the idea of *earning* a grade (rather than being *given* one) and provides students with the sense that they are making continuous progress toward better grades throughout the semester. In his book *The Multiplayer Classroom*, former game designer Lee Sheldon (2012) explained that his grading system resembles the experience points systems many video games use, so students can *level up* throughout the semester. Students earn points throughout the semester—this is true in both traditional grading and gamified grading—but the difference is how those grades are calculated and presented to the students. All students enter Sheldon’s class with a 0, and he begins the first day of the first semester by telling them, “Everyone in this class is going to receive an F... Unless...” (Sheldon, 2012, p. 3-4), then he explains the experience points system he uses in lieu of traditional grades. Sheldon makes it explicit that they need to *earn* experience points to level up and progress toward an A. This approach supports a growth mindset and motivates students to continually engage with the course and course material.

This is a much different approach from most classes, where students earn a grade on the first major assignment, and based on that one graded assignment, they have a general sense of what they will probably get on the next assignment (Main & Ost, 2014). For example, in typical freshman English classes, students are usually assigned about five essays throughout the semester, with each essay representing a percentage of the final grade. The first essay is generally due within the first couple of weeks of the semester. When a student gets her first graded essay back from the professor and she sees a grade of 75% (C), she knows that her current grade in the class is now a C, and she may think getting an A is either out of reach or not worth the effort. By comparison, with Sheldon’s (2012) approach, she has not earned a 75% (C), she is now 75 points closer to the next level. She is 75 points *ahead* of where she was before that

assignment. This perspective is more supportive of a growth mindset because it reinforces the ideas of constant progress and *earning* a grade rather than *being given* one. Sheldon (2012) explained, “[i]n a traditional grading system, if you miss an assignment, you *lose* points. In the MC [multiplayer classroom], you can always make up the assignment—you simply *earn* less XP [experience points]” (p. 58; emphasis added).

I include this example because the language that we use to talk about grades is very important, and evaluation is a component of pedagogical practice. In the case above, when we say a student *loses* points, we imply that she had those points to start with, since you cannot lose something you never had. *Losing* points carries a negative connotation, whereas *earning* points carries a positive one. In this passage, Sheldon is demonstrating the extent to which he is *thinking like a game designer* rather than a typical educator: in virtually all games that use experience points, such points cannot be lost, only earned. This is one of the mechanics that game designers may manipulate to get players to feel motivated and engaged—players constantly feel as though they are making progress toward a specific goal, and the experience points they accrue indicate how much progress they have made. This holds true for documenting attendance, as well: in a traditional grading system, “[s]tudents who miss classes have points deducted from that total. In the MC [multiplayer classroom], students are awarded XP [experience points] for every class they attend” (Sheldon, 2012, p. 58). Mathematically, these two takes on grading systems work out the same, since subtracting from 100 or adding to 0 does not inherently change the number of points earned, but the two perspectives vary significantly in the type of mindset they reinforce (fixed or growth) and the types of emotion they generate.

Gamification and game-like learning situations are also beginning to be embraced with some success on a larger scale. The Quest2Learn (Q2L) school is an example of game design

and systems thinking applied to 6<sup>th</sup>-12<sup>th</sup> grades (Salen, Torres, Wolozin, Rufo-Tepper, & Shapiro, 2011). Q2L, developed through a partnership between Institute of Play, New Visions for Public Schools, and New York City's Department of Education, admitted its first cohort of 6<sup>th</sup> graders in 2009 and has added an additional grade level every year (Salen et al., 2011). Q2L implements games and game-based pedagogies to address a perceived "lack of American educational models designed to prepare learners for the innovations needed in [the] twenty-first century" (Salen et al., 2011, p. 3). Though Q2L is still a fairly new venture, there are early signs of success with their gamified approach to learning. For example, Q2L boasts that "54% of Q2L students were proficient on the 2015 ELA [English Language Arts] exam compared to 30.4% of students citywide" ("About Q2L | Quest to Learn (Q2L) – Middle School and High School," n.d., sec. Quest to Learn in the Press). Additionally, initial results "indicate that Quest to Learn 8<sup>th</sup>-10<sup>th</sup> graders demonstrate twice the rate of learning growth as college students in critical thinking, problem solving, analytical skills, and written communication" ("Quest to Learn (Q2L) – Middle School and High School," n.d., sec. Twice the Rate of Learning Growth). Though Q2L works with middle and high school aged students, the early success of the school suggests the potential of taking a gameful or gamified approach to pedagogy.

### **Conclusion of Literature Review**

This literature review examined scholarly work on academic culture, pedagogy and higher education, faculty choice of pedagogy, psychological concepts related to gamification, and gamification in education. While we know that academic culture can influence faculty adoption of non-traditional pedagogies like gamification, little is known about other factors (supportive or preventive) that may impact their decisions. Gamification may be appealing as a pedagogy because it incorporates what we understand about how to motivate students by

utilizing flow and/or Self-Determination Theory perspectives, and courses can be gamified in a way that supports a growth mindset over a fixed mindset.

The literature reviewed above is intended to give a broad overview of the types of literature available. Some grounded theorists, particularly those following Glaser's approach<sup>4</sup>, suggest that researchers should ignore the existing literature on a topic until after data has been collected and analyzed. However, Corbin & Strauss (2015) asserted that, in grounded theory, reviewing the literature before beginning a study can serve to identify gaps or discrepancies in existing knowledge and can increase researcher sensitivity. The literature reviewed above includes literature examined both prior to data collection, which intended to both situate my study within an ongoing conversation about pedagogy and gamification while at the same time serving to and enhance my sensitivity, as well as the literature I examined when I was mostly done with data collection. In keeping with Straussian grounded theory, reviews of the relevant literature essentially acted as book ends for the data collection and analysis process, and data collection and data analysis occurred simultaneously throughout most of this project (a Gantt chart will be provided in Chapter 3 to clarify the timeline for this project).

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<sup>4</sup> see Chapter 3 for a brief discussion of the differences between Glaser's and Strauss's approaches to grounded theory



### **Chapter 3: Methodology**

I selected grounded theory as the methodology guiding data collection and analysis because this study is exploratory and I intended for it to produce a substantive theory regarding how and why gamification is implemented as a pedagogical tool for brick-and-mortar higher education courses. For clarity, I make the distinction between *implementation*, or designing a course with gamified elements, and *instantiation*, or actually running the gamified course. This distinction is necessary because it is possible for a professor to use the same course design for several sections of a course within and across semesters, so designing the course and running the course must be considered as two separate actions. Each instantiation of a gamified course may vary based on the distinct personalities and dynamics of the students in each class, which may, in turn, lead to variations in the effectiveness of the course design (“Classroom dynamics & diversity,” n.d.; Pawlowska, Westerman, Bergman, & Huelsman, 2014); though the effectiveness of a given course design falls outside the scope of this study, it may be addressed by future research. In this chapter, I address the intention of the study, a rationale for the grounded theory approach, a description of the study’s setting and participants, and the data collection and data analysis procedures, followed by a discussion of ethical considerations, trustworthiness of qualitative research, and the study’s limitations.

#### **Intention of the Study**

This study does not intend to evaluate the effectiveness of gamified courses. Rather, it is intended as an exploratory study to examine how and why higher education faculty implement gamification as a pedagogical tool in their courses. The final product of this study is a substantive theory that moves beyond rich description to provide an interpretive view of faculty experiences of gamification as a pedagogical process (Charmaz, 2014; Corbin & Strauss, 2015;

Merriam & Tisdell, 2015). A substantive theory is one that “is considered transferrable [to situations of a similar context], rather than generalizable,” whereas a formal theory “is based upon validated, generalizable conclusions across multiple studies that represent the research population as a whole, or upon deductive logic that uses validated empirical theories as its basic axioms” (“What is Substantive Theory,” n.d., para. 1).

### **A Qualitative Perspective**

Because this study is exploratory in nature and intends to contribute to theory on gamification and faculty’s implementation of an innovative pedagogy, a grounded theory approach is appropriate as it provides an interpretivist, postpositivist, pragmatic lens that enables me to consider multiple possible interpretations of the data I gathered (Charmaz, 2014; Corbin & Strauss, 2015; Creswell, 2013; Dey, 1999). I am primarily interested in the development of faculty’s understanding of gamification as a pedagogical tool and how they attempt to implement game-like thinking or game design elements in their courses. Moreover, since my study sought to investigate and understand the *process* of implementing gamification, grounded theory is an appropriate choice, as grounded theory intends to construct a theory, grounded in the data provided by participants, to explain a process, particularly for areas of research where no adequate theory exists (Charmaz, 2014; Corbin & Strauss, 2015). Gamification’s use as a pedagogical tool in higher education is still relatively recent and uncommon, and as of the writing of this dissertation, there is no extant theory to explain its adoption or implementation in brick-and-mortar higher education courses.

Grounded theory, particularly the Straussian variety that I use for this study, relies philosophically on a theoretical perspective called symbolic interactionism, which grew out of the pragmatic tradition (Charmaz, 2014; Corbin & Strauss, 2015; Dey, 1999). Pragmatism,

which evolved mainly at the University of Chicago around the 1900s, “views reality as fluid and somewhat indeterminate, and as open to multiple interpretations” (Charmaz, 2014, p. 263), and this philosophical lens underlies symbolic interactionism. Symbolic interactionism “views interpretation and action as reciprocal processes, each affecting the other” and “recognizes that we act in response to how we view our situations” (Charmaz, 2014, p. 262). Therefore, the interpretation of language and action are important aspects of data analysis in grounded theory methodology, as meaning is derived from how persons choose to act and interact with the world around them. This lens is useful for this study because faculty who gamify are choosing to act and interact with the teaching and learning process based on their personal values within the larger academic context.

The methods used in a grounded theory approach are “systematic, yet flexible guidelines for collecting and analyzing qualitative data” intended to keep the researcher engaged with the data in an iterative process to identify and interpret themes and explicate an emergent analysis (Charmaz, 2014, p. 1). Corbin and Strauss (2015) stated, “qualitative research is not meant to have a lot of structure or rigid approach to analysis. It is an interpretive, very dynamic, free-flowing process” (p. 1). Charmaz (2014) likewise considered grounded theory methods “a set of general principles, guidelines, strategies, and heuristic devices rather than formulaic prescriptions” (p. 3). This level of flexibility is essential for identifying, interpreting, and analyzing the “meaning, actions, and events” that interviewees describe to allow themes and concepts to emerge from the gathered data (Charmaz, 2014, p. 262). Ultimately, the substantive theory produced by this process will contribute to the fields of knowledge regarding both gamification in educational contexts and faculty’s use of non-traditional pedagogy, which I hope will prove useful for educators as they consider means to improve their practices in the

classroom. As Corbin & Strauss (2015) argued, “[k]nowledge leads to useful action, and action sets problems to be thought about, resolved, and then converted into new knowledge” in a continuous and pragmatic “interplay of practice and inquiry” (p. 21).

### **Dissertation Study**

**Setting.** This study was conducted at a large, public research institution in the eastern United States. This site was chosen because of the large faculty size, making it more likely to find a sufficient number of faculty who gamified their courses, and because there was evidence of some degree of institutional support of the concept of using games and game-like approaches in education. Though I had considered a number of other sites at which to conduct this study, I was much less likely to find a sufficient number of faculty who gamified at smaller institutions due to the relatively smaller size of the faculty body. Therefore, I opted for a site with a large faculty size so that I would be more likely to identify a sufficient number of participants eligible for this study.

**Study timeline.** In order to improve the transparency of this project, particularly because of the order in which stages of the research process occur in grounded theory, I include a Gantt chart that details when I made progress on various aspects of this study. As will be described later in this chapter, several of the stages occur simultaneously (namely data collection and data analysis), as recommended by Charmaz (2014) and Corbin and Strauss (2015), so that responses from each interview can be used to inform subsequent interviews. Additionally, the literature review process in a sense bookends the data collection and data analysis stages, which is a somewhat different approach than other methodologies (i.e., ethnography, case study, narrative, etc.) typically employ.

Table 3.1: Study Timeline

	Oct 2016	Nov 2016	Dec 2016	Jan 2017	Feb 2017	Mar 2017	Apr 2017	May 2017	Jun 2017	Jul 2017	Aug 2017	Sep 2017	Oct 2017	Nov 2017	Dec 2017	Jan 2018	Feb 2018	Mar 2018
Literature review	x	x												x	x	x	x	
Proposal drafting	x	x	x															
Protocol drafting					x	x	x											
Identification of potential interviewees			x	x	x	x	x	x	x	x	x	x						
IRB submission & approval							x	x										
Scheduling of interviews									x	x	x	x						
Interviews/transcriptions									x	x	x	x	x					
Document collection									x	x	x	x	x					
Data analysis									x	x	x	x	x	x	x	x	x	
Draft writing											x	x	x	x	x	x	x	x

**Participant selection and recruitment.** This study was open to all faculty at the study site—regardless of rank, tenure status, or department—provided they had previously used or were currently using game elements or game-thinking in a brick-and-mortar course. This decision was made for three reasons. First, since this study intends to generate a substantive theory, not a formal theory, drawing from a broader range of faculty would be more likely to result in emergent themes that have value, relevance, or meaning for higher education and pedagogy in general, not limited by any one disciplinary approach to thinking or teaching. Second, as Corbin & Strauss (2015) noted, “it is concepts and not people, per se, that are sampled” (p. 135); therefore, the primary relevant detail is faculty who have implemented

gamification in the classroom; their rank, tenure status, and department are ancillary. Third, gamification is not a common pedagogy, so casting a wider net was more likely to generate a sufficient number of participants for this study. I chose to exclude faculty who have only gamified completely-online courses from this study because most online courses are taught through learning management systems or similar pre-designed platforms (e.g., Sakai, Blackboard, ANGEL, Canvas, etc.), so faculty who use such systems may be choosing which components to include in their course, but they are not necessarily involved with designing those components themselves—they are limited by how the software developer has chosen to program a particular component.

To compile a list of potential participants, I searched the key terms “gamification” and “gamify,” individually, on the study site’s home page. This generated a list of ten faculty members, one of whom had left the study site for a position at a different university and was therefore excluded from the study. This list was augmented through personal conversations with a number of faculty, staff, and administrators from various academic units at the study site. Additionally, some potential participants were suggested to me by other study participants. One of my initial concerns going into this study was the extent to which participants would be identified through snowball sampling; however, several of the study participants did not know of anyone else at the study site who would qualify for this study. Of the participants who did know other faculty who gamified, they tended to suggest between one to three other faculty members, and there was some limited overlap among the suggestions. In all, I attempted to contact via email 32 faculty members who I had reason to believe used gamification as a pedagogical tool. Of those 32, nine did not respond to my emails, two initially agreed to participate but never responded to scheduling attempts, five declined to participate, six had left the study site (job

change, retirement), and ten agreed to participate in this study. Table 3.2 below provides an overview of the faculty who gamify interviewed for this study. Table 3.2 only lists nine faculty as two interviewees were combined into a composite participant; the reasoning for this decision will be discussed in greater detail in the “Ethical Considerations” section later in this chapter.

Table 3.2: Faculty Who Gamify

Pseudonym	Department	Rank	Tenure Status	# of Years Teaching*	Gender
Ben	Health	Full Prof.	N	15-20	M
Dennis	Engineering	Full Prof.	T	15-20	M
Frank	Engineering	Full Prof.	T	>30	M
Jeff	Economics	Lecturer	N	10-15	M
John	Information Science	Asst. Prof.	TR	15-20	M
Leslie	Music	Assoc. Prof.	T	>20	F
Mary	Linguistics	Lecturer	N	15-20	F
Sara	Natural Science	Full Prof.	T	>30	F
Walter	Information Science	Prof. of Practice	N	10-15	M

\* Total number of years teaching at all institutions, not only at the study site  
 Tenure Status: T = tenured; TR = on the tenure track; N = non-tenure track

Additionally, to aid in triangulation and to help develop sensitivity regarding gamification and pedagogy, I also interviewed gamification experts and pedagogy experts as ancillary voices. I identified gamification experts as people at the study site whose teaching, research, or other professional responsibilities involved gamification; similarly, I identified pedagogy experts as people at the study site whose teaching, research, or other professional responsibilities revolved around pedagogy. These gamification and/or pedagogy experts were not considered the study’s main participants but auxiliary voices that could help to increase researcher sensitivity on the topics of pedagogy and gamification, and that could be used as points of comparison or contrast when analyzing the perspectives of the core group—faculty who gamify.

**Data collection procedures.** After receiving an exempt status from the Institutional Review Board (IRB), I began contacting the faculty I had identified through my initial searches (described in “Participant selection and recruitment” above) via electronic mail. Participants were given a copy of the informed consent document as an attachment in the initial recruitment email, and a physical copy was offered to them before the start of the interview. Nearly all of the participants asked questions about the time commitment participation would require and indicated that they had busy schedules. Two participants asked for additional clarification regarding my dissertation topic prior to the start of the interview; no other participants had questions for me or about this project.

*Documents.* All participants were asked to share their teaching philosophy and any syllabi and assignment sheets relevant to their gamified course(s). These documents were listed on the informed consent document that was shared with all participants via email. Additionally, I asked participants for these documents in person immediately after the interview concluded. Reminder emails were sent to faculty who agreed to share these documents but had not done so. Though most interviewees declined to share a copy of their teaching philosophy, most of them provided me with other documents, including departmental agendas, booklets or webpages created for their courses, and informational posters reflecting their results. Some participants also asked me, prior to meeting with them, to read articles that they had published regarding their gamified courses. I obliged these requests to the extent that I was able.

*Interviews.* The primary data collection vehicle was semi-structured, in-depth interviews. The initial interview protocol was revised based on feedback from committee members and from other doctorate-holding faculty who teach and research in higher education environments and are



familiar with pedagogy and/or gamification. A peer debriefer suggested I use a thematic list to serve as an aid during the interviews, which I found helpful.

I typically met with interviewees at their offices, though three participants requested other locations (i.e., library study room, coffee shop). Interviewees were provided with a copy of the informed consent document via the initial recruitment email and were offered a hard copy of the same document at the beginning of each session. I obtained implied consent (i.e., participants were given the informed consent document but were not required to sign any paperwork giving their explicit consent due to the exempt determination by the IRB; participants gave their consent by participating in the research project), and all participants allowed me to record the interviews. I also took detailed notes during each interview, capturing words and phrases verbatim when possible. The interviews with faculty who gamify lasted about 55-75 minutes and initially followed the prepared protocol. The interviews with pedagogy and/or gamification experts generally took about 45-60 minutes. Abiding by the structure and order of the protocol throughout the entire interview was not always feasible, as I wanted to give participants leeway for elaborating as much as need be or to allow for follow-up questions based on interviewees' responses. Often when providing additional explanation on one topic, interviewees also addressed other questions that I would have asked later in the interview. The thematic list helped me ensure that we covered all of the intended topics regardless of the order in which the interviewees decided to discuss them. This provided a helpful level of flexibility to put my interviewees at ease and improve rapport, which Dey (1999) suggested is important for collecting quality data.

All interviews were transcribed within 24-48 hours after the interview occurred, with the exception of one technical error, where the audio file was corrupted before I could transcribe it.

In lieu of transcription for that one particular interview, I used the detailed notes I had taken during the interview, in which I had captured verbatim several words and phrases the interviewee used, and my memory of the discussion to write out everything I remembered. Within three hours of having completed the interview whose audio file was corrupted, I had completed a detailed write-up of the interview session, which I emailed to the interviewee. He verified that the write-up was complete and accurate, excepting only one minor correction (the state in which his undergraduate college was located).

Trends in the data began to emerge early on and informed subsequent interviews. Several of these early themes also served as the foundation for developing the categories that were progressively elaborated upon and refined throughout the construction of my substantive theory; in grounded theory, this is the process of theoretical sampling (Charmaz, 2014, Corbin & Strauss, 2015).

**Data analysis procedures.** Transcription was primarily denaturalized (Bucholtz, 2000), though occasionally non-speech actions (verbal pauses, laughter, hand motions, etc.) were included where they seemed to suggest an alteration or augmentation of the speaker's words. For example, one participant's use of verbal stalls when he said, "Um, so, I am uh, not very proud to say that uh [chuckle] I used what my professors did as sort of this was their methodology and I sort of took that and used it for my own" seemed to convey a hesitance or a distancing, and so I opted to preserve them. Transcriptions and other documents were loaded into QSR International NVivo 11 Pro software to aid in organizing, coding, and analyzing the gathered data. As suggested by Corbin & Strauss (2015) and Charmaz (2014), I began data analysis after completion of the first interview. Data collection and data analysis occurred

concurrently for the first several months of this study, with the themes and insights uncovered in each interview informing adjustments to the protocol for subsequent interviews.

Each transcript went through several rounds of coding, beginning with open coding and line-by-line coding. After the initial transcript, I coded instance-by-instance, reverting to line-by-line coding only when I felt like the interviewee's meaning eluded me or I had reached an impasse. Following the advice of Charmaz (2014) and Corbin & Strauss (2015), I attempted to remain as close to the participants' words as possible during the initial phases of coding, and I used the present participle verb form<sup>5</sup> wherever possible to foreground the dynamic nature of the categories, properties, and dimensions I was coding. I kept the codes as succinct as possible to capture the pith of interviewees' responses.

I used memos in conjunction with several analytical strategies, namely exploring word choice and word meaning, developing constant comparisons among categories and sub-categories, "waving the red flag" (Corbin & Strauss, 2015, p. 98), asking questions of the data, and applying the flip-flop technique. Questioning and constant comparisons were two of the most useful of these techniques to get into the analysis, and memoing provided a means for me to track my thought processes as I moved through the data collection and data analysis steps. The constant comparative method involves comparing each data point to other data points within the same data source (i.e., interview transcript) and with data points in other data sources (other interviewees' transcripts, documents provided by interviewees, etc.) continuously throughout the data analysis stage (Charmaz, 2014; Corbin & Strauss, 2015). The open coding, line-by-line

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<sup>5</sup> Charmaz (2014) and Corbin & Strauss (2015), among others, suggest using the gerund to show an active process, but this is grammatically inaccurate, since the gerund is a verbal form that functions *as a noun*. Since it functions as a noun, the gerund is static, whereas the present participle is the progressive form of the verb. They both refer to the -ing form, but thinking about it as a *progressive* verb rather than a static noun has been more effective at helping me see the emerging patterns of *process*.

coding, and instance-by-instance coding were rather time consuming, but they were necessary to ensure that I was not skimming over the interviewees' intended meanings and imposing my own meaning in their stead.

As I moved into axial coding, Corbin & Strauss's (2015) conditions-actions/interactions-consequences paradigm was at first helpful for beginning to identify the relationships between categories, but it became too rigid of a structure as I moved deeper into the data. As Charmaz (2014) noted, "Although axial coding may help researchers to explore their data, it encourages them to *apply* an analytic frame to the data. In that sense, relying on axial coding may limit what and how researchers learn about their studied worlds and, thus, restricts the codes they construct" (p. 149). This was an issue I encountered during the data analysis process. I readjusted my coding during this phase to group concepts according to similarity rather than attempting to fit them into a prescribed paradigm.

Memos were useful in examining the labels I had assigned to categories, particularly as I moved away from Corbin & Strauss's (2015) coding paradigm. Having a record of my thought process throughout the initial phase of axial coding, as I tried to apply the conditions-actions/interactions-consequences paradigm, helped me reassess other ways the data might be grouped together and other relationships that might suggest. I continued to find *conditions* to be a relevant container label, and so I kept that, but actions/interactions did not adequately describe what I was seeing in the data, nor did consequences.

Memoing also provided an outlet for developing researcher reflexivity, particularly regarding my own philosophical views on education and my interest in games. Quantitative research methods traditionally strive for objectivity by seeking to remove causes for bias or prejudice, and researchers from such a background "have cast doubt on the reliability of

qualitative data based on a lone, possibly biased, observer's idiosyncratic recordings of immediate interactions and impressions" (Charmaz, 2014, p. 321). Corbin and Strauss (2015) noted that researchers are not blank slates, that they "bring with them their perspective, training, knowledge, assumptions, and biases, which in turn influence how they interact with participants and interpret data" (p. 77). Rather than "suspend[ing] preconceptions" arising from personal experience as Glaserian grounded theory would have me do (Simmons, 2010, p. 19), I followed Charmaz's (2014) and Corbin & Strauss's (2015) advice of using memos and journals to explore my reactions to the data and to examine my preconceptions and biases. This led, early in the data collection and analysis, to the realization that I was expecting to see gamification being adopted as a reaction against passive traditional education, particularly the lecture format. After realizing that my personal biases about education had influenced what I was looking for, I returned to the data with a fresh set of eyes, enabling me to see that my participants spoke less about moving away from traditional teaching methodologies and more about making learning real or concrete for students, which led to more fruitful data analysis sessions.

### **Ethical Considerations**

Creswell (2013) noted that potential ethical considerations should be addressed at each stage of the research process. To ensure that this dissertation would be respectful of participants and their voices, this dissertation has taken the following steps in accordance with Creswell's (2013) suggestions:

1. Prior to the beginning of the study: I applied for Institutional Review Board (IRB) approval. This study received an exempt determination from the IRB.
2. At the beginning of the study: All participants were informed of the broad purpose of this study via the recruitment email, which included as an attachment a copy of the informed

consent document suggested by the IRB. All participants were invited to ask any questions they wanted prior to deciding whether or not to participate in the study.

3. During data collection: Interviews were held in participants' offices, or at an alternate location of their choosing. This was done to give interviewees control over some aspects of the interview and to minimize one potential source of reactivity (Maxwell, 2013). I also obtained verbal consent prior to starting my audio recording device. All participants were also informed that they could stop the interview at any time, and that they could choose not to answer any questions.
4. During data analysis: To ensure participants' confidentiality, I gave each participant in the *faculty who gamify* group a pseudonym. Gamification experts and pedagogy experts were not given pseudonyms. Instead, since their perspectives largely agreed with one another, I typically refer to them en bloc as "gamification experts" or "pedagogy experts" in Chapter 4. In the rare instances where I quote one of them directly, I refer to them as "one pedagogy expert" or "a gamification expert," thus obviating the need for pseudonyms for those providing ancillary voices. Since several of the departments, offices, and other locations were indicative of a specific campus, I replaced those names with more general ones to further safeguard participants' confidentiality. All identifiers have been removed from the transcriptions and other documents (a brief discussion on confidentiality appears later in this section). Additionally, I used researcher reflexivity memos extensively and reported multiple points of view to ensure that I was being true to my interviewees' perspectives. As much as possible, I used *in vivo* codes during open coding and line-by-line coding to stay close to the data (Charmaz, 2014; Corbin & Strauss, 2015).

5. In reporting the data: I am seeking transparency and honesty in my presentation of the data and the thought processes that I followed throughout the data analysis stage.

Additionally, I am continuing to protect my interviewees' identities through the use of pseudonyms for those in the *faculty who gamify* group, and en bloc referencing for those who participated as experts on gamification or pedagogy.

6. In publishing the study: Though this study has not yet been published, I do intend to publish papers based on this research. Before I do so, however, I plan to ask participants for additional feedback on my analyses.

**Additional steps for ensuring confidentiality.** Because some of the documents provided to me by interviewees were published articles about their gamification efforts, I was confronted with a dilemma between preserving subject confidentiality and ensuring all published sources used in this study are properly cited and retrievable. Regarding confidentiality in qualitative research, Hammersley and Traianou (2012) cautioned, "reporting of evidence must be done in ways that avoid the sources, and the people and settings referred to, being identifiable" (p. 126). To that end, I have decided to treat material taken from articles written by the interviewees as though they had spoken those words during the interview. That is, their words are attributed to the source, but not in a way that might compromise their (or other interviewees') confidentiality. Additionally, several participants had created their own games and wrote published articles containing those titles; to further preserve confidentiality, the names of those participant-created games have also been changed or omitted. The titles of third-party games that are publically available and not specifically connected to anyone at the study site have not been changed.

A second dilemma I faced was that one of the participants for this study was in a unique position, both at the study site and in terms of gamification efforts; one peer debriefer suggested that my initial methods of preserving confidentiality (use of pseudonym and a generalizing of characteristics) may not have been sufficient, since this person's use of gamification was one of the few of its kind to have been published on. This peer debriefer suggested "swirling together" two of the interviewees to create a composite interviewee to further blur potentially identifiable details while preserving the perspective on gamification. Since I found evidence of this method having been used in other published qualitative research (Hammersley & Traianou, 2012; Hopkins, 1993; Lee & Hume-Pratuch, 2013; Piper & Sikes, 2010; Sparkes, 1995), I adopted this method to further safeguard participant confidentiality. Though I interviewed ten faculty about their gamification efforts, only nine participants' experiences are discussed in detail, as two have been combined into a single composite participant.

This issue of confidentiality also arose regarding the selection of peer debriefers. Extra care should be taken if the audience is likely to personally know either the informants or the entities (i.e., people, offices, academic units, etc.) the informants may refer to during their interview (Hammersley & Traianou, 2012; Tolich, 2004). Since I had reason to believe that at least two of the people who offered to serve as peer debriefers knew at least one of the participants and/or entities referred to during the course of the interview, I decided to decline their assistance, choosing instead to look farther afield for debriefers who, to the best of my knowledge, did not personally know any of the people, departments, or offices who participated in or were referred to throughout the course of this study.



## Credibility and Quality

Though the terms *validity* and *reliability* are often discussed regarding quantitative research and are sometimes mentioned in qualitative research, I have chosen instead to focus on the *credibility* and *quality* of my work throughout this study, in keeping with the arguments put forward by Charmaz (2014) and Corbin and Strauss (2015). Corbin and Strauss (2015) noted that “everyone agrees evaluation is necessary, but there is little consensus about what constitutes an appropriate set of evaluation criteria for qualitative research” (p. 341). Corbin further explained, “I don’t feel comfortable using the terms *validity* and *reliability* when discussing qualitative research. These terms carry with them too many quantitative implications” (Corbin & Strauss, 2015, p. 346; emphasis in original). The aims of qualitative research differ from the aims of quantitative research; Charmaz (2014) clarified that “the logico-deductive model of traditional quantitative research necessitates operationalizing established concepts in a theory as accurately as possible and deducing testable hypotheses about the relationships between these concepts” (p. 31), whereas “Interpretive [qualitative] theories aim to understand meanings and actions and how people construct them” (p. 231).

Both Charmaz (2014) and Corbin & Strauss (2015) found *credibility* a useful term for assessing how trustworthy or believable a study’s findings are. Additionally, Corbin & Strauss (2015) suggested *quality* to capture the extent to which the research “resonates with readers’ and participants’ life experiences...makes the reader think and want to read more...has substance, gives insight, shows sensitivity,...[and] is both scientific and creative” (p. 347).

Quantitative research methods traditionally strive for objectivity by seeking to remove causes for bias or prejudice, and researchers from such a background “have cast doubt on the reliability of qualitative data based on a lone, possibly biased, observer’s idiosyncratic recordings

of immediate interactions and impressions” (Charmaz, 2014, p. 321). However, as Maxwell (2013) argued, a researcher’s preexisting beliefs cannot be erased, but it is instead the researcher’s responsibility to understand how those beliefs may be influencing the research. Corbin and Strauss (2015) noted that researchers are not blank slates, that they “bring with them their perspective, training, knowledge, assumptions, and biases, which in turn influence how they interact with participants and interpret data” (p. 77). Rather than trying to set aside all of those preexisting notions in seeking objectivity, qualitative researchers strive to examine their positionality and develop researcher reflexivity and sensitivity to their topic (Charmaz, 2014; Corbin & Strauss, 2015).

Researcher reflexivity is a process through which the researcher examines his or her “interests, positions, and assumptions [that may have] influenced his or her inquiry” (Charmaz, 2014, p. 344), often via writing memos throughout the research project, which I did as I progressed through this study. The most prominent personal bias that I had brought into this process was the belief that faculty were opting for gamification over passive formats, particularly the lecture. As I examined this belief through a series of memos where I compared my perceptions to the data I gathered from participants, I realized that I held a personal bias against the lecture format. I was conflating the idea of the lecture with examples of poorly delivered lectures from my days as an undergraduate student. I came to understand that the lecture itself is not necessarily a poor pedagogical approach. By developing a greater self-awareness of my own personal biases, I saw that I had been looking for participants to cast aspersions on the lecture format, so when some participants did criticize the lecture, it resulted in confirmation bias. Revisiting the data with that in mind, I then saw that participants were not necessarily putting

down the lecture format, but instead were attempting to build upon or improve educational experiences, regardless of what pedagogy served as a starting point.

Corbin and Strauss (2015) described sensitivity as “the ability to carefully listen and respect both participants and the data they provide” (p. 77), and suggested that prior knowledge and experience with the topic and the research experience itself can enhance a researcher’s sensitivity. To increase my sensitivity, I constantly compared my own personal knowledge and experience with the data I was gathering from participants, and I examined the data I collected with regard for their properties and dimensions (Corbin & Strauss, 2015). Because sensitivity grows throughout the course of a research project, I frequently returned to my earlier interpretations of the data and accompanying memos to look for new connections or insights.

To further promote the credibility and quality of this study, I utilized rich description, so that the data could guide the results, and triangulation with supplemental sources to corroborate interpretations and findings (Creswell, 2013). To gather rich data and to aid in triangulation, I had originally intended to collect participants’ teaching statements and any syllabi or assignment sheets that were relevant to their gamified course(s). Though I asked all participants in the *faculty who gamify* group to provide these documents, only one person gave me all of the documents I asked for. One participant gave me an assignment sheet and a page of notes from a departmental meeting regarding gamification. One participant gave me access to her syllabi and the projects students had created in her gamified courses, but not her teaching philosophy or assignment descriptions. One participant allowed me to take a picture of a poster he made detailing student responses and reactions to his gamified course over several years. Several participants said they did not have a current teaching statement to share with me. I did not want to risk alienating any participants, especially since I intended to ask them to participate in

member checking further along in the process, so for some participants I was not able to collect the documents I had originally intended to analyze.

In lieu of the documents I had intended to collect, some participants directed me to read articles they had published concerning their work with gamification. I also searched the study site's webpage for news articles, videos, or other documents relating to gamified courses that might be relevant or might provide additional insight. This resulted in a hodge-podge of secondary or supporting materials that provided richer data but did not lend themselves to comparison on some points (i.e., only one document elucidated departmental culture regarding gamification), though comparisons among data collected via interview and data collected via document analysis did provide some additional avenues for exploration.

Though Lincoln and Guba (1985) called member checking “the most crucial technique for establishing credibility” (p. 314), it is not without controversy (Birt, Scott, Cavers, Campbell, & Walter, 2016; Carlson, 2010). While member checking does allow participants the opportunity to correct, elaborate upon, or otherwise alter the researcher's initial (re)presentation of each interviewee's perspective, it can sometimes lead to further confusion rather than clarity, particularly if interviewees deny having used certain words or expressed a particular idea (Cohen & Crabtree, 2006; Creswell, 2013; Lincoln & Guba, 1985; Maxwell, 2013; Sandelowski, 1993; Sandelowski, 2008). Additionally, because member checking often assumes one true reality (Cohen & Crabtree, 2006; Sandelowski, 1993), it is philosophically somewhat at odds with the interpretivist, postpositivist context underpinning this study, where “reality is assumed to be multiple and constructed rather than singular and tangible” (Sandelowski, 1993, p. 3).

Bearing these concerns in mind, I employed member checking both during and after the interviews to give interviewees the opportunity to verify that the data I had gathered from them

captured the ideas they wanted to convey (Creswell, 2013; Lincoln & Guba, 1985; Maxwell, 2013; Sandelowski, 2008). During the interviews, as opportunities to ask for disambiguation arose, I used questions such as, “When you say ‘gamification,’ what does that term mean to you?” to probe interviewees’ perceptions. This approach allowed me to separate my personal understanding of terms from the way interviewees intended them. Toward the end of several interviews, I also asked participants for feedback on themes that seemed to be emerging from the data; their responses were used as another point of comparison for the various revisions to the emerging model. Sandelowski (1993) cautioned, “members may be uninterested in participating in such an exercise [a formal checking process]” (p. 7), and though nearly all of the participants verbally agreed to participate in member checking, not all participants responded to such requests. For example, participants were given the opportunity to correct any inaccuracies in the transcription of the interview, though not all of the interviewees responded. Those who did respond generally provided corrections to the grammar of the interview transcript, not to the content or substance of the interview.

### **Limitations of the Study**

All research methodologies have their limitations, and grounded theory is no exception. One limitation for this study is that gamification is not a widely used pedagogical tool, so the initial pool of potential interviewees was constrained by who had chosen to implement gamification as a pedagogical tool in a brick-and-mortar classroom. This may or may not coincide with the institutional type of the study site (major research institution rather than an undergraduate-serving institution), as faculty at major research institutions may face different types of pressure regarding their teaching and research agenda than faculty at other institutional types might experience (see “Suggestions for Future Research” in Chapter 5). Of the ten

interviewees in the *faculty who gamify* group who agreed to be interviewed for this study, more than half were male. Additionally, all of the participants had been teaching for at least a decade, meaning none of those who opted into the study were early-career educators. A broader range of experience levels (i.e., graduate teaching assistants or faculty with fewer than five years' teaching experience) may have provided more insight into perceptions of pedagogical innovation for early-career faculty. Though I invited at least three early-career educators to participate in this study, one declined and two did not respond.

Additionally, I invited several faculty who used badges to participate in this study, but they declined, saying that they did use badges, but they did not consider badges to be game mechanics, nor did they consider their approach to the classroom to be gamification. This opting out further reduced an already constrained pool of potential interviewees. Though these persons' perspectives and experiences were not included in this study, their rationale does raise an interesting question about pushback against the terminology or idea of gamification that could be explored by future research. Notably, their rationale was also espoused by one person in the *faculty who gamify* group and at least two gamification experts, so I was able to gain some insight into this issue through some of the people who had agreed to participate in the study.

Another limitation of this study is that the data presented to me through the stories they chose to share with me represent their perspectives on innovation, pedagogy, and gamification in a given context and at a given time. It is possible that if I were to interview them again in the future, or if someone else were to interview them, the data they provide could lead to different interpretations or understandings of their perceptions. This potential is in keeping with the postpositivist and interpretivist underpinnings of this study.

Finally, though conducting a limited literature review prior to collecting and analyzing data is consistent with Straussian grounded theory (Charmaz, 2014; Corbin & Strauss, 2015), it may also be considered something of a limitation insofar as most studies using other methodologies rely more heavily on existing literature up front. With the use of grounded theory, however, little to no review of existing literature should be done up front, though grounded theorists who choose to delay reviewing literature are expected to return to the literature after they have collected and analyzed their data, typically to identify alignment between existing research and their findings, or to highlight discrepancies between their data and published research that may point to new avenues for future investigation (Charmaz, 2014; Corbin & Strauss, 2015).

## Chapter 4: Study Findings

### Overview of Study Findings

In this chapter, I present the findings of this study, including a model of a substantive theory that is not necessarily generalizable, but may be transferrable to similar situations. Each component of the theory derives from the stories participants shared during the interview process. Before doing so, I will briefly revisit the research questions that guided this exploration and summarize data analysis procedures. This study intended to explore the intersection of gamification and pedagogy from the faculty perspective and was guided by the following research questions:

1. What do we learn about gamification as a pedagogical tool from faculty who implement it in the classroom?
2. What do we learn about pedagogy from faculty who gamify their courses?
3. To what extent does disciplinary pedagogical knowledge affect choices that faculty make, particularly regarding gamification as a pedagogical tool?

Perspectives from nine faculty who gamify, three gamification experts, three pedagogy experts, and one faculty member with a foot in each camp, so to speak, were analyzed using Straussian grounded theory methods (Charmaz, 2014; Corbin & Strauss, 2015; Dey, 1999), and the findings provided in this chapter have emerged through a process of data analysis using transcripts of the interviews conducted with faculty who gamify and, to a lesser extent, from documents they provided to me during the data collection process.

Data was gathered and analyzed using the guidelines for grounded theory research espoused by Charmaz (2014) and Corbin and Strauss (2015). Concepts were constructed from themes that emerged through the use of multiple analytic tools, including questioning, constant



comparisons, the flip-flop technique, explicating word choice, and looking for the negative case (Charmaz; 2014; Corbin & Strauss, 2015). Constant comparisons were used to look for similarities and differences both between interviewees’ transcripts, and within each transcript as well; that is, each piece of data was compared to other data that originated from the same interview as well as data arising from each of the other interviews (Charmaz, 2014; Corbin & Strauss, 2015). The flip-flop technique was useful for examining conversational implicature, or what an interviewee might be implying based on his/her choice of phrasing (Corbin & Strauss, 2015; Grice, 1975; Johnstone, 2008). Coding progressed through several rounds (open, line-by-line, axial, and selective) in conjunction with the use of memos, resulting in the theoretical model presented in Figure 4.1 below.

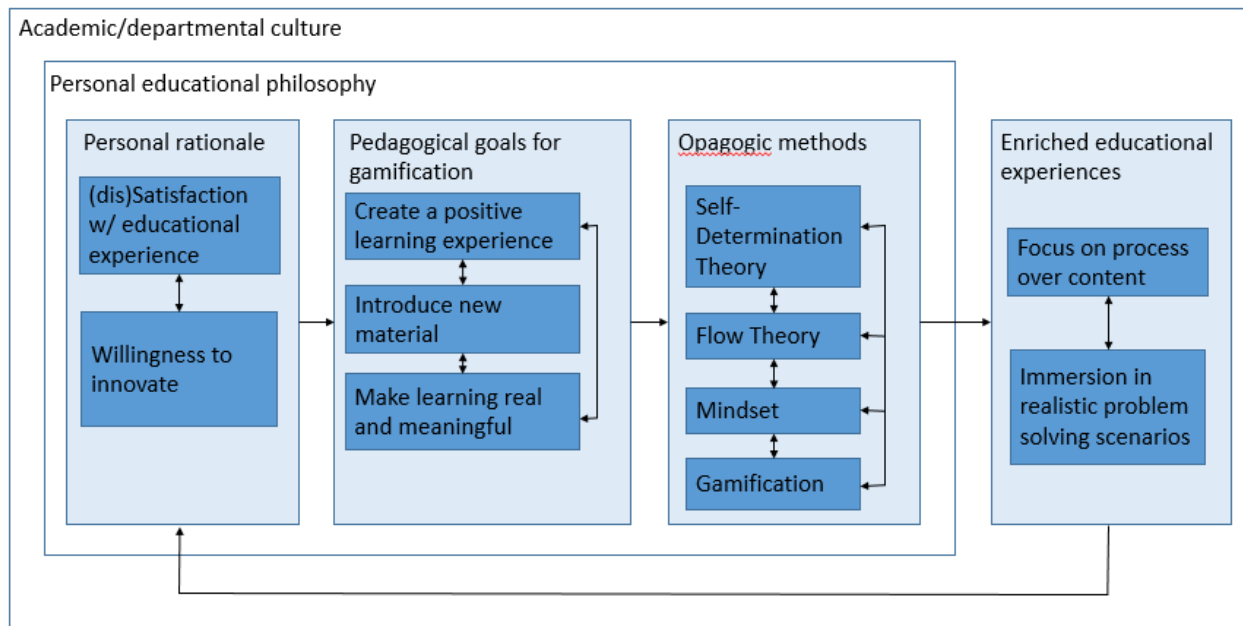


Figure 4.1. A model for opagogy<sup>6</sup>

<sup>6</sup> Opagogy (ō-pah-gō-gee) will be defined and explained in detail later in this dissertation. It is essentially a new term, derived from interviewees’ perspectives on what education is and what it should be. Opagogy can be understood to mean “leading to the good life.” See “Discussion” in Chapter 5 for arguments demonstrating the need for new terminology in this regard.

In what follows, I will explain the model provided in Figure 4.1 from the outside in, and from left to right. Academic and departmental culture provides context for a discussion of participants' educational philosophies, particularly regarding their varying levels of (dis)Satisfaction with educational experiences and their willingness to innovate or to take risks with their pedagogical approach. Specifically, faculty involved in this study reported a desire to create positive learning experiences, to make "the gateway into learning" fun, and to make learning "real" and "meaningful" for their students. In order to do so, they employed gamification (game thinking and game mechanics) in ways that were informed by and/or supportive of flow, Self-Determination Theory, and mindset. In the perspectives of the interviewees, the intention of using gamification in this way is to foster enriched educational experiences.

Quotation marks throughout the remainder of this dissertation are used solely to indicate interviewees' exact wording in in-line quotes (e.g., when I refer to "meaningful" learning, my intention is not to emphasize the word meaningful, it is to indicate that at least one participant used the word "meaningful" to describe learning). Such quotes will appear frequently, as this study follows grounded theory methodology, and the themes that emerge must necessarily be grounded in the participants' words. Additionally, in keeping with a grounded theory approach, the data presented throughout this dissertation comes largely from the interview responses and the documents provided by the interviewees. All inclusions of outside data are indicated by parenthetical citations.

As I worked through writing memos and analyzing the data I gathered, I came to see the main concepts, as expressed in Figure 4.1 above, along with less prominent themes that will be discussed later in this chapter as forming a complex web of interconnected nodes that are

inextricably connected. I drafted dozens of variant models by picking up different nodes and seeing what kind of structure the remaining nodes fell into, and I assumed several different lenses or perspectives (i.e., rhetorical analysis, systems perspective) to see what new insights they might suggest. Discussions with other researchers, including my dissertation chair, helped me determine a model and organizational scheme that would minimize redundancy from one section to the next while keeping the research questions in full view. However, since many of these concepts were often presented in close juxtaposition with one another, and since interviewees tended to give clarification on one concept by way of elaborating on another, not all redundancy could (or should) be removed. For example, discussion on the risks inherent in innovation was relevant in both the “Tenure and freedom” subsection, as well as in the “Willingness to Innovate” section. Likewise, faculty gaining personal joy from seeing their students succeed appeared as a personal determinant, but the evidence faculty provided of their students’ success was also relevant to the discussion in “Faculty takeaways” toward the end of the chapter. Where it was necessary to reiterate concepts, my intent was to add meaning, context, or nuance to ideas or quotes that bore repeating.

### **Academic Culture**

Because pedagogical decision-making happens within the context of the academy, a discussion of how participants talked about academic culture—to the extent that they did—formed a backdrop against which discussion of their personal educational philosophies became more fruitful. Participants’ commentary on academic culture, both in the university at large and in their specific department(s), spanned a fairly wide range from those who viewed higher education as being slow to change, to those whose departments encouraged and supported innovative approaches in the classroom. For the most part, the main concerns to emerge from

the interview data in this regard were how educators learned how to teach; the degree to which academia, the study site, or their particular department resisted or welcomed change; and the extent to which interviewees felt tenure did or did not allow them more freedom in focusing on their teaching. I should also note, though, that not all participants had tenure-line positions. I will further examine each of these main aspects of academic/departmental culture in what follows.

A less common theme from the data but one nevertheless worth mentioning is that several interviewees spoke to a sense of loneliness or isolation in their department, which is important to note because such aloneness could be a deterrent for other faculty who may be interested in trying gamification (see the discussion on determinants in the “Willingness to innovate” section later in this chapter for other factors that emerged as potential influencers regarding the decision to innovate or gamify). There is alignment between the aspects of academic culture the interviewees commented on and those addressed in Austin (1994); Bok (2006); Hendrickson, Lane, Harris, and Dorman (2013); and others, as reviewed in Chapter 2 (see “Academic Culture” for a brief discussion). There is also a degree of interplay among these various aspects evident in the quotes provided throughout this section, suggesting that these different facets of academic culture feed back into one another to some extent.

**How educators learn to teach.** Most interviewees commented on how they learned to teach. Among those who addressed this aspect, the idea of replicating what they saw other professors do emerged as the most common experience, and the pedagogy experts also generally considered mimicking one’s professors to be common practice. None of the interviewees spoke about on-boarding efforts, New Faculty Orientation programs, being mentored by a more senior faculty member, or working with a teaching center, though at least two of those four options

were available at the study site. Two of the interviewees did note that they had family members who were credentialed in education and spoke of using those family members as a resource.

Leslie, a tenured associate professor who taught music courses, described something suggestive of institutional inertia regarding pedagogy in her field:

a lot of the people, a lot of the training, a lot of the teaching and pedagogy that happens in my field is still very much that master class. It's still very much the tradition that has been in classical, Western music for hundreds of years...that model is fairly straightforward, so the things I'm doing are *really* divergent.

She attributed this to the tendency for faculty to replicate the instructional methods they had encountered as students: "And this is a problem in teaching, right? We teach as we were taught, and that idea of exploring and changing and just trying something new, I think that comes with experience," though she also acknowledged that she was quite willing to take risks others tended to avoid. In reflecting on an experience with her own teacher preparation undergraduate students in this regard, Leslie commented, "They hadn't learned it that way [using gamification]. So they didn't really see the value in changing from what they had learned." She expressed frustration that her students had demonstrated a tendency to replicate what they had experienced as a student rather than explore innovative teaching methodologies.

Frank, a tenured full professor in an engineering field, expressed concerns about academic culture similar to Leslie's. When asked about his early teaching experiences, Frank somewhat echoed Leslie when he said,

We didn't worry about things like pedagogy in those days. You just kind of went into the classroom and probably mimicked what the people who you thought were good teachers,

you'd mimic them and try not to do what you thought the bad teachers did. And I'm going to guess that's still how almost all of us start.

Regarding how he developed his pedagogical approach, Frank commented, "I think I'm guided kind of intuitively by what I think will work or not, and then later, I find some excellent resource that supports it."

Dennis, a tenured full professor in a different area of engineering, also began teaching by mimicking his professors: "Um, so, I am uh, not very proud to say that uh [chuckle] I used what my professors did as sort of this was their methodology and I sort of took that and used it for my own." The verbal stalls and the chuckle may be interpreted as a hesitance to admit, or perhaps as an effort to distance himself from the act of mimicking "what [his] professors did." He described "what [his] professors did" as a "traditional pedagogy" that relied on lectures, exams, and a "final culminating project." When Dennis began to try "alternative teaching methodologies"—specifically gamification—after realizing that "pure lecture" was no longer reaching most of his students, he described a process that involved reading plenty of research and "a lot of trial and error" because he "had no sort of tutor to guide [him] through this process." Though the study site had two or three different units on campus that could have worked with him to figure out how to gamify his courses, his claim that he "had no sort of tutor" may suggest either that he was not aware of those units, or that for whatever reason, he chose not to work with them. In discussing his motivation for trying gamification, he explained that in addition to getting students more "excited" about learning, he also wanted "to help them see what's involved in teaching so that they might come to appreciate how to teach, if they decide to go that route." This may indicate a continued awareness of the tendency for students to replicate what had been

done to them if and when they become faculty members, and that he wanted to broaden their understanding of teaching and learning.

Sara, a tenured full professor in the natural sciences, also modeled her instruction in the early days of her career on what she had seen other professors do. However, unlike the other faculty interviewed for this study, Sara did not mimic professors she had had as a student; instead, she sat in on colleagues' classes the semester before she began teaching:

I didn't have to teach the first semester I was here, so I attended colleagues that were teaching that class, and since we had like four sections, I could see how different people did it, and I emulated Dave Smith, who was the one who I thought was best,...and that really carried me through.

Sara acknowledged that, when she first started teaching, she was "coming more from the perspective of how *I* viewed college when I was in college." She described her undergraduate self as having been "awestruck that I was in a classroom with someone who had reached that level" and "hanging on every word" her professors said. She said that, as a student, she "went in [to the classroom] with tremendous respect." However, she also noted that "it was the other way around by the time I got to the point of teaching," saying that she felt she had to earn her students' respect rather than being given it based on her educational and career attainments. She implied that this lack of respect showed in students' poor attendance and in the way many students were "getting up and starting to leave" before the end of the class period. A number of the pedagogical adaptations she undertook early in her teaching career, such as incorporating videos or doing hands-on demonstrations, were intended to mitigate specific student behaviors she found problematic; they were not done in replication of other professors' approaches.

At least three interviewees—including Frank, as quoted above—responded with something akin to “none” when asked what pedagogy they used when they began teaching. John, an assistant professor in Information Science, did not consider pedagogy in his early days of teaching. He reflected on how he, personally, responded to different kinds of learning situations or pedagogies as a student, commenting, “I’m sometimes trying to do things differently from how I’ve experienced them.” Walter, a professor in the same department as John, also had not considered pedagogy when he began teaching: “In developing a pedagogy, to say I had a pedagogy starting out, I didn’t. And, in fact, I couldn’t have defined pedagogy back then, I don’t think.” Instead, he initially relied on the guidance a family member who held a terminal degree in an education field.

These interviewees’ perceptions of the culture surrounding teaching in academia were borne out by the voices of the pedagogy experts, particularly regarding the lack of preparation for teaching. One pedagogy expert explained, “I...see people who teach, currently, or are new to teaching, who’ve never had any courses on pedagogy, even a non-credit course. So they’re really underprepared for college level teaching.” Another expert noted, “there’s research that suggests...we teach the way we were taught, and if you’re a faculty, you must’ve done something right, cause you’re now a college faculty member. Something went ok for you, so you’re going to go on that basis.” These perceptions are lent further support by extant research on the slowness of pedagogical change within academic culture (Beyer, Taylor, & Gillmore, 2013; Bok, 2006; Brownell & Tanner, 2012; Golter et al., 2012; Grimes & White, 2015; Lattuca & Stark, 2011; Mazur, 2009; Michael, 2006), as discussed in Chapter 2. This perception suggests something of a self-reinforcing cycle that may play into institutional inertia regarding



how resistant to or accepting of change professional fields, academia as a whole, or individual departments may be, particularly regarding pedagogical innovations.

Among those interviewed for this study, replication of existing, often “traditional” pedagogies emerged as the primary means for learning how to teach, while self-guided adaptation was the most commonly reported method for continuing to learn about and develop one’s pedagogical approach over the years. Three of the interviewees reported working with the Educational and Augmented Games for Learning Environments (EAGLE) office for specific game-based projects; while this may help faculty develop their use of gamification as a pedagogical tool, it is not necessarily likely to help them develop their pedagogy outside of a gamified context. There seems to be something of a disconnect between faculty who are interested in innovative approaches to pedagogy and the units or programs available at the study site whose main purpose is to help faculty develop their pedagogy (i.e., New Faculty Orientation programs, faculty mentoring, faculty development offices). Future research might investigate the extent of this disconnect or examine methods for mitigating it so that faculty who wish to innovate have a better sense of institutional support for their efforts.

**Resistant to or accepting of change.** Several faculty commented on how welcoming of (or resistant to) change their field, academia at large, or their specific department tended to be. Those who viewed the culture as resistant to change generally suggested a lack of recognition for those attempting innovative pedagogies and/or a greater emphasis placed on research productivity over effective teaching. Leslie and Frank in particular commented on the lack of recognition for innovations in teaching, while Dennis, Ben, John, and Walter described a range of departmental openness to change, from Dennis’s colleagues who wanted to wait and see how

his gamification experiment turned out, to Walter's dean encouraging him to develop war-game-like scenarios for his courses.

Leslie's and Frank's experiences represent the more resistant end of the spectrum in that they perceived a lack of support from the institution for the broad idea of innovating one's pedagogical approach. Leslie, for example, expressed overt frustration over the lack of a reward structure for educators who wanted to innovate in the classroom:

There is no reward for attempting innovation in higher education in terms of pedagogy and teaching. In terms of promotion, and dossier construction, and assessment of you as a teacher, it all comes down to "Do students feel this is successful?" It...has nothing to do with "Is this innovative? Is there potential here?...What did you learn about teaching and learning from trying that new thing?" And innovation, in any field, in any regard, is riddled with failure.

The aspects of innovation that are meaningful to Leslie—"Is there potential here?...What did you learn about teaching and learning?"—were not given the same weight by those in positions of authority both in her department and in the institution as a whole, in her perspective. She spoke several times during the interview about the need for some leeway and understanding for faculty who are in the process of innovating their teaching, particularly in the early stages of trying something completely different.

Frank also noted a lack of recognition for effective teaching approaches. At one point in his interview, Frank said it was "normal" that the University was "really bad at recognizing our own" in terms of their efforts in the classroom, even when constituents outside of academia acknowledged his effective teaching practices:

Outside of [this University], this course has gotten a lot of recognition. And I've gotten some accolades...They don't come from [here]...we're really bad at recognizing our own, and not only, I mean that's normal, and I expect that. But I'm surprised that people outside know about this course.

He said, for example, that a major, multinational corporation was willing to pay for a representative from their company to visit his course every semester, but that he “[hadn't] had another faculty lift a finger to help.” Though he indicated that he “[didn't] know if he expected them to [help],” he also seemed mildly disappointed that his colleagues did not know what happened in his course:

It's funny, this class has been here so long, and it's just sort of completely under the radar scope in that if you went to my colleagues and said, “What happens in that class?”

They'd have no idea. And yet,...most of them would say, “Oh, yeah, I've got...two students out of that two years—these are the best students!”

When asked if one of his colleagues might take over his course when he eventually retires, Frank commented that “taking on something like this would be the kiss of death for a young faculty person.” When asked to clarify what he meant by “kiss of death” he responded, “Well, that would be the perception because of time commitments and you're putting too much effort into teaching, and we know that's bad. And you should be putting effort into research, so [shrug].” The implication here is that Frank perceived his department emphasizing research productivity over the improvement of one's teaching. There also seems to be the implication that teaching might be belittled in his department because it is perceived as “bad” to be “putting too much effort into teaching.”

Leslie's and Frank's claims were lent credence by the pedagogy experts, who asked, "how are they rewarded for doing this [trying innovative pedagogical approaches]? I mean, if I'm going to spend this time and effort in risky business when I could be writing grant proposals? You know?" As discussed in Chapter 2, these reasons for resistance to change, particularly regarding the lack of a reward structure and the risks inherent in innovation, are acknowledged by other educational researchers, as well (Beyer, Taylor, & Gilmore, 2013; Bok, 2006; Brownell & Tanner, 2012; D'Avanzo, 2009; Hou & Wilder, 2015).

However, unlike Leslie and Frank, Dennis found his peers "receptive to [innovative pedagogies like gamification] in the sense of, you know, they want to contribute to see what happens," but they had not yet tried it themselves. Dennis explained that his colleagues had been willing to participate in interviews that helped to guide Dennis's gamification efforts, and one of his colleagues was helping with validation efforts. Dennis also provided me with an agenda from one of his departmental meetings, where his work with gamification was one of the main topics to be discussed. Though both Dennis and Frank were in engineering, albeit in different areas of engineering, they described different experiences within their respective departments concerning the department-wide acceptance of pedagogical innovations.

Ben, a full professor off the tenure track in health, also perceived his colleagues as being open to innovative educational approaches: "I think people [in this department] have all sort of bought into this idea of active engagement. It's not 100%, obviously, but the majority of people, particularly those who are teaching the undergraduates." Ben mentioned that one or two of his colleagues also used game-based learning (i.e., using a full-fledged video game in the course), but he was not sure if they used gamification as a pedagogical tool. Of his other colleagues, he said, "I don't think they do games per se, but there is an awful lot of experiential learning that

goes on in health.” Ben spoke of both his own and colleagues’ efforts with games and gamification, and of his department’s interest in potentially badging the undergraduate curriculum (which Ben did not view as gamification) as examples of educational innovations in his department.

Walter, a Professor of Practice off the tenure track, was affiliated with Information Science. Walter likewise found his department to be supportive of innovations in teaching approaches. He explained that he had gotten encouragement from his dean when he first started teaching; his dean told him, “fall back on the things that you know and the things that you did while you did teach in the Marine Corps...[which] was to do war gaming.” The encouragement from his dean possibly came from the dean’s first-hand experience with a war game scenario: “the dean actually had gone to an Army War College event and...observed a war game. And when he came back, he said, ‘You know, you’re teaching terrorism this semester. Why don’t you build a war game?’” Walter also expressed an awareness of available funding to support innovative approaches to teaching within his department, though he also suggested some of his colleagues might be reluctant to adopt an approach similar to what he had developed: “they’re not sure, by and large, 1) do they have time to build one, and 2) do they have the operational experience to pull it off.”

John, an assistant professor on the tenure track also in Information Science, largely echoed Walter’s perception that the department was generally accepting and supportive of innovative pedagogies: “I think there’s general support for that. I don’t necessarily need much support to make this happen...there’re now different funding vehicles available, so for example, I could hire somebody to write another environment like I did.” He later clarified, “We’re

always looking for ways to make our teaching innovative and attractive to students, so there's certainly a big push towards that."

Jeff, a lecturer off the tenure track, taught economics. He indicated that generally speaking, the people in his department "were willing to try new things." He said more people in his department seemed willing to try something new "if you could demonstrate that it was successful." His responses suggested that faculty in his position had limited freedom in terms of innovating their teaching, specifying that "different pedagogies are acceptable within limits." He said as long as students were learning the material, student grades roughly fit a normal distribution, and student ratings at the end of the semester were positive, lecturers within his department were "mostly autonomous." One of the pedagogy experts attested to lecturers in Jeff's department being upheld to these criteria, particularly the ratings students give their professors at the end of each semester:

I do know in the Economics Department here, they look at them. It's the only department where you *really* hear about that, especially on their standing faculty...they have to maintain a certain number, so they might be less willing to experiment if they thought it could be harmful.

Jeff explained, "there can be a hesitancy to try something new [in the classroom], especially if you don't know how it's going to turn out." This sentiment was reflected in nearly all of the interviews to some degree—there seems to be a tension between wanting to innovate, which is inherently a "risky business" as one of the pedagogy experts phrased it, and needing to meet certain requirements to maintain one's employment and/or uphold one's professional reputation. Jeff, toward the end of the interview, suggested that a database with "a huge library of examples" that catalogued successful and unsuccessful gamification attempts "would take some of the

hesitancy out of the equation and make it easier for [educators] to try this” in their own classrooms.

A possible source of “resistance” to changing pedagogical approaches was suggested by one of the pedagogy experts, who claimed, “there’s a lot of people who are resistant who will put up road blocks.” The phrase “will put up road blocks” implies a deliberateness to resisting change. She described a situation where a faculty member wanted to gamify her course but “need[ed] more assistance on the pedagogy side of things. And she’s asked for it, but she hasn’t been given it” by her department. She claimed that “it has to be the instructional designer and the faculty member willing to make sacrifices to make it happen” because in her perception, departments were typically unwilling to provide support for pedagogical change.

The lack of incentive structure noted by Leslie, Frank, and the pedagogy experts, along with the emphasis on research productivity and the potentially “harmful” impact low student ratings could have echo some of the concerns identified in the research on faculty adoption of new pedagogies discussed in Chapter 2 (Bok, 2006; Brownell & Tanner, 2012; D’Avanzo, 2009; Golter et al., 2012; Grimes & White, 2015; Lavis, Williams, Fallin, Barnes, Fishback, and Thien, 2016).

**Tenure and freedom.** Of the ten faculty interviewed for this study, five were tenured, one was “going up for tenure” at the time of the interview, and four were off the tenure track. Of the six tenure-line professors, two chose not to comment on tenure, and the remaining four expressed a range of perceptions about what impact their tenured status had (or had not had) on their pedagogical approach. Sara (natural sciences) and Frank (engineering) both felt that having tenure did not necessarily give them more freedom with their teaching, since research expectations remained quite high in their respective departments. Dennis (engineering) and

Leslie (music), on the other hand, both found some amount of “freedom” in having earned tenure. As the paragraphs below suggest, there is a fair amount of overlap between the concept of resistance to or acceptance of change, and that of tenure and freedom.

Sara and Frank did not necessarily find that having earned tenure provided them any more leeway or flexibility in their teaching. Neither one offered in depth commentary on the topic of tenure and “freedom” with pedagogy. Regarding tenure and teaching efforts, Sara said, “The expectations are still very high on research in our college, and I don’t think that it really enters in too much.” When asked if he could comment on tenure in relation to his teaching, Frank responded, “Nobody cares.”

Leslie explained, “I started [innovating with pedagogy] before tenure, and I don’t know if that was so good in some regards,” noting that one experiment she did resulted in low student ratings at the end of that semester. She perceived her status as a tenured professor as giving her “some freedom” to innovate in the classroom, but she also suggested that her continued innovation could be potentially detrimental to her achieving promotion to full professor status:

But in the long run, now I know I’m tenured, I’m going to do what I want to do. There’s some freedom with that. You know, I still would like to be promoted eventually, but I guess there’s no system to reward innovation, and failures associated with innovation are still viewed as failures. And that is a real problem with developing higher education pedagogy in every regard.

Leslie’s perspective on tenure and promotion is quite similar to her perspective on academic culture and resistance to change. In both contexts, she commented on the lack of a reward system for attempting innovations, while failed innovations could be harmful to one’s career—all stick and no carrot.



Similar to Leslie, Dennis found “more freedom” in having achieved tenure. He suggested that, pre-tenure, his teaching efforts were “constrained,” and that he lacked the time to devote to improving his approach to the classroom:

It gives me more freedom to explore sort of alternative teaching methodologies, and it’s not just that I was sort of constrained from a teaching perspective, but it gives me more time to emphasize teaching. Prior to tenure, prior to promotion, it was mostly focusing on research to get the productivity to go to the next level.

That Dennis felt “constrained,” and that he was “mostly focusing on research...to go to the next level” suggests that, regardless of how welcoming of pedagogical change his department may or may not be, he himself elected to “focus” primarily on research for the sake of promotion and tenure.

The perception that faculty need to focus on research “productivity” so that they can “go to the next level” was common among the *faculty who gamify* interviewed for this study, and it was also reflected in most (but not all) of the auxiliary voices of gamification and pedagogy experts who were interviewed, as well. One gamification expert, in explaining what he saw as resistance to changing pedagogical approaches, suggested one of the ways in which faculty might feel, as Dennis put it, “constrained from a teaching perspective.” He explained, “some faculty [at this University]...they’re told flat out, don’t do anything other than publish and these three other things, because it’ll weaken your chances for tenure success.” He described this as a “demotivating factor for faculty undergoing the tenure process” to attempt pedagogical changes, including gamifying their courses, “because the bottom line is, and we know this from research, any time faculty introduce a technological change or a pedagogical change, for at least that first year, their [student ratings] drop.” Though Dennis’s “constrained” experiences and Leslie’s fear

that pedagogical innovation may impede her earning promotion may differ from the deterrent identified by the gamification expert, this does lend credence to the idea of a connection between going up for tenure and being discouraged from focusing on teaching or pedagogy.

In addition to the concerns outlined in the sections above, another less prominent theme that emerged from the interview data was the idea of feeling alone or isolated from others in one's department. Leslie's interview portrayed a somewhat frustrated depiction of academic and departmental culture in the sense that navigating the norms or expectations of her field and department at times seemed a potential deterrent for innovating with gamification as a pedagogical tool. For example, at one point in the interview she said "it's lonely" to be the only person in her department working with gamification, noting "My work is reviewed by my colleagues who often don't understand what I'm doing. And as a junior faculty member...even encroaching into mid-career, I sought out others who did something similar so I knew I wasn't crazy." Her rationale, "so I knew I wasn't crazy," implies a sense of self-doubt alleviated by finding like-minded others. It should be noted that, when asked about other faculty she knew who gamified, Leslie named professors at other institutions, not at the study site. This omission reinforces her claim that "it's lonely" to attempt innovation within an environment that she perceived as hesitant, reticent, or otherwise slow to accept change. This interpretation that she viewed her field and department as slow to accept change is further supported by her claim, "a lot of the teaching and pedagogy that happens in my field is still very much that master class," as noted above.

Though Frank did not seem to consider his existence within his department "lonely" the way Leslie had, he did describe a respectful but distanced relationship with others in his department: "We have some really famous people in our department. I don't know who they are

because I don't care about my colleagues and they don't care about me, but I know they're here." He described his colleagues as "quite accomplished" overall; he spoke highly of the research productivity of his more seasoned colleagues and of the research potential of his less experienced colleagues, but did not really comment on them as teachers. His discussion of his colleagues' teaching was limited to an anecdote about a professor in his department who used to take the student rating forms directly from his faculty mailbox and put them in the garbage can without ever glancing at them.

Mary, a lecturer off the tenure track in linguistics, also hinted at a sense of isolation from her department. She explained, "I haven't really been invited to any department meetings recently, so it depends on who's in charge." That she felt the need to be "invited" to participate suggests that she viewed herself as somewhat of an outsider in her own department; whereas other faculty might view departmental meetings as an expectation or obligation, the language Mary used implies that she expected *not* to go unless she was "invited." She later added, "to be honest, I think some colleagues have, not knowing my history, have wondered what my role was, like how did I end up in this position." She acknowledged, "I didn't quite follow the same framework as other people, so they weren't quite sure what my credentials were," though she also noted that the people who knew her better "were more supportive." Aside from this brief discussion about her department and her colleagues, Mary did not offer other commentary on how she viewed academic or departmental culture.

Interviewees' perceptions of academic culture, specifically regarding how faculty learn to teach, the openness of their department regarding innovation, the extent to which they felt tenure gave them "freedom," and their relationships with their colleagues tend to align with published literature in these areas (Austin, 1994; Beyer, Taylor, and Gillmore, 2013; Bok, 2006; Brownell

& Tanner, 2012; Halpern, 1994; Hendrickson, Lane, Harris, & Dorman, 2013; Lattuca & Stark, 2011; Tierney & Bensimon, 1996; Virick and Strage, 2016), as discussed in Chapter 2. This understanding of how interviewees perceived the academic culture within which they performed their duties, particularly regarding their teaching, provides a backdrop against which their personal educational philosophies and what they value in education can be examined. It also suggests something of a disconnect between the desire to innovate and the institutional supports that could help ease the way toward innovating pedagogy.

### **Personal Educational Philosophy**

This section will introduce the participants by way of describing something of their philosophy on education, gleaned from interview data and other documents gathered during data collection. Against the backdrop of interviewees' perceptions of the culture and expectations of postsecondary education, their personal philosophies about what education *should* be both highlight the tensions they feel within the higher education context and establish something of an impetus for change, for innovating with their pedagogical approach. This section provides rich data for developing a better understanding of this study's main participants which, when viewed holistically, may serve as a rudimentary sketch of faculty who may be interested in pedagogical innovations like gamification (bearing in mind that this study's participants essentially self-selected into both gamifying *and* participating in this study—such a sketch cannot reflect the characteristics of those who gamify but declined to participate in the study).

**Introducing the participants.** This section is intended to introduce the participants who populated the *faculty who gamify* category and give the reader a sense of who they are as educators and what they value in postsecondary education. Nearly all of the participants had intended to pursue a career in education; only one interviewee became an educator after a full

career outside of academia. Participants will be introduced in alphabetical order according to pseudonym. I have copied Table 3.2 from Chapter 3 below to refresh the reader on some of the general characteristics of this study’s main participants before providing a richer description of each one.

Table 4.1: Faculty Who Gamify

Pseudonym	Department	Rank	Tenure Status	# of Years Teaching*	Gender
Ben	Health	Full Prof.	N	15-20	M
Dennis	Engineering	Full Prof.	T	15-20	M
Frank	Engineering	Full Prof.	T	>30	M
Jeff	Economics	Lecturer	N	10-15	M
John	Information Science	Asst. Prof.	TR	15-20	M
Leslie	Music	Assoc. Prof.	T	>20	F
Mary	Linguistics	Lecturer	N	15-20	F
Sara	Natural Science	Full Prof.	T	>30	F
Walter	Information Science	Prof. of Practice	N	10-15	M

\* Total number of years teaching at all institutions, not only at the study site  
 Tenure Status: T = tenured; TR = on the tenure track; N = non-tenure track

Ben, a full professor off the tenure track in health, had been drawn to the idea of spending his career teaching: “I wanted to be an instructor or a teacher...career path-wise, I always wanted to end up in academia, and largely be an instructor. It hasn’t quite worked out that way...they didn’t really hire me for my teaching capacity.” He explained that his experiences as a student “attracted [him] to” active pedagogies and active learning: “very few classes were what you would think of as lecture. There were a lot of discussion-based. So it was really interactive, and that probably is what attracted me to it...I thought that was pretty cool.” His desire to create learning situations where students could actively engage with the course material was evident at several points in his interview, particularly when he discussed his motivations for using gamification, which he described as his attempt to answer the questions,

how do you make this learning experience real? And how can you make it concrete?

And how can you make it connected to the lives of these students, you know, how do you make it where they can, they can see the value of it?

He returned to this idea of creating a different experience for his students when he described his decision to move away from the lecture format he had used in previous iterations of the course:

“I was trying to think about how do we make it, how do we sort of increase their experience of it, as opposed to sort of passively listening to a lecture. And so I started with the game SimHealth.”

As will be discussed in the “Pedagogical Goals of Gamification” section later in this chapter, Ben’s desire to “increase their experience of it” through the use of gamified learning contexts led to “real” or “concrete” educational experiences that Ben felt were “enriching” for his students.

Dennis, a tenured full professor in an engineering discipline, wanted to “get [his students] more excited about learning.” Dennis chose to try gamification because he felt “it can help students to I think not only engage in the topic, but engage in the process of learning.” His language here, specifically the minimizing adverbial phrase “not only,” implies a minimizing of “the topic” and a prioritizing of “the process of learning.” Dennis also expressed a desire to learn “how can [students] get beyond that novice learner stage so that they become a more competent learner?” Since Dennis specified that he was moving to a gamification pedagogy from a lecture pedagogy, this “more competent learner” idea suggests that students who “engage in the process of learning” may become more competent at learning than those who passively listen to “pure lecture.” Though Dennis indicated that his pedagogical experience so far mainly focused on lecture, project-based learning, and gamification, he also felt that “ultimately the learning goals that you have should be robust enough that it’s not exclusive to one particular methodology or pedagogy.”

Frank was a tenured full professor in engineering with over 30 years' worth of teaching experience in the postsecondary environment. Toward the beginning of the interview, Frank commented,

I don't think there's any strategy for being a good teacher in terms of "Oh, so-and-so uses clickers, and he gets good evaluations, so if I use clickers, I'll get a good evaluation"...I think it's really if you connect with the students and realize that you're there because you care, and you want them to learn as much as you hope they want to learn. I think you'll do alright as long as you're not completely off the network. And different people do that different ways.

In other words, the tools used to teach are not what makes students connect with their professors or their coursework; rather, Frank viewed a mutual investment in the learning process as one criterion for "being a good teacher." Early in the interview, Frank commented, "there's a notion that anybody can teach any subject to an undergraduate, and I disagree." He indicated that in depth knowledge and experience with a subject gave educators "stories and insights" relating to the subject area, making the learning experience both "personable" and "real." In his experience, "students like that, if you can give it relevance that you've experienced in your own life."

Frank's educational philosophy differed from other interviewees' responses in that he questioned whether educators, on the whole, were maybe too quick to discard lessons that did not *seem* relevant. Using the example of schools dropping cursive writing from the curriculum because typing has somewhat replaced writing as a necessary skill, Frank asked,

So we took [cursive writing] out of the schools, but was the lesson to learn that? Or was the lesson to learn that you've got to make 10,000 As before you're good enough to make

Bs, and that learning isn't always fun, and there's a standard you have to achieve, and it takes time and effort?

He commented that he "wondered if our forefathers weren't way smarter than we give them credit for, and some of these lessons were not for what they appeared to be."

Frank also viewed a distinction between knowing the facts about a subject and gaining an understanding of the subject:

You can look up facts on the internet, but you can't look up understanding, and that you have to have. And you can't get that understanding without having a certain number of facts to work with. You can forget the facts later, once you get the understanding and look them up when you need them.

In his view, "students think they don't need to know things because they can look it up whenever they want to." He considered this a "missing link;" because students knew that they could look up facts whenever they needed to, they did not "put in the time" with the facts to get to a deeper level of understanding about the subject matter. He described his role as guiding students toward developing that deeper "critical understanding."

Jeff was a lecturer in economics, off the tenure track. He taught for more than 10 years in this role and received awards for being an effective teacher. He was in his junior year as an undergraduate when he realized he wanted to teach, so he went to graduate school where he gained experience teaching large format classes. He considered himself "almost more old school in teaching," in that his classes were generally a combination of "chalk and talk" lecture and discussion format, and he occasionally used brief videos. Jeff saw value in getting students to understand "the reason why we're learning these things," and he claimed that using an economics video game in his course helped students reach that understanding.



Jeff often spoke of altering educational experiences in terms of a cost-benefit analysis. He said, for example, that there could be “a big up-front cost in terms of time and effort invested” into developing a course (i.e., adding gamification to a course) and he “wanted to make sure that students were getting some benefit” for that investment. Later in the interview, Jeff reiterated that he “won’t do it [gamification or any other pedagogy] just for the sake of doing it;” he wants to be “sure students are getting something out of the experience,” and he generally talked about this in terms of “more time spent thinking about the material, more time spent developing an intuition about how economics works,...see[ing] data being created in real-time,...[or] see[ing] data trends and mak[ing] predictions.” His hesitance to gamify “just for the sake of doing it” and his claim that “you want to make it the best student experience you can” suggest a strong commitment to his students’ learning.

John was a cognitive scientist on the tenure track in Information Science with more than five years’ experience teaching at the postsecondary level. Toward the end of the interview, John commented, “in an ideal world, students would come to us and they have learned to think, they have learned to critically think.” From that foundation, he felt

the postsecondary experience should expose them to a more focused field that leads to...in a loose sense of the word, a profession or professional area, an area to have a basis for a career and a lifetime of work that contributes for the benefit of society and our students.

He identified exposure “to science, to state of the art research...[and] the methods that lead to publishable results” as an important aspect of a postsecondary education. He also offered a negative definition of what he saw as the purpose of a college education: “University is not vocational. University is not job training. University should not be geared toward preparing

students for their first job. University should go far beyond that.” John noted that his perception of what “University” meant was influenced by his schooling, as he had completed his undergraduate and graduate degrees in European universities. He clarified, “I think still our job as a university is focused on providing the foundation for an intellectual life. It’s kind of not that different from when I say I teach programming, not Java.” The programming versus Java comment referred to an earlier part of the interview where he emphasized the importance of teaching students how to think programmatically: “If they’re taught right, they’re taught programming, how to develop an algorithm, how to think programmatically, right? And then it doesn’t really matter what the syntax of the language is that comes out of it at the end.” This suggests that he valued developing his students’ capacity for abstract thought over getting them to learn the content of the course.

Leslie was a tenured associate professor who taught music and music education courses. Her intention had always been to be an educator, and being a teacher was part of her sense of self: “I am a teacher. I love teaching. I am invested in this field,...from a very early age I wanted to be a teacher, I knew what I was going to do.” She spent over 20 years as an educator, and more than 15 of those years teaching in postsecondary environments. Her approach to pedagogy had partially been influenced by professors she had taken courses from: “the teachers that called to me, in undergraduate and in graduate school, were the innovators. They were the ones who were exploring and trying new things, whether it was successful, or if it failed.” She also spoke of books that influenced how she taught, particularly Lucy Green’s (2002) *How Popular Musicians Learn*. She explained that book influenced how she thought about pedagogy because “it really turned my profession on ear...[Green] brought in this idea of why are we using sheet music all the time? How about if we listen to something and figure out how to play it?”

Essentially, Green's book invited teachers to bring informal learning practices into the formal "master class" that has traditionally formed the basis of Western music education.

Leslie also referred to game designer Jane McGonigal and researcher James Paul Gee<sup>7</sup> as influencing her philosophy on education. At one point in the interview, she described a philosophical problem she saw with schooling at large:

I get it, it can be extremely stressful. I mean, learning shouldn't be a pain, right? It's really only in school, I think Jim Gee said it's really only in school that people can find learning a pain...this is his words, not mine, but learning should be like food or sex, it should be a great pleasure. You know, the paradox is how does school so frequently kill that instinct? I mean, if learning were a pleasure, people would want to learn forever.

She also positioned gamification as a potential solution for this "paradox": "through the combination of productive, innovative, contemporary pedagogy and gaming, we can kind of rekindle that primordial interest that we have in learning in the outside world in general and bring that back to schooling." This idea to "bring [that primordial interest that we have in learning] back to schooling" was something of a motif throughout the interview, suggesting it was one of the foundational aspects of her philosophy on education. At another point in the interview, for example, she said, "for me, in how I choose to use games and gamification, is it's a bridge between formal learning and informal learning, or between kind of in-school learning and out-of-school learning, and I want to break that boundary."

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<sup>7</sup> Leslie and other interviewees occasionally mentioned people who influenced them, though they did not typically specify (or could not remember) which books or articles they had read. McGonigal's (2011) book *Reality Is Broken* discussed the power of games in a similar perspective to Leslie's. Gee's (2005) article "Pleasure, learning, video games, and life" and his (2008) book chapter "Learning and games" reflect similar ideas to what Leslie described, as well.

She expounded on the ways in which games and gamification can “break that boundary” at several points in the interview, claiming, “I mean school is so much about the what and so infrequently about the why. And in games, particularly modern games, it’s all about the why, it’s all about the quest, it’s all about the mission.” At one point she juxtaposed the use of game thinking with addressing “why learning matters” in a rather impassioned assertion of her philosophy:

You’re forced into this world where you’ve got to learn the tools and the techniques in order to fulfill the “why is this important.” And that’s the model for new pedagogy, for me...why do you learn to add? It’s not because you need to learn to add, it’s because adding together the number of troops that you have in this encounter will help you to battle the—I mean, it needs to be part of that bigger story, that bigger why, why is this important. And I think if we make that flip, and gamification can help make that flip into why learning matters, the how and the what will just happen. Just like it does in games. It’ll just happen. People will seek the skills they need in order to answer the most important questions, in order to be the hero of their own stories. That’s my manifesto.

Ending her statement with the assertion “That’s my manifesto” suggests how deeply she held these convictions. This quote highlights one of the most prominent conflicts between how schooling typically occurs and Leslie’s philosophy on education, particularly in the schism between “the what” and “the why.” In attempting to “bridge...formal learning and informal learning,” she also wanted to bridge “the what” and “the why” so that her students would understand “why learning matters.”

Mary was a lecturer in linguistics, off the tenure track, who also worked as an instructional designer; she taught for about 20 years at the postsecondary level. Her intention

had been “to follow the traditional tenure track” doing both teaching and research. She placed importance on individualizing students’ learning experiences: “more and more I try and make it an experience where whatever things I can personalize, I try and personalize.” She also indicated that she believed it was important for students to feel interest in or be able to relate to the materials they were learning:

I really feel like it’s important to find a topic that’s meaningful to the student, otherwise...they’re just going to go through the rote steps, and it’s not going to be as good a quality as if it’s something they *can* connect with.

“Just going...through the rote steps” implies a base or possibly superficial level of learning, suggested by the downtoning adverb “just,” which minimizes the action of the verb. Mary implied that she wanted her students to do more than “just...the rote steps” because going beyond that superficial level would likely result in a higher quality learning experience for her students. Additionally, this idea of getting students to “connect with” the material came up several times throughout the interview. Mary seemed to want her students to be able to connect the course content with their own lives as well as be able to make connections among the various concepts taught in the course.

Several aspects of Mary’s educational philosophy were described through game thinking and game language. For example, at one point she talked about students developing analytic tools and linguistics skills in terms of leveling up a character’s abilities in a game. Referring to the research done by James Paul Gee, Mary explained how she saw the idea of leveling up applying to the tools and skills students should be learning<sup>8</sup>. She explained that each analytic tool, each method, each line of reasoning was like a different tool in a video game; they had to

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<sup>8</sup> Gee (2013) argued, “learning systems, like games, should involve level design and how it helps learners ‘level-up’” (p. 151).

first be understood independently of one another, but then they could be combined for more advanced analysis: “as you get more tools together,...you can start planning more complicated and complex actions...I can really start planning an actual campaign as opposed to just whacking with my sword.” She was interested in finding ways of “making explicit certain skills” and showing students how to combine different skills and analytic tools to conduct more in depth analyses.

Sara was a tenured full professor in the natural sciences, and she had taught at the study site for roughly three decades. She perceived that students in her department, as a whole, “[weren’t] really learning that much.” Because “the gains [in their learning] are almost nothing,” she said her primary concern was for her students to get “more appreciation and perspective,” while “teach[ing] them how we go about doing calculations...[or] improv[ing] their math or reasoning skills...That’s a secondary goal for me.” She expressed a desire for her students to “be exposed to” ideas that could lead to them “hav[ing] a more satisfying life”:

I think as human beings, they’d have a more satisfying life...if they were open to being exposed to these things, and then they’d know that later in life they could glance at an article on science or go to a concert...and enjoy it, but that’s not the way things are.

Her claim, “but that’s not the way things are” was reinforced throughout her interview, at times juxtaposed with the ways in which she perceived the need to “adapt” her pedagogical approach. For example, after explaining that students struggle with course content because they have more distractions to cope with than previous generations had, she commented, “I’ve learned to present less and to really make the points that I want to make, and I don’t have to do all of it. And less is more, right, that’s the thing. So I think that’s important.” She also expressed some frustration about students’ claims that they learned best by memorization, which was at odds with how she

felt learning should occur. In describing how she thought learning experiences should be designed, for example, Sara used several tactile kinds of verbs, like “maneuver,” “move,” and “manipulate,” suggesting that she valued learning experiences where the learner would be actively *doing* something to build understanding, rather than memorizing facts by rote.

Unlike the other interviewees, Walter had not intended to be an educator. He spent his career in the Armed Services and happened into a position teaching security courses at the study site after he retired. Though he was occasionally given teaching responsibilities in the Armed Services, he had no training in pedagogy. When he began teaching at the study site, he recalled, “I couldn’t have defined pedagogy back then, I don’t think.” However, a relative with a terminal degree in Adult Education offered him advice along the way, particularly regarding “how to approach the classroom, how to approach course development.” His approach to the classroom suggested that he valued hands-on or experiential learning. Specifically, he used a nine-week long extended simulation in each of his courses to “challenge some of the decision theoretic concepts that I was teaching in the course, [and] put the students in the mindset of having to solve a problem given an organizational construct and within an agency’s analytic mission.” That he was willing to devote between nine months to two years to researching, developing, and constructing each of the scenarios he used suggests a high level of fastidiousness regarding the learning experience he intended to provide for his students. He indicated that he wanted these scenario games to be as realistic as possible, claiming,

if you’re trying to teach serious analytic, structured analytic techniques, and for the purpose of these students...doing this for a living in the analytic career field, then you need to have the same rigor in your scenario as you demand in their products.

This quote further evinces how fastidious of an approach Walter took regarding his pedagogical decisions and how much realism he intended to infuse into his students' educational experience.

Some of the commonalities that emerged included a general sense that the educational system was falling short of interviewees' expectations in various areas, and this idea will be discussed in more detail in the section below. Interviewees also shared a desire to make learning experiences “real,” “concrete,” and/or “meaningful” for students, and they often sought to foster such experiences by making learning active within their courses. For some, this meant shifting from a 55-minute “pure lecture” to shorter mini-lectures interspersed with other activities, and for others it meant moving away from the lecture almost entirely in favor of collaborative “peer-to-peer” learning situations, where students needed to work together to solve a given problem. All of the interviewees indicated an awareness of how much students “enjoyed” their courses, and several of the interviewees opted to use gamification as a pedagogical tool expressly to improve students' enjoyment and/or to mitigate what they perceived to be a “difficult” or “painful” learning experience.

### **Personal Rationale**

Though only two interviewees spoke directly about learning theories or motivational theories by name--both of them identified Self-Determination Theory (Deci & Ryan, 1985) as influencing their pedagogical approach—most of interviewees described ways in which they involved students in making choices about their learning (autonomy), encouraged students to make connections with others in the class via teamwork assignments (relatedness), and attempted to ensure that assigned coursework pushed, but did not overreach, students' abilities (competence). This seems to suggest that most of the faculty who gamify interviewed for this study, whether wittingly or not, seemed to be applying the precepts of Self-Determination



Theory in their pedagogical decision making. Two interviewees also spoke of the impact game theory had on their approach to the classroom. One additional participant explained that she had been motivated by the idea of getting students to lose themselves in learning the way players can lose themselves in a game (i.e., so immersed in the experience as to lose one's sense of time); the lost sense of time is one of the key markers of being in a flow state (Csíkszentmihályi, 1975; Csíkszentmihályi, 1988b—see Chapter 2 for a brief discussion of Flow Theory).

One thing that became crystal clear throughout the data analysis process is that all of the interviewees were devoted educators, and each of them demonstrated a deep sense of caring or concern for their students' educational experiences. This is not to suggest that only faculty who gamify care about their students, nor does it suggest that faculty who do not gamify do not care. It may, however, suggest that faculty who do not prioritize their students' educational experiences over departmental culture or expectations for research productivity may not be interested in gamifying their course, though additional research would be needed to make that determination.

**(dis)Satisfaction with educational experiences.** This part of the model is labeled “(dis)Satisfaction” for two reasons. First, it is intended to reflect the full range of perceptions from dissatisfaction to satisfaction without assuming that either end of the spectrum is more truthful or accurate than the other. It acknowledges that all interviewees' perceptions fall somewhere along that spectrum, and it assumes that such perceptions are contextual by nature, in keeping with the interpretive and pragmatic underpinnings of this study. Second, it is intended to capture the idea that the interviewees who used gamification in their courses generally iterate on the game mechanics with the aim of moving the needle toward greater satisfaction with the educational experience students receive through the course.

Nearly all of the faculty interviewed for this study expressed some level of (dis)satisfaction with various aspects of the educational experience, some of which they attempted to address within their own classrooms, and some of which they acknowledged were larger-scale issues. The themes that emerged generally reflected macro-scale systemic issues in American education, and/or the understanding that the students entering their classrooms are different than students used to be. For some of the interviewees, these two factors clearly fed into each other, whereas other interviewees offered brief or passing critiques on specific aspects of education.

What emerged on closer analysis, though, was that these interviewees were not simply identifying what they perceived to be shortcomings, but they were also exploring ways in which gamification might (or might not) mitigate what they saw as problematic, to the extent that they could address those concerns within their own courses. Educational or pedagogical issues that faculty identified but did *not* attempt to address through gamification are included in the following sections as well, in part to clearly depict interviewees' perceptions and in part to demonstrate perceived limitations of gamification. For the most part, what interviewees identified as potentially problematic in education highlight some of the tensions interviewees felt between academic culture and what they, themselves, valued in education. Some of these issues can be addressed with gamification and some cannot (or have not been yet). The intent throughout the remainder of this section is to provide a nuanced picture rather than to cherry pick only the issues faculty tried to mitigate through the use of game mechanics or game thinking; a balanced presentation of gamification should show its perceived limitations as well as its successful and unsuccessful applications.

On the whole, the kinds of (dis)satisfaction interviewees reported tended to stem from a discrepancy between what they thought education *should* be and what they perceived education to *actually* be. Two fairly intertwined threads emerged in this regard. One thread described systemic issues with the American educational system writ large; several interviewees described various ways in which education across the board was not quite hitting the mark. For some interviewees, this was evinced in discussions of the purpose of a college education. Others commented on the shortcomings they perceived in primary and secondary schooling that left students poorly prepared, academically and emotionally, to pursue collegiate level coursework.

The second thread focused more on how interviewees perceived the students themselves, particularly in terms of their being unwilling to invest time and effort into their own education. About half of the interviewees seemed to attribute students' unwillingness to invest in their education to the ways in which students' prior educational experiences had shaped them before they enrolled in college; some also felt students today had more distractions to contend with than previous generations. By and large, interviewees' (dis)satisfaction did not seem to be directed at the students themselves, but at the students as a product of their educational histories to date. Some of the interviewees drew causal connections between them, such as when Sara attributed students' hating math to how they had been taught math in high school.

Seeing a causal connection between students' prior educational experiences and how those students act or interact with their college coursework is why these two emergent threads are very closely intertwined. Though the purpose of this study is neither to validate nor to challenge such causal claims, it is important to understand how faculty perceive their audience—their students—because such perceptions likely factored into their pedagogical decision-making. It is also important to understand that, for some of the interviewees, their use of gamification was

an attempt to reach out and “surprise” students who may have become jaded or blasé toward learning because of their prior schooling.

In explaining what a postsecondary educational experience should provide for students, John claimed the purpose of a university was not to train students for a job, but to prepare them to contribute meaningfully in a professional career. He reinforced this idea through repetition of a negative definition: “University is not vocational. University is not job training. University should not be geared toward preparing students for their first job.” Semantically speaking, his use of two declarative “is” verbs followed by the modal “should” suggests some degree of disconnect between his personal view that university is not meant to train students “for their first job” and his perception of reality. This interpretation is borne out as he continued to define what a university education “should” provide:

University should lay the foundation for careers and also for an intellectual life. Now, in 2017, in this country, with our system of high school, or general education, with our incentive system for colleges, with the cost that’s associated with colleges, this is a lofty goal, right? So I’m fully aware that we’re not there, we’re moving further away...It’s already causing problems in that, you know, we are as a nation, we’re far behind in our education, and that unfortunately includes many of our undergraduate institutions.

His claims that “we’re not there, we’re moving further away...we’re far behind in our education” support the interpretation of a discrepancy between his personal educational philosophy and the environment in which he was situated. He indicated that a systemic change from viewing students as students to seeing students as customers was one of these “problems,” particularly at the study site: “we’re under great pressure to please the customer. Students are not treated as students anymore. Students are treated as customers.” He explained that this idea of

“students...as customers” factored into his pedagogical decisions to an extent because his “evaluation as a lecturer is solely based on the student evaluation”:

I’m not evaluated according to whether I teach them anything. I’m not evaluated to whether experts think I’m teaching them well. I’m evaluated according to whether the customer likes the experience. And I think gamification to some extent plays into that because it provides a great experience for most students.

Viewing a student as a customer creates a shift in the dynamic between teachers and students that could be problematic. It implies that the student has more power in that dynamic (i.e., the old adage “The customer is always right”), which could be a positive or a negative, depending on the extent to which students themselves prioritize liking a class over learning from it when they fill out the student evaluations at the end of each semester. This prioritizing of “the customer lik[ing] the experience” over the student learning from the experience (i.e., “I’m not evaluated according to whether I teach them anything”) is somewhat at odds with John’s stance that a postsecondary education should “lay the foundation for careers and for an intellectual life.” Though his department, or at least the people with the authority to make decisions about John’s promotion and tenure status, looked only at his students’ evaluations—not at his actual teaching ability—John himself was “more concerned...about [his] students actually learning well” and being able to meet certain standards upon receiving a passing grade in his course. While liking an experience and learning from it are not mutually exclusive, this discrepancy between John’s priorities and what he perceived his department’s priorities to be represents one kind of tension between the faculty interviewed for this study and the academic or departmental culture in which they work. For John, the use of gamification largely closed that gap because he was able to use competition and collaboration mechanics to motivate his students to engage more deeply in

learning to think programmatically and algorithmically, as will be discussed in more detail later in this chapter.

Leslie expressed a similar sentiment to John's "intellectual life" when she indicated that she wanted her students to be lifelong learners: "I want learning to be lifelong, I want learning to be, 'Here, I've learned something in school, and now I'm seeing it in life' or 'I've learned something in life, and what are my questions, I'll bring them to school'." The repetition of "I want learning to be...I want learning to be..." in this context suggests that she did not view current educational practices as leading to lifelong learning. It also suggests that getting her students to be lifelong learners is something she aspires to, not something she necessarily considers *fait accompli*. However, she also indicated that there is a "barrier" or a "boundary" between "in-school learning and out-of-school learning." She claimed, "I want to break that boundary." When asked to clarify how "breaking down that barrier" could lead to lifelong learning, she explained,

in education, we have a fairly long history of teaching tasks and teaching knowledge. We don't focus as much on process...it's no longer important that we drown our students in knowledge, especially things that they can Google. We need to drown them in process. We need to take their own natural curiosities and help them, equip them with ways in which to follow that interest, to find the answers that are most important to them, to pose questions that are meaningful in their lives...I mean school is so much about the what and so infrequently about the why.

She explained that "the why" can be a strong motivator for students, because if they see how a lesson applies to their own life or how it can help them achieve their goals, they "will seek the skills they need in order to answer the most important questions, in order to be the hero of their

own stories.” This perception is borne out by the pedagogy experts, who agreed that students “have to see value in the instruction. That’s a big one. You know, ‘Why am I learning this?’ Not only ‘Why do I need to know it for this class?’ but...more important, “Why do I need to know this?” This discrepancy between “the what” and “the why,” along with the desire to prioritize “the why,” was reflected to some extent in nearly all of the interviewees’ responses and will be discussed in greater depth in the “Enriched Educational Experiences” section later in this chapter.

Several of the interviewees also expressed concerns about students’ educational experiences in K-12 that might leave them poorly prepared, academically and emotionally, for collegiate work. Some of the interviewees offered brief comments indicating that incoming students were not as well prepared as they should be, while others delved into what they perceived to be the cause(s) of students’ lack of preparation for college-level coursework. John, for example, commented that “*in an ideal world*, students would come to us and they have learned to think, they have learned to think critically” (emphasis added). The phrase “in an ideal world” indicates that he would *like* to see students who “have learned to think critically” by the time they enroll in college, but that was not how he perceived the *real* world to be, suggesting that he perceived K-12 education as failing to teach students critical thinking skills. He furthermore commented that, due to systematic grade inflation, students “expect grades in the A/B range” for “just trying,” regardless of the actual outcome of their efforts. In his perspective, this systemic inflation has “eroded” the effectiveness of grades as a source for external motivation, arguing that “we need a better incentive structure.” His desire to foster “a better incentive structure” led him to investigate ways to support students’ internal motivation—and

thus to Self-Determination Theory (Deci & Ryan, 1985)—since he felt external motivators like grades had been “eroded.”

Frank was one of the interviewees who expressed, at length, some concerns about the ways in which students were being educated before they reached his classroom. He indicated part of this when he spoke about educators removing apparently obsolete topics from classrooms, possibly without understanding the intended lesson or considering the long-term ramifications (as discussed in the “Introducing the participants” section above). He gave the example of schools cutting art classes and explained how that had a negative impact on students’ ability to visualize and draw their ideas in a way that could be conveyed to other engineers:

I had this guy from [major corporation], and two of our students wanted to explain something. Sketching and drawing is the language of engineers, to a large extent. And they couldn’t sketch their idea. And it was a mechanical thing. They couldn’t sketch it, and they couldn’t even figure out the orientation they should sketch it from to explain it to us. And...we took mechanical drawing in grade school. Seventh grade, I think I actually started mechanical drawing. And all engineers took this.

However, since programs like AutoCAD and other drafting software have become widely available, Frank noted that fewer and fewer students were taught how to draw anymore. As a result, his students were less capable of expressing their ideas, and Frank had to add lessons on drawing and sketching into his course to address the issue. Admittedly, Frank did not use gamification to solve this particular issue, but it does exemplify one of the ways in which systemic trends in K-12 education can have ripple effects that can become classroom-level concerns for postsecondary educators. Though this specific example does not involve gamification, it is included to portray one the ways in which interviewees perceived the student



body as being less prepared than previous cohorts. It is also intended to provide a more balanced perspective by demonstrating that faculty who use game mechanics as a pedagogical tool do not view gamification as a solution to every sticking point they encounter.

Sara, who also spoke in great detail about how students' prior schooling left them poorly prepared for college work, claimed that students no longer know how to learn in part because they are no longer taught effective note-taking and study skills. She explained, "systematically studying them [class notes] is not—The way that they think they would study for a science test is by recopying notes. And that is what my daughter was being taught to do in high school." She indicated that this was particularly harmful in science and math courses, where the material was expected to build off of previous lessons, since recopying notes might improve retention but likely would not improve understanding. Sara also expressed concern about fundamental science concepts being over-simplified in primary and secondary schools, which was possibly causing her students to struggle with understanding basic concepts in her course. She recounted one particular problem she saw students struggle with year after year as an example: identifying how many stars are in our solar system. At the end of the semester, she said, "fewer than 50 percent" of students know that there is one star in our solar system. She explained that when students encounter certain information about the planet Earth in primary and secondary school, the material is over-simplified, and when she then teaches a more nuanced account of the same material, students "struggle" to learn it. In her perspective, students' misunderstandings about scientific concepts are directly related to their inability to take notes and study effectively:

Because they don't really know the sun's a star, and they don't really know that planets aren't stars, and they don't really understand that the solar system's not just huge and everything. You know, the solar system being smaller than the universe is another thing

that some of them don't get. *Because they're all just words that they've written down, that they've copied.* (emphasis added)

The repetition of “don't really know...don't really know...don't really understand,” along with the downtoning adverb “just” in “just words” suggests that Sara did not feel that students were actually grasping the import behind the words, not developing a deeper understanding of the material. This word choice bears a striking resemblance to Mary's “just going...through the rote steps” comment discussed above. Sara's description of this phenomenon was somewhat analogous to learning the wrong lyrics to a song—it takes effort to go back and relearn the correct version. As Sara explained, students are usually unwilling to invest the time or effort needed to relearn it, especially for a general education course. She expressed frustration over this issue: “But you see, it's very unsatisfying that they've gone through the semester and not really gotten anything from it, which means that it was a waste of their time. And that's bad, right? I don't want to waste their time.”

That students have “not really gotten anything from” the course was not simply Sara's perception; she offered data to support her view. She explained that all of the students University-wide who took the introductory-level course, regardless of who taught it or which section of the course they were in, took pre- and post-tests on a validated assessment used nation-wide. Based on the comparison of pre- and post-test scores across all students who had taken the course at the study site in a given year, Sara said, “the gains are almost nothing...I mean people aren't really learning that much, which is why it's better for me to think that what they're getting is more appreciation and perspective or something. Otherwise I get too depressed.”

Because she perceived that students were not entering her course with accurate prior knowledge or effective study techniques, Sara felt the need to alter some of her pedagogical strategies. In particular, she reduced the amount of content she intended to cover each semester: “I’ve learned to present less and to really make the points that I want to make, and I don’t have to do all of it. And less is more, right, that’s the thing. So I think that’s important.” The other pedagogical change she made to accommodate students entering her course with weak academic skills was to add game mechanics to her course, first by giving it a narrative structure because “there’s the idea that teaching in the context of a story can be good, I mean that’s, for the story-based course, about half of our students feel that a story makes it easier to learn.” She eventually developed a full game out of the course, though at least one section of it continued to be offered as the narrative version.

In addition to their students’ academic preparation, several interviewees also addressed the emotional or affective aspect of the learning experience. Nearly half of the interviewees expressed the perception that students viewed learning as a difficult or painful activity, though the interviewees who commented on this aspect in detail generally did not feel that it *should* be difficult or painful. For example, Leslie spoke at length about the negative impacts failure in an educational setting could have on students and suggested that game thinking might mitigate some of the negativity:

failure in school is permanent and it’s punitive. I mean, if you think about the way that students encounter failure in education, it’s failing a test. It’s failing a course that is forever on your transcript. It’s failing an assignment that affects your overall grade and lowers your ability to do well. Games don’t do that. Games fail, but you have every

chance to succeed after a failure in a game, and wouldn't that be interesting if education was more like that? If we could fail repeatedly with no punitive cost?

Her presentation of failure in education compared to failure in games is strongly reminiscent of Dweck's (2006) concept of how a sense of failure can affect students with a fixed versus a growth mindset. Toward the end of the interview, Leslie commented, "I get it, it can be extremely stressful. I mean, learning shouldn't be a pain, right? It's really only in school, I think Jim Gee said it's really only in school that people can find learning a pain." As discussed in the "Personal Educational Philosophy" section above, Leslie viewed innovative pedagogy, games, and gamification as a way to potentially make learning *not* a pain, a way to "rekindle that primordial interest that we have in learning in the outside world in general and bring that back to schooling."

Mary echoed a similar sentiment when she described how she perceived students encountering new or unfamiliar material. She talked about students being "a little bit frightened" when they were "confronted by a language [they] don't know." She explained that "the fear of other languages is natural," but also said she wanted to find ways of showing her students that "it is not as scary as people realize." She wanted to find ways to help her students "get over that" fear so they could appreciate how interesting language can be. Mary discussed her use of role-playing scenarios so her students could see "what [it is] like to speak a non-dominant language" and the use of humor to diffuse some of the "fear" of being "confronted" by the unfamiliar.

Sara also described learning as "difficult" or "painful," and she partially ascribed that to the way students were being taught to learn or to study in high school. Of all the interview responses, Sara's diatribe on learning prior to college demonstrate most clearly the intertwined nature of how prior schooling experiences impact students' ability or willingness to engage with

ideas presented in college. At one point in the interview, she said of her students, “they’re scared, for one thing, and their minds aren’t really open to [learning].” When asked to clarify, she explained,

They hated math in high school...the way that they were being taught math was drill of a certain kind of problem at the beginning of the week, practice with that kind of problem in the middle of the week, and then a quiz at the end of the week. The next week, there was another topic which was often very detached...Most of them got As. But they didn’t understand anything of what they were doing, and if forced to sort of mix the kinds of problems together, a lot of people would struggle.

Because they “struggle[d]” with math, Sara explained, they “convinced themselves somewhere along the line that they weren’t good at it.” As a result, whenever students in her course encounter “a number or an equation...[they] panic.” The way Sara described her students’ “panic” resonates with Leslie’s and Mary’s perspectives on learning being “painful” or “scary.”

Regarding the other thread, with a greater focus on the students themselves rather than the system that produced them, two intertwined themes emerged. One theme was an acknowledgement that students today are *different* from the way students used to be. Some interviewees simply observed this perception and moved on to other topics, while other interviewees attempted to explain how or why students had changed. The second theme, which is closely connected to the first theme, was that students were not willing to invest time and effort into their own learning.

Several of the interviewees discussed the ways in which the students entering their classrooms were different from students in previous years or previous generations. Some interviewees, such as Dennis, observed that students had changed without attempting to explain

the cause of the change. Juxtaposing the idea that students were changing with the idea that he needed to adjust his pedagogical approach accordingly, Dennis claimed,

I see students changing in terms of their, how they learn I guess is the best way of describing it. I see the old methods of pure lecture, of 40-50 minutes a class session, just wasn't really effective in terms of reaching the students, and so I wanted to...hit the target of sort of the majority of students...that target was moving more. I was losing that target by lecturing for 50 minutes every class session.

As Dennis explained, this realization was one of the primary catalysts for his decision to move away from a “pure lecture” format and try a different pedagogical approach—namely gamification.

For other interviewees, the perception that students have changed resulted, at least in part, from some of the issues they described in a broader, more systemic sense, such as Sara's claim that the way students are being taught math in high school made them “afraid” of the math they encountered in college (as discussed above). Similar to Sara, Frank also identified students' math skills as a particular area of weakness, compared to previous students: “anybody who's been teaching very long at all will say, ‘Boy, the math skills that everybody's coming in with are pretty weak.’ And I just mean the basic—I don't expect them to memorize integrals anymore.” At another point in the interview, Frank returned to the idea that students were “not performing at the same level” anymore:

I doubt you could talk to any faculty member who's been at this as long as I have who wouldn't say that the students we have now are not performing at the same level they used to. They're not dumber by any means. But, it's pretty clear they don't put in anywhere near the effort studying that students once did.

Frank attributed this lack of time and effort spent studying to students having “a lot more distractions and so forth.” During an earlier, unrecorded conversation, Frank had also brought up a similar idea, saying that students were too distracted by their smartphones to focus on their studies.

John offered similar comments about students’ lack of a willingness to put effort into their studies. He guessed that only about 20 percent of the students who enroll in the computer science major through his department actually become programmers. He said that students did not seem to believe that they would actually have to try, and when they realized that they could not progress in their courses without putting in the effort to learn programmatic and algorithmic thinking, they would switch majors.

Sara espoused a similar view to John and Frank in that she perceived students as less willing to put effort into their academics than students in previous years or generations. She attributed this, at least in part, to students “know[ing] less about how to learn than they did before” and to not having been taught effective study methods prior to enrolling in postsecondary education (as discussed above). Sara commented,

students expect to be doing less than they used to expect to be doing. They know less about how to learn than they did before. Most of them have never used a textbook in high school. And they don’t even use them in college, now...The way that people do things is very different.

Sara explained that it was commonly understood that students were expected to spend “three hours of work per credit outside of class,” but she also noticed “that wasn’t what students were spending. They were spending maybe one hour per credit outside of class.” She explained that this was a downward trend that had been continuing for several decades: “Now it’s almost down

to nothing they expect to be doing, so you don't really have anything but their attention in class, except for right before the test when...they'll try to cram." She found that students would not take her course seriously, calling it "just a gen ed." Sara also noted that students in her classes had increasingly prioritized their time and effort around networking, rather than academics: "People think the connections they're making are more important than any knowledge they may gain, and the connections might be with friends rather than with faculty or classwork, and...certainly if it's not in their major, then it's not deemed important." Sara described these various factors combining to whittle away at how much time and effort students were willing to invest in their coursework.

Another way in which interviewees viewed students as differing from previous generations of students relates to what experiences they may have had outside of school. Frank, for example, talked about how his leisure time activities helped him develop a passion that he would pursue throughout his career, but he commented that students no longer seem to have that kind of passion to guide or motivate their studies. He explained,

[I] admit that most of what I learned about [my field] I didn't learn in school. I learned by building models when I was younger, and I went to school to learn the mathematics and the theory. And unfortunately, our students don't seem to have that background of building, being passionate about [building models]. So how do you put that experience back in?

Frank's description in the passage above suggests something of a formal learning vs. informal learning dichotomy, which seems to echo Leslie's perspective. Frank's question, "how do you put that experience back in?" represents a desire similar to Leslie's desire to "break down that barrier" between in-school learning and out-of-school learning—both of them feel that there is



something in that out-of-school learning experience that can spark a kind of curiosity or passion that may be missing from more formal schooling contexts.

This idea that students have changed, or that students are less willing to invest time and effort into their education than previous students had, is not uncommon. Two of the three pedagogy experts interviewed as ancillary voices also addressed this concern unprompted. One of them, who had spent much of her career in a faculty development type of role, suggested that students' reticence to invest in their own education can lead to faculty feeling frustrated in the classroom:

[One] assumption they make is that students will come to class prepared and do homework really thoroughly, that students are going to make the effort to learn. That doesn't happen like it should, even in the more rigorous disciplines. So there's a sense of frustration, ...like "How do I deal with this? They come to my class, and they don't know calculus. What am I supposed to do?" I see heavy reliance on use of extensive lecture approaches without much time for practice or feedback or interaction in classrooms.

This "sense of frustration" seems a fitting description for experiences like Sara's and Frank's, and possibly to a lesser extent, Dennis's and John's. It also lends credence to Dennis's rationale for moving away from "lecturing for 50 minutes every class session" and Ben's desire to "increase [students'] experience of it, as opposed to sort of passively listening to a lecture."

The combination of faculty's perceptions of shortcomings in the educational system and their perceptions of how students have changed led several of the interviewees to attempt changing their own pedagogical approach in order to better reach their students. Frank acknowledged that, though the

students that we have don't seem to be performing at the level they used to, I can't do too much about what comes into [the department] as a freshman. All I can do is control what comes out as a senior...So I can't sit and gripe about they're not as prepared as they were 10 years ago. This is what I have, and I have to get as much out of them as I possibly can.

This seems to be a commonly held sentiment among interviewees—that though incoming freshmen may have changed, students who graduate from the university are still expected to meet certain criteria—so something about the educational experience students receive during their time at the study site likely needs to be adapted. From Dennis realizing he “was losing that target by lecturing for 50 minutes every class session” to others recognizing that students were not willing to put much effort into their learning, to Leslie wanting to do something “*really* divergent” at the intersection of gaming and pedagogy, one of the strongest threads connecting the various interviewees was a willingness to innovate in the classroom to address these perceived shortcomings.

**Willingness to innovate.** All of the faculty who gamify interviewed for this study indicated a willingness to innovate or to take risks with the way they approached teaching a course. Several of the interviewees discussed classroom innovations that both did and did not include gamification; a few of the non-gamification innovations will be briefly mentioned in this section to give the reader a broader perspective of what interviewees considered innovative. Pedagogy experts indicated that this willingness to innovate tended to be uncommon among faculty at the study site: “I see very few faculty willing to embark on this [innovating with pedagogy] generally on their own.” Interviewees seemed to range from Jeff, who described himself as “almost more old school in teaching,” to Leslie, who said of herself, “I’m kind of like

I think a unique bird in that regard. I'm like, 'Let's try it! Who cares if it fails?' or 'Let's learn from the failure!'"

In describing his previous teaching experiences, Jeff explained that his pedagogical approaches, when he began teaching as a graduate student, were "limited" by the technology available in the classroom. He described his initial pedagogical approach as "chalk and talk" because of those classroom limitations, but when he started teaching at the study site and could use the smart podia in the classrooms, he began to incorporate different pedagogical methods. At one point, he had added an achievement and reward structure to his course, which was designed to encourage students to improve their attendance and to try for higher scores on their quizzes and exams. Though he eventually discontinued the achievement system because he found it "too complicated" for large format courses, it demonstrates that he was willing to invest the time and effort into trying something he had not tried before in order to improve certain metrics in his course (i.e., attendance, exam scores). Though Jeff considered himself somewhat of a gamer, the idea to use video games to teach economics did not come from him. Several years ago, one of his colleagues was developing a video game related to economics, and Jeff was invited to use the game in his own courses. Since then, he used the game nearly every semester, often with community and competition mechanics overlaid on the game itself as he explored ways in which to encourage students' participation and engagement with the game experience.

Mary, like Jeff, had also tried out an achievement and reward system. She commented, "I was also doing educational gaming, so I wanted to try out gamification because...I liked the idea of games can introduce content in a way that traditional education can't." She explained, "I do a lot with, kind of like technology applied to the classroom, like educating through technology kinds of things...different tools, different technologies throughout the years." At

several points in her interview, she talked about trying out new ideas and new technologies whenever she heard about them: “whenever we get new tools, I try them out, so [recently] I’ve expanded more into discussion boards.”

Though John did not offer much commentary on his willingness to innovate, he did suggest that his department encouraged its professors to try new things with their teaching: “there’s some [funding] support available, and it may well be provided for such approaches. We’re always looking for ways to make our teaching innovative and attractive to students, so there’s certainly a big push towards that.” He also indicated that his department held meetings “to discuss what we can do to support everybody in the classroom,” which supports his perception that his department is supportive of classroom innovations. Toward the end of the interview, he added, “if there are other ways of teaching people and getting them to do well, I’m all ears.” John expressed a particular interest in “developing a teaching infrastructure for myself that would scale up” and “automatically evaluate” students’ submissions so he could use it with any class size.

Frank demonstrated a considerable willingness to innovate, and had even pursued and secured federal funding in that vein. He received a National Science Foundation grant that would allow him to investigate an innovative teaching approach. He said the main goal of the grant was to answer the question, “can you teach engineering without examinations and homework? Can you teach it and make it fun?” Regarding the course he developed out of that initial grant, he said, “I think it’s succeeded probably way better than anybody thought it would, *except it takes a crazy person to do it*” (emphasis added). This “crazy person” idea ties back in to Frank’s earlier comment that taking over this course would be “the kiss of death” for a

younger faculty member. It also echoes Leslie's comments about seeking out others who gamified "so [she] knew [she] wasn't crazy."

Frank expressed a somewhat pragmatic perspective on trying new things in his courses. At one point in the interview, he explained,

I do a lot of things that are kind of different and new that end up that way, that I just start doing them because I think I get a little frustrated. I know something's not working, and you try to improve it, and then it works better.

He gave an example of giving homework quizzes after he realized that students were basically looking up the answers to the homework online rather than working through the exercises themselves. He explained,

I adopted this idea that...I would assign the homeworks [sic] as always, and then I wouldn't collect them. The day they were due, I'd give an in-class quiz on the homework, and if they did the homework, that quiz should be really easy. If they didn't do the homework, it should be pretty much impossible.

Frank described his approach to trying new things in the classroom as "guided kind of intuitively," where he would try something out, and then later he often would come across research supporting what he did. It should be noted that Frank did not consider what he did with gamification (notably the use of collaboration and competition mechanics) to be innovative, though he was willing to innovate in his courses as need be. Additionally, it should also be noted that Frank did not consider the format of his course, which spanned multiple years rather than one semester, to be very innovative, either, though having the same students in the same course for several years would probably be considered highly innovative outside of his discipline. This

is to suggest that what is or is not considered innovative for different faculty members is likely context-dependent.

After earning promotion and tenure and having more “freedom to explore...alternative teaching methodologies,” Dennis “dabbled in gamification [on] three...separate occasions.” He described his efforts at gamification as “a lot of trial and error...I had no sort of tutor to guide me through this process...So yeah, so a lot of it has been trial and error, basically.” Though the verb “to dabble” often has something of a superficial connotation, Dennis’s repetition of the phrase “a lot of trial and error” belies the meaning connoted by “dabbled” and instead suggests a willingness to invest his time and energy into repeatedly (as suggested by the repetition of “trial and error”) working at bringing gamification into his courses. Moreover, he was willing to invest his time and energy into gamification in spite of his doubts about published gamification research, explaining that for him, “There’s just not enough validation to really demonstrate” which techniques are effective and which are not. He explained, “I read articles of other people’s research, and I see examples of things that are done poorly.” However, despite not having anyone to guide him and not finding gamification research as well validated as he would have liked, Dennis was still willing to try it out in his own courses, and he did so in a way that is somewhat unique: he assigned his students to gamify difficult concepts themselves. So not only was Dennis interested in pursuing “alternative teaching methodologies” like gamification, but he was also willing to think outside the box in determining how to implement gamification in his course.

Leslie described herself as generally being drawn to innovation. Looking back on her experiences as a student, she said, “the teachers that called to me, in undergraduate and in graduate school, were the innovators.” She reflected on her doctoral studies as a time to learn

about and “experiment with” different pedagogical approaches: “it informed the practice that I did on a daily basis. I’d go for the summer to learn, and then I’d come back and experiment with the ideas I was learning with my students in K-12.” She explained,

You’ve got to be able to see something at a conference or read an article, or have just an idea that kind of bubbles up—and that’s kind of where the gamification came for me—an idea that bubbles up and be willing to risk it, and put it in your curriculum, and try it out, and then be critical of yourself...Did it work? Did it not work? And how could this be modified to be better, or just abandoned?

Leslie acknowledged, “There are many things I’ve tried that just never resurface, and that’s fine,” and she again commented on the lack of an incentive structure that would encourage innovation without penalizing for innovations that were unsuccessful.

Similar to Leslie, Ben described himself as “not that risk averse.” He recounted a story about meeting with his department head for an annual peer review early in his teaching career. When his department head told him, “You’re not afraid to fail,” Ben responded, “if you don’t fail...if you’re not sort of out there enough where this whole thing could just sort of crumble around you, then how are you ever going to sort of achieve this somewhat of a lofty goal?” His willingness to take risks led him to adopt a series of health-related video games to use as a vehicle for his students to practice looking at healthcare data and making decisions based on that data in a safe environment where they could see the consequences of their choices.

Several of the interviewees also commented that, when innovating, it is important to remember that things do not always go as planned. Mary, for example, noted, “And just, you know, not everything’s going to work.” Ben likewise noted, “So, you know, if you’re going to try, if you’re going to experiment like that, there’s going to be some failure. It’s just going to

happen...it's not always going to be perfect.” He referred back to the survey data he had gathered from his students over the previous few years, saying, “there’s always going to be a percentage of students that are going to hate it. I mean I’ve got good results here, but that means that there’s 10%, 12%, 20% of the class that *didn’t* agree with that, you know?” Leslie likewise acknowledged that some innovations are unsuccessful; she referenced Thomas Edison’s infamous series of failures before he was able to produce the light bulb, arguing that “innovation in any field, in any regard, is riddled with failure.”

While most of the faculty interviewed for this study indicated that they were willing to innovate, Sara saw innovation in the classroom as an imperative. Toward the end of her interview, she commented, “I think if we don’t adapt, we’re going to lose the battle, basically. The battle of education, of science education.” Her use of battle imagery suggests a direness or urgency behind her personal motivations for gamifying her course not seen in others’ responses. Sara’s battle analogy voiced more strongly the sentiment expressed in John’s comment that “as a nation, we’re far behind in our education.”

However, it should also be noted that even when faculty are willing to innovate, there were other factors—referred to here as “determinants”—that emerged as having influenced faculty’s decision to innovate in one way or another. No single determinant seemed influential enough to sway a decision in favor of or against innovating; however, the interviewees generally identified several types of determinants as considerations they took into account. These determinants generally fell into one of four categories: financial, institutional, personal, or technical.

Financial determinants included concerns over available funding and potential legal issues. One interviewee, for example, used tablet computers and inexpensive apps, and she



relied on small dollar amount gift cards so her students did not have to spend money out of pocket for the course. She commented, “if I didn’t have little donors along the way, it would be a real challenge to do this.” Her claim that “it would be a real challenge” without small donors suggests that it would still be possible to innovate without them, but not having those small donations could potentially deter her, especially in conjunction with other determinants. Another interviewee spoke of securing funding to help his department develop a way to gamify several difficult topics. A third interviewee recounted an instance where the university refused to house some abandonware<sup>9</sup> he wanted to use for his course “because they were afraid they were going to get sued;” rather than give up on that innovative approach, he found a different way of gaining access to the abandonware for his students. A fourth faculty member described an arduous process of documenting intellectual property for a gamified course she developed. More often than not, financial determinants revolved around funding concerns, though only two interviewees were aware of funding available directly from their departments to support innovations. Interviewees who mentioned financial or funding concerns generally said that funding would be helpful but was not typically necessary for their innovations.

Institutional determinants included considerations such as academic or departmental expectations, logistical or bureaucratic concerns, and receiving or not receiving recognition for innovations. Interviewees’ comments on this type of determinant were often tied to how they perceived the academic and departmental cultures in which they were situated. Academic and departmental culture were discussed in detail earlier in this chapter, but it is worth noting that several interviewees claimed that pressures from their departmental colleagues detracted from their perception of self-worth to varying degrees; in this regard, there is some overlap between

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<sup>9</sup> “Abandonware” is internet slang for software that has been abandoned by the developer.

institutional determinants and personal determinants. Logistical or bureaucratic concerns typically involved coordinating across more than one academic unit. For example, Dennis described how such a situation arose in relation to his efforts at validating the gamification with which he experimented: “It’s just been difficult to get the right timing down and having the IRB go through in time, and that the Bryant Center is doing, is heading.” Others, including the gamification experts interviewed as supplementary voices, commented on the difficulty of getting in touch with the people at the Educational and Augmented Games for Learning Environments (EAGLE) office to collaborate on projects. One respondent recounted having to physically go to the EAGLE office to get ahold of someone, since emails went unanswered and the voicemail box was constantly full.

Personal determinants generally described how interviewees expressed feeling about themselves or what they might need to sacrifice (generally in terms of personal time) in order to innovate. Some interviewees explained that they got a sense of joy or pride from the courses they had gamified. Ben, for example, explained that he often questioned himself: “I would say, ‘You should just give three exams and be done...Why are you doing this?’ Because it’s a pain in the ass, and you have to deal with a bunch of stuff you wouldn’t have to deal with” if it weren’t for gamifying the course. Referring to the students’ reactions to how much they learned in the gamified course, he continued, “And then I end up with results like these, or there’s one section that is just absolutely brilliant in what they present, and they thought about stuff in such a way, and you say, ‘Well, *that’s* why you do it.’” Other interviewees expressed feeling down about themselves after innovating, particularly in relation to low student evaluations or departmental expectations. After experimenting with gamifying her course one semester, an interviewee explained that her students had given her low evaluations at the end of the semester: “my

[student evaluations] for that were not so great, and that affects me. And I'm a teacher of teachers, so if I don't get like really great [evaluations], people are like, 'What's going on?' and I feel badly about myself." Other interviewees described the innovation process (including gamifying a course) as being both time-intensive and labor-intensive. John, for example, said he was "not sure if I would do it again at this time, just because of my overall time commitment," while Mary explained that she had been unable to add a narrative layer to her course because she "just never really had the time to completely storyboard that out." She added later, "I wish I'd had more time to figure out some of these teaching issues." Walter and Sara both explained that the game-based learning and gamification in their courses had taken years to develop. It can be difficult for an educator to stay motivated over such a protracted time, particularly if their department or colleagues do not see value in what they are attempting, as Mary and Leslie had noted.

Technical determinants generally involved limitations or opportunities provided by the available technology. Leslie, for example, had to stop using a gamified approach she designed for one of her courses because the iPad2 would not support the video game Garage Band. Other interviewees explained how they were limited in what they could gamify when using the Flash software because it was cumbersome to program, and Ben explained that he had to have technical support create a patch for one of the games he used in his course so students could actually run the game. Technical determinants were not merely detractors, though. Leslie explained that, when she learned of another unit on campus using iBeacons, she saw an opportunity to incorporate that into the way she gamified her course. Another interviewee described a piece of wearable technology called a BIRD and how it might be incorporated into a

course to encourage students to engage with the material, and she was in the process of designing a study around that kind of technology.

Not all interviewees addressed each type of determinant, but the above paragraphs do represent the most common concerns or factors that emerged from the interviewees' stories of innovation and/or gamification in their courses. Though financial and technical barriers to innovation or the adoption of a different pedagogy had not been explored in the initial literature review for this study, they did emerge as concerns among the interviewees. Other determinants, however, reflected issues that had been explored in the literature review, notably how faculty view their roles as educators, and how that perception could clash with academic and departmental culture (Anderson, 2009; Lattuca & Stark, 2011; Virick & Strage, 2016). If departments, and particularly the people in leadership roles within departments, become more aware of the types of determinants that may detract from faculty's decision to innovate their pedagogical approach, then steps can be taken to reduce such barriers and encourage further innovation.

### **Pedagogical Goals for Gamification**

The idea of "bridging formal and informal learning" emerged early on in the data analysis process, and it nicely captures the dichotomy between "in-school learning" and "out-of-school learning" that Leslie, Frank, Mary, Sara, and, to a lesser extent, Walter discussed. It also captures the desire to bring "the real world" into "formal learning contexts" that many interviewees expressed. "Bridging formal and informal learning" also suggests that faculty who innovate their pedagogical approach through gamification are seeking to bring something from informal contexts into the classroom that either does not normally happen, or does not happen to the extent they would like, in a typical traditional or formal learning context. As such, the idea

of “bridging” these two spheres is a useful window into how and why faculty innovate their pedagogical approach through the use of gamification. Three themes emerged in this regard. First, nearly all of the interviewees indicated that they wanted to foster a “positive” learning experience. The word “positive” is intended to convey a sense of positive affect, such as enjoyment, motivation, or engagement (whether students were actually learning more than they would have without gamification falls outside the scope of this study). Second, about half of the interviewees discussed the potential benefits of using gamification, combined with a positive learning experience, to introduce students to new, unfamiliar, or difficult course material. For some, this was built into the nature of the introductory-level courses they taught; for others, this was more relevant for specific concepts, sometimes in an upper-level course. The third theme to emerge was the use of gamified learning to allow students to experience course concepts in a “real” or “meaningful” way, and a few interviewees compared these experiences to what students would have received via the lecture format. For most of the interviewees, these themes were not exclusive of one another; there is a fair amount of overlap, for example, between creating a positive learning experience and introducing potentially “scary” ideas in a way that allows for “non-threatening” practice, to borrow Mary’s words.

**Creating a positive learning experience.** For some of the interviewees, the desire to foster a positive learning experience stemmed from their perception that learning is often needlessly “scary” (Mary), “painful” (Leslie and Sara), or “difficult” (Leslie and Sara). Interviewees commonly used combative or confrontational language to describe education in general, as well. Leslie, for example, said we “drown our students in knowledge;” Ben and Dennis described students “struggling” or “wrestling” with the material; and Sara spoke of “the battle of science education.” None of these terms has a positive connotation. However, the

interviewees' own stances on education, as discussed in the "Personal Educational Philosophy" section above are at odds with what they perceived as negative affect. For them, fostering a positive learning experience was an attempt to move the needle from "scary" or "painful" toward "fun" or "enjoy[able]." Nearly all of the faculty who gamify interviewed for this study commented on using gamification to get students motivated or engaged with the course. There seemed to be a general sense that if the learning experience could be designed in such a way that students would enjoy the experience, then the students would be more likely to be motivated to engage with the material on a deeper level. Whether or not this would be borne out in any given instantiation of a course falls outside the scope of this study, though faculty's perception of these connections is certainly relevant here—as Ben explained, his decision to continue using a gamified pedagogy was the direct result of his and his students' perception that it was more enjoyable and taught them more, as compared to the lecture format (this will be discussed in more detail in the "Enriched Educational Experiences" section later in this chapter).

Since more than half of the interviewees described learning in combative terms carrying negative connotations, with at least three of the interviewees acknowledging that learning is "scary," "painful," or "difficult" for students, and since their outlook on education was that it should be "fun" or "a great pleasure," there is a clear discrepancy between how they perceived education and how they thought it should be, as discussed earlier in this chapter. They adopted the use of gamification—sometimes game mechanics, other times game thinking, but often a combination of the two—to address this discrepancy. Mary, for example, claimed, "setting a mood, a good mood is important." She explained that "traditional education" was a "very formal context, usually, whereas gamification can add, it can add a chance to practice skills, but it can also add a sense of whimsy, which can be, I think can be beneficial in the right circumstance."

Her use of “whereas” indicates a contrast between the “very formal context” of “traditional education” and the “beneficial” potential of “whimsy,” a mechanic found in many games that encourage creativity or playfulness. She felt gamification was “pretty well suited” to teaching linguistics because much of the material in her course involved “imagining you’re in different environments...[and seeing] what’s it like to have your language not be the dominant educated language.”

Mary viewed “a sense of whimsy,” the use of humor, and “having fun” as ways to help students “get over that” feeling of being “frightened” when “confronted with a language they don’t know.” She claimed that the use of role-playing tactics, combined with “having fun,” can help students realize that other languages are not actually “scary,” while helping students understand that “the fear of other languages is natural.” Her use of game mechanics intended to reduce “the fear” her students felt so that they could be open to seeing that linguistics “is actually kind of interesting.” Mary also used game mechanics, such as simple challenges or small puzzles, to offer her students “a way...to practice certain skills” and to “be exposed to certain types of data in a *non-threatening* way” (emphasis added). Her use of the adjective “non-threatening” suggests that, without the challenge game mechanic, exposure “to certain types of data” could be considered threatening. As a linguist, Mary was likely familiar with the concepts of face (Goffman, 1955) and face-threatening acts, as understood through Politeness Theory (Brown & Levinson, 1987)<sup>10</sup>. While it is unclear whether Mary’s intention was to suggest Politeness Theory, it does provide a rather intriguing lens for future research: do students feel,

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<sup>10</sup> The common phrase “saving face,” meaning to avoid humiliation or maintain one’s dignity, is fairly similar to Goffman’s (1955) presentation of face. Face is “the positive social value a person effectively claims for himself” (p. 213), or the self-image a person shares with the public. Brown and Levinson (1987) define positive face as “the desire...to be approved of” (p. 13). Since the act of education inherently puts students in situations where they are “confronted” with unfamiliar knowledge, to use Mary’s word, such a confrontation may cause a student to feel embarrassed (threat to positive face), especially if he/she feels he/she *should* know the material but does not (Johnstone, 2008).

consciously or subconsciously, that the act of being educated publicly threatens their sense of self—their positive face? Similarly, do faculty who attempt to foster a “fun” or “enjoy[able]” classroom experience do so with the aim, intentionally or unintentionally, of mitigating or redressing threats to their students’ positive face? If so, to what extent might educators improve student engagement by mitigating potential face-threatening acts?

Sara’s adoption of gamification (and eventually game-based learning) followed a similar rationale to Mary’s. As discussed above, Sara felt rather strongly that students had been conditioned to “hate math,” and were reticent to engage with the material in her course in part because it involved some math, which would make them “panic.” Dweck (2006) described such reticence as students with a fixed mindset attempting to protect their image by not allowing it to be challenged by new concepts. Sara expressed the belief that if students could get beyond that “panic” reaction to the material, they might realize, “Gee, this is actually interesting!” and learn something from it “by surprise.” She explained, “the challenge is to reach them for the sake of the materials,” demonstrating her use of game thinking in approaching this issue. Throughout the interview, Sara often returned to the idea of “fun,” and that seemed to be a key criterion for her, particularly in developing the gamified learning experiences. For example, she compiled a list of topics she wanted to cover in her course, then asked herself, “what games could we design to actually teach these things and also be fun to some degree?” When asked to clarify why she wanted students to have “fun,” she responded,

Because you might choose to do it if you don’t have to. Because you might actually pay attention to the concepts rather than simply trying to get through it as quickly as possible. And because the next time you go to do your [natural science homework], you might not put it off until the last minute.



She explained that students put off doing their homework for her course, or they rushed through it, because they felt it was “just too much.” With the gamified learning experiences, though, she found that her students “actually do choose to do it, because it’s actually not painful. And then they’re actually getting something from it, kind of by surprise. Oh, wow!” Her foregrounding of the term “actually” through repetition suggests that, with the use of gamified learning, Sara perceived something of a convergence between what she wanted to see happen and what was “actually” happening with her students. Similar to Mary, Sara also expressed the belief that once students got past that hurdle of negative affect, they could be open to learning.

In describing her stance on educational experiences, as noted in more detail earlier in this chapter, Leslie posited that “Games fail, but you have every chance to succeed after a failure in a game, and wouldn’t that be interesting if education was more like that? If we could fail repeatedly with no punitive cost?” She described how she had taken the perspective on failure portrayed in games—that “failure in games is simply feedback done well...It’s simply a mechanism of feedback. And that’s the beauty of games, you constantly are getting this feedback like no educator I’ve ever seen [laughs]...this constant, individual feedback”—and explored ways to implement that with her students. She explained,

I’ve played with that idea a little bit. My students have playing exams, like in guitar, they have to show proficiency on being able to play this variety of chords or...whatever the new material is, but instead of coming in for that high-stakes one-time quiz, play in front of me in my office, they have the ability to go home and record themselves playing the tune as many times as it takes until they get to the level where they are satisfied.

Whether a student submits their first attempt or their thirtieth, she “grade[d] the one that they’re most proud of.” She clarified, “It’s about them reaching [satisfaction with their own

performance] in the way that makes the most sense for them. I just want them to reach it, however that happens, that's up to them, individually.” Though this approach to taking an exam does not necessarily seem very game-like on the surface, it is motivated by game thinking and the kind of feedback mechanics generally found in games.

Leslie's approach to these exams is reminiscent of a growth mindset (Dweck, 2006) in that she allowed her students to keep trying as many times as they wanted, rather than having a single, high-pressure moment of assessment that would saddle them with a grade that might not accurately reflect their ability:

I mean, what is a final exam? Me or the University saying, “On December 4th, at 2pm, you will have mastery in this subject!” I mean, that's just crazy talk, right?...it doesn't work that way. So...games allow us to do the best we can in the situation, the confines of a thing called schooling, in which we work.

Leslie's approach regarding these exams also agrees with a Self-Determination Theory (Deci & Ryan, 1985) perspective in that it increases students' autonomy and sense of competence—*they* decide when and where to play, and *they* decide when they feel their work best reflects their highest level of competence. By giving her students more of a say about what will be evaluated and when, Leslie was able to use game-thinking to decrease the “punitive cost of failure,” and therefore decrease the likelihood that her students would experience negative affect in her course.

While Mary, Sara, and Leslie were clearly motivated by mitigating the negative affect they perceived in educational experiences, other faculty focused more on increasing the positive affect instead. Frank, for example, incorporated challenges and competitions into his course because “students love competition.” His course, which stretches over multiple years instead of

a single semester, is structured in such a way that there is a long time between when students design a project and when they can see the finished product. He explained, “you have to have some things in there that are fun and raise the esprit de corps, but also build on what you’re doing.” He added, “usually in the spring, when they’re running out of gas, let’s do something fun. And we just do something fun.” These “fun” competitions were not distractions from the course, however. Rather, students were paired up in such a way that an older student would be working with a younger student, and each team was then faced with a challenge that required them to engage in “true engineering problem solving and critical thinking.” Frank explained he incorporated collaboration in this way because he “hope[d] there’s mentoring going on” from the more senior student to the more junior student on each team. Though his main goal was to “raise the esprit de corps” for his students, Frank’s use of competition and collaboration mechanics was well integrated into the course material and encouraged both hands-on and peer-to-peer learning. In other words, it was not fun for the sake of being fun; it was fun for the sake of learning.

Like Frank, Dennis also focused on the positive aspect of making learning “more enjoyable.” Because Dennis recognized that he “was losing that target [of reaching most students] by lecturing for 50 minutes every class session,” he decided to try gamification in “an attempt to get them more excited about learning.” It is clear from how he described his motivation for trying gamification that creating a positive learning experience was a main goal for him: “how do we make something that students have traditionally have struggled with in class more fun to learn through gamification? More fun, more enjoyable...More gamelike, something that’s not what we’ve done in the past.” Though Dennis assigned his students to gamify a topic, he himself also used game mechanics—namely competition, collaboration, and a challenge—in the way he designed their assignment. Dennis explained that the competition and

collaboration got students working with one another in a way that lent itself to engagement and “a credible experience”: “they’re more than competitors in this class, they’re also collaborators in a sense, because the gaming process is one that requires multiple people to be engaged in it in order for it to be a credible experience” (the idea of “a credible experience” will be discussed in further detail below). At one point in the interview, Dennis expounded on how he saw engagement and positive affect as beneficial for learning:

I think engagement has wrapped around it a lot of other sort of peripheral kinds of benefits...So you're engaged, that means you're alert. To engage, that means you're more motivated to engage. And so I think along those kinds of more affective kinds of outcomes or impacts, that gamification does have a broader sort of influence than, you know, it engages students more. I think that if done right, it can really get students more motivated to learn.

This perception of the connection among engagement, motivation, and student learning was echoed by the pedagogy experts, who claimed, “motivation has to come from within, but you can set up triggers and the right environment to motivate students. And if they’re not motivated, it’s next to impossible for them to be engaged in the class.” One faculty developer noted, “I think it’s very hard to learn if you’re not engaged...if you’re not engaged, you’re usually not paying attention, and we all know if you don’t pay attention, you cannot learn.”

Similar to Frank and Dennis, John also focused more on the positive aspects of learning, though he had briefly indicated an awareness of potentially negative affect when he described learning certain skills as “frustrating” and needing “a great deal of motivation.” John indicated that, for him, increasing students’ motivation was one of the main reasons he decided to use gamification in his programming courses: “perhaps motivation is sort of the biggest, the biggest

reason to gamify your classroom.” He explained that his understanding of motivation was influenced by Self-Determination Theory (Deci & Ryan, 1985; see the Literature Review in Chapter 2 for a brief discussion of SDT). Similar to Leslie, John considered immediate feedback important for motivating students to continually try to improve on what they had accomplished, to push themselves to do better with each attempt. He also agreed with Leslie that “having sort of a single, high-pressure evaluation point...is probably quite a bit too much for the students,” explaining that he felt the “need to sort of lead them to that” with homework, short quizzes, and other activities or assessments.

John used game mechanics, most notably quick feedback, challenge, competition, and collaboration, so that students could test their algorithms however often they needed. He commented, “When you have to wait for several days or if not weeks to get your work back, and handed to you with corrections, that’s just a turnaround time that’s not conducive to learning or even to motivation, right?” John pointed out that programming inherently provides a certain level of immediate feedback: “you write a little program according to the instructions, and you get feedback and you fix your program until it works.” In other words, if the code returns errors or will not compile, the student knows right away that something is incorrect without having to wait for the professor to say so. But since the challenge he set for his students was to develop an algorithm that outperformed others’ algorithms, the feedback they needed went beyond knowing if their program ran *correctly* to knowing if it ran *efficiently*. John emphasized the “very fast turnaround time” his gamified learning experience provided for students:

before you even upload your code, you can locally test your code, and I give people the bots...so they can test their own performance...or even observe their performance against

someone else. So fairly fast turnaround...times are certainly sort of a game element that's important here.

While the feedback mechanic lets students gauge their own progress, the competition built into the course helps to motivate them: "It's a lot of fun for a lot of people, and competition kind of drives people to excel and to work harder than they would otherwise."

Also similar to Frank and Dennis, John found that "collaboration helps in the sense that they can teach each other or help each other with things that some people in the groups understand. *This is why I am forming these groups*" (emphasis added). His rationale is clear: he was "forming these groups" expressly so "they can teach each other or help each other" as they develop their algorithms, which they could then test as often as they wanted against each other, against previous students' bots, or against his environment. Regardless of what they tested their algorithms against, the students got feedback very quickly and without the need for John to evaluate each submission from each student along the way. In this way, the challenge, collaboration, competition, and quick feedback mechanics were well-integrated with one another.

Not all interviewees spoke in depth about wanting to foster a positive learning experience, though all of them did comment to some extent, on their students liking or enjoying the gamified learning experience. Walter, for example, demonstrated that he was aware of his students' enjoyment of the learning experience when he commented in passing that his students seemed to like the gamification elements. Walter seemed more concerned with how the gamification he overlaid onto his game-based pedagogy impacted students' engagement with the material, including how much they encouraged one another to study the course material. His use of game-based pedagogy was intended to "bridge theory to practice" and "to engage students in

critical thinking and problem solving,” which he said happened to a greater extent after adding a gamification layer to the game-based pedagogy. When asked to clarify how the gamification had changed students’ experience in the course, Walter explained, “The teams were competing now, so they were encouraging each other to study hard, and they *wanted* to nail the problem” (emphasis added). Walter’s use of “wanted to nail the problem” suggests that he perceived his students as more motivated by their own desire to win. In other words, he did not say they “*needed* to nail the problem,” which implies a focus on grades over learning the subject matter (i.e., the difference in connotation between “I want to pass this course” and “I need to pass this course”—the former suggests an interest in the subject matter, whereas the latter implies consequences for failure and connotes a degree of desperation). This idea of *wanting*, not *needing*, to solve a problem is reminiscent of Dweck’s (2006) concept of a growth mindset.

One theme that emerged in regard to creating a positive learning experience was that students were not the only ones for whom the experience was positive. More than half of the interviewees indicated they felt positive emotions after gamifying their course. Some said they took “joy” from or were made “happy” by the gamified learning experiences. Others spoke of their students with a smile and a sense of pride. Ben, for example, said that some of his students’ solutions to the challenges he gave them were “absolutely brilliant” and that was personally rewarding enough to keep him going with gamification. Leslie used terms like “interesting,” “amazing,” and “absolutely fascinating” to describe several of her gamified learning experiences. Walter made a point of telling me, with a smile, that “the student who won the top award, she was able to use that on her résumé, and she got hired by an agency. I just did a security interview for her right before you came in.” Though interviewees, particularly Leslie, Frank, and Sara had commented on the lack of an incentive structure for innovating with pedagogy and the

self-doubt and negative affect stemming from departmental and academic culture, these indicators that interviewees were also finding “joy” and “happ[iness]” in what they did with gamification suggest an internalized self-reward for their efforts. For some, particularly Ben and Leslie, this sense of positivity generated by their gamification attempts also seemed to work as a positive personal determinant in favor of continued innovation.

As indicated above, there is a fair amount of overlap between the emergent ideas of fostering a positive learning experience and making the gateway to learning fun, as will be discussed in more depth in the next section below. In terms of fostering a positive learning experience, interviewees generally focused on improving student enjoyment of the learning experience, encouraging students to engage with the course material more deeply, and/or designing learning experiences that they felt were likely to motivate their students. For nearly all of the interviewees from whose responses the idea of fostering positive learning experiences emerged, they tended to use other pedagogical approaches they had tried in the past (most commonly the lecture format) as a basis for comparison.

**Making the gateway to learning fun.** Several interviewees commented that the moment of introduction to new material can be difficult for students, and so they attempted to use gamification to diminish that potential barrier to learning. As discussed in the previous section, some of the interviewees viewed new material as having the potential to be “scary,” and in this regard, fostering a positive learning experience and making the gateway to learning fun are intertwined. Not all interviewees felt that new material was necessarily “scary;” some saw it as an opportunity to get students “excited” about the new material. The general sense across all interviewees who commented on using gamification to introduce new material was that if they could get the students excited about a topic, then the students would be more motivated to



engage with the course content, and therefore would be more likely to learn the new material. Ben, who used game-based learning and gamification to introduce new material, commented, “this course...[is] an introductory course...and so it sort of plays into catching people who have very little knowledge about healthcare, so it can be kind of exciting.” In a similar vein, Mary also claimed that “games can introduce content in a way that traditional education can’t.” She defined “traditional education” as “sage on the stage...we’d have lecture, we did have homework assignments...a very formal context, usually.” The idea of learning being “fun” came up several times in Mary’s interview, and she felt that “having fun” could mitigate exposure to new and potentially “scary” material, as discussed in the previous section.

Leslie probably provided the most detailed rationale for using gamification to introduce students to new material. Reflecting on a statistics course she had taken as a student, she explained that her professor had students play with colored M&Ms to learn the concepts of descriptive statistics. From that experience, she learned that

The gateway into learning has to be fun, particularly when the student might not understand why they need what they are getting from you. I think that’s when it’s really needed. If...I get the idea, “Ok, I’m doing this because...” Then I can take...a more serious approach. But if I’m new to the subject and I’m not sure where things are going, make it playful. Make it fun. Make it engaging. Because then the process of doing it *becomes* light-hearted, and that, you know, steep curve of learning that it takes when you are going from zero to something just becomes a more engaging process (emphasis added)

Because she said “the process of doing it *becomes* light-hearted,” the implication is that learning something new is *not* typically viewed as being light-hearted in her perspective. Her repetition

of the imperative “make” three times in quick succession foregrounds the idea that what she called the “gateway into learning” is *not* generally perceived as playful, fun, or engaging; otherwise, it would not need to be *made* into those things. Since she argued that learning “should be a great pleasure” and her interview was rife with examples of her desire to bolster positive affect for her students, there is some degree of discrepancy between her perception that the “gateway into learning” is not actually “light-hearted” and her desire for learning to “be a great pleasure,” which she attempted to remedy through gamification.

Leslie spoke of the “power” of games in this regard, recounting an experience where she had invited some friends, “who had never shown [her] that they play an instrument or that they have a passion for singing,” over to her house to play Guitar Hero. She noticed that her friends were playing better than she was, despite her musical training, and she began to wonder, “What is happening here? What is the power of this game that’s *bringing out and initiating musicality* in people that have not displayed it around me in other ways?” (emphasis added). What Leslie was noticing was what Huizinga (1950) called *the magic circle*—people are willing to do things in the context of a game that they would not do otherwise. There is something about the context of a game that invites people to step out of their comfort zone and makes it okay for them to try something new or different, even if they may not feel they have the ability to successfully complete it (consider, for example, that many people who do karaoke cannot sing very well, but having fun generally supersedes potential deterrents such as embarrassment). Leslie noted, regarding this experience with her friends playing Guitar Hero, “there’s something here that crosses over into pedagogy...that could really shape and transform music education in unique ways.” Taking advantage of *the magic circle* to invite students into a space that “bring[s] out

and initiat[es] musicality” seems to be one of the ways that pedagogy could be improved through gamification for Leslie.

Leslie wanted to see if she could capitalize on this ability of games to “bring out and initiate musicality in people,” so she developed a study wherein she and her undergraduate teacher preparation students used aspects of music-based video games like Guitar Hero and Rockband to introduce secondary school students to the guitar. In particular, Leslie wanted to see if experiencing “early success, that motivation of, ‘Oh my gosh, I’m playing this tune,’” in a video game would translate into their being able to play the same tune on a real guitar. Leslie said the students, who had not been taught guitar previously, came out of that learning experience with a sense of accomplishment. They told her, “We played Guitar Hero, and then we learned the song, and then we played it on guitar, and *I can do this!*” (emphasis added). After having been introduced to playing guitar through aspects of video games, the majority of those students expressed a sense of self-competence when they tried the same songs on the real guitar. (The impacts of this study, particularly on Leslie’s undergraduate students, will be discussed further in the “Student reactions” section later in this chapter.)

One way in which Dennis used gamification also relates to the “gateway into learning,” albeit less directly than was seen in Leslie’s implementation. As noted above, Dennis implemented gamification in a rather unique way, in that he assigned his students to gamify difficult concepts, “so that [those] concept[s] can be conveyed and hopefully learned *by follow-on students.*” (emphasis added). It is important to note that the intended audience who would eventually learn from the gamified content were *future* students—those who had not yet learned basic statistical concepts (i.e., probability, normal distribution, etc.). Dennis explained,

I've looked at gamification [as] restructuring a concept that professors are used to teaching and restructuring it from the viewpoint of the students, so how the students would view the material, and how they would teach it if they had the opportunity to. One of the topics his students had to gamify was the basic statistical concept of the normal distribution, which Dennis's colleagues had identified as a "stepping stone" concept that students generally "struggled" with when taught through traditional means, but that was also essential to students' success in the program. Dennis explained that having students approach the material in this way led them to "a deeper understanding" than they would have gotten if they had "simply take[n] the instructor's notes" and replicated them. Dennis again used a downtoning adverb ("simply") to minimize the act of working from the instructor's notes and prioritize the act of working through how to gamify these basic concepts themselves.

As noted earlier, there is quite a bit of overlap between the idea of making learning into a positive experience, and designing learning experiences to be fun at the moment when students are introduced to new or potentially "scary" material. In both of these situations, interviewees applied game mechanics and/or game thinking to reach or appeal to their students in ways that more traditional pedagogical approaches may not have. The third theme to emerge—making learning experiences "real" or "meaningful"—demonstrates another distinct way that interviewees attempted to innovate their pedagogical approach through gamification.

**Making learning experiences real and meaningful.** Several of the interviewees also spoke about gamifying their courses with an eye to making the learning experiences "real" and/or personally "meaningful" for their students. For some interviewees, "real" meant that the learning experiences students had in the classroom should bear some degree of resemblance to the kinds of situations in their life or career (particularly outside of academia) where they might

be expected to make use of the knowledge or skills being taught in the course. There was a general sense among most of the interview responses that if a learning experience could be made “real” then it would be more “meaningful” to students, and that students would be more likely to “invest” their time and effort into learning material they perceived to be “meaningful.”

This interpretation of “real” learning was particularly apparent in the way some—but not all—of the interviewees spoke of “the real world,” “a real world context,” “real data” (as opposed to “canned problem sets”), and “real life.” The implication here is that there is a dichotomy between what happens in the classroom and “the real world,” and this idea echoes Leslie’s rationale for “bridging formal and informal learning contexts” and Walter’s for “bridging theory and practice.” Though the idea of formal schooling being something distinct or separate from “the real world” was suggested in several of the interview responses, Mary perhaps expressed her concern about that dichotomy most clearly when she asked,

how can you get [students] in a situation where they have to use the skills in hopefully a more meaningful way than a canned problem set? I mean, canned problem sets have their place, and I use them, but the more that they can understand it’s not a problem set, it’s something that’s real, I think the more connection they find in a lot of cases.

That Mary wanted to create learning experiences that were “more meaningful...than a canned problem set” indicates that “canned problem set[s]” do not necessarily provide “meaningful” learning, in her perspective. Mary’s implication here rings true for me, because as someone who has spent nearly a decade teaching undergraduate English composition and grammar courses, I have hundreds of sample sentences that demonstrate an aspect of grammar or sentence structure quite well, but they are not the kinds of sentences people would actually use in their daily writing

or speaking<sup>11</sup>. As Mary had explained earlier in the interview, she valued “bringing in real world context” for her students and having her students examine “real data” over “canned problem sets” whenever possible. Mary’s rationale of “it’s not a problem set, it’s something that’s real” captures the perceived dichotomy, but also suggests an underlying issue, using the flip-flop technique (Corbin & Strauss, 2015; Charmaz, 2014): problem sets are considered *not* “real,” *not* “meaningful,” and may therefore be somewhat removed from how that material—in Mary’s case, linguistic analysis—could be applied to “real data” outside the classroom. She claimed that seeing “real data” or being exposed to “a real world context” would make learning “more meaningful” for her students. She incorporated “real data” into the mini-challenges she used to give her students “non-threatening practice” with course concepts, while her use of role-playing mechanics allowed her students to experience what it would be like to speak a non-dominant language, rather than listening to or reading about such a situation. Her pedagogical approach intended to “push them more into what’s really happening in the discipline, so that it’s not just, ‘Well, this is what we’ve discovered,’ but ‘this is how we discover things’.” By using these mechanics, Mary wanted her students to understand how the lessons taught in her course could be applied to the world around them.

While John’s students were not necessarily examining “real data” the way Mary’s students were, John’s use of gamification did encourage “real world” thinking about problems. In particular, one of the learning objectives for his course was for his students to learn object-oriented programming, which he described as “a closer reflection of the ontologies that we find in the real world.” This kind of programming required them to “formalize [their] thinking about

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<sup>11</sup> An example of this is the garden path sentence “The horse raced past the barn fell,” which demonstrates the potential ambiguity of a grammatically correct sentence and the need for clarity (The horse [that was] raced past the barn fell). It demonstrates what a garden path sentence is—one that misleads the audience—but it is probably not a sentence that any of my students have ever or will ever actually use in real life.

the real world and about problems,” and was reinforced through the gamified aspect of the course, where they were challenged to develop algorithms in competition with one another. He explained that, particularly regarding his use of competition, “it’s a somewhat accurate reflection of what you’re going to be faced with on the job market and then in your job later on, right, you’ve got competition. And recreating that is not necessarily wrong.”

Ben explained that his use of gamified learning stemmed from a desire to give students a learning “experience” that provided them something more than they might get out of a lecture: “I was trying to think about how do we make it, how do we sort of increase their experience of it, as opposed to sort of passively listening to a lecture.” He wanted to try gamified learning because it gave students the opportunity to look at data, make decisions based on that data, and then see the consequences of those decisions. He saw the use of certain video games as a “good vehicle for them to kind of see the consequences of decisions that get—or things that *don’t* get decided in healthcare.” He considered it an “eye opening experience” for some students:

it’s kind of easy to, in the abstract, say, “...I want everybody to have equal this and that and the other” and then when you’re sort of confronted with, “Ok, you’re running in the red by so many billions of dollars, and you need to make a decision now.” And so they’d make a decision which would go against their values, and [the game would say], “Your constituents are really pissed off at you because...you reneged on a campaign promise.”

Putting students in a situation where they need to make a decision and see what happens because of that decision creates a different kind of learning experience than they would receive through the lecture and does seem to “increase their experience of” the course materials. He gave an example of tasking his students to revamp the healthcare system with a hypothetical fund to help pay for the changes they wanted to make. He said if there were no realistic limits or boundaries

for the fund (i.e., total amount, how much could be dispersed per year), then students could have “outstanding results...that never would work in the real world.” He explained, “it has some rules, just like a game does...there’s an objective,” and by making the rules and objectives closely mimic reality, he created an environment in which his students could gain experience with realistic decision-making in a healthcare context. To that end, he set the limits and boundaries on the hypothetical fund to mimic an actual healthcare fund established by the federal government, so students were working with realistic dollar figures and timelines.

However, Ben found that “there always seemed...to be a percentage that just wasn’t...engaging in it.” By adding role-playing, collaboration, competition, challenge, and reward mechanics to that video game experience, he extended the video game into the classroom context to encourage his students to engage with learning situations. He created teams of students, assigned each team a role or perspective to guide their decisions, and challenged them to “come up with their best shot of reforming the healthcare system.” The teammates had to collaborate to figure out how to apply the lessons learned in the course to meet certain outcome criteria. Ben gave them these targets to meet, but “quite honestly, you can never get 100 percent of the targets. But you can get like 95 percent because part of the problem in healthcare is that... if you try to improve quality, it might have an impact on access.” For Ben, making the learning experience “real” or “concrete” for students meant “a little bit more of them struggling on their own, within the context of a class, to sort of figure out some of the challenges and trends...in healthcare.” In this way, he provided an “increase[d]...experience” that improved both their enjoyment of the course and their understanding of the material, as compared to a typical lecture format (these outcomes will be discussed further in “Enriched Educational Experiences” later in this chapter). However, Ben also cautioned that gamification had to be “integrated” or “infused



into the class,” that it should not be “simply something you put on in the last week of class and say, ‘Oh, wasn’t that cute!’ It really just needs to be a part of the fabric of that class.”

Jeff’s use of a video game augmented by gamification was similar to Ben’s, particularly in that Jeff wanted to be “sure students are getting something out of the experience.” Unlike Ben, Jeff did not form students into collaborative groups. Rather, he focused on competition as the key motivating mechanic, and added an optional discussion forum to encourage the formation of a community around the gameplay experience. Through the discussion forum, the community he fostered outside of the classroom encouraged his students to compete with each other to see who could score the most points in the game. Jeff joined in this sense of competition by posting screenshots of his own progress in the game and challenging students to top his score, as well. In order to do well in the game, students had to think about how to apply economics concepts from the course (cost-benefit analysis, revenue and cost comparisons, supply and demand, elasticity of demand, etc.) within the context of the game. Students were challenged to “grow [their town], not run it in the red.” Jeff explained that he included the game as an assignment because it meant students spent “more time...thinking about the material, more time...developing an intuition about how economics works.” He also wanted to create learning experiences where “students can see data being created in real-time” and where they could “see data trends and make predictions.” By assigning the video game and gamifying that experience to extend it into the classroom, Jeff gave his students the opportunity to actually apply the lessons from his course, to actually make decisions and see the consequences of those decisions in the no-risk game environment (i.e., no real people would be negatively impacted if the student made the wrong decisions in the game).

Though Walter's main approach in the classroom was a game-based pedagogy, he also applied gamification to his full-fledged scenario games, similar to the way Ben and Jeff gamified the video games they used. Walter also valued creating "real" experiences for his students, which was apparent in the amount of research, preparation, and planning that went into his scenario games. To clarify, Walter did not view the scenario games as gamification, but he *did* gamify the scenario games by adding role-playing, competition, collaboration, challenge, and reward mechanics to each scenario game. Walter added these mechanics specifically to encourage his students to engage with the scenario games at a deeper level because he wanted them to get more out of the scenario game experience. Of the scenario games themselves, Walter explained, "The reason these things seem real is because they could be real or they have been real." Even within a role-playing situation, where he assigned teams of students to assume the perspective of various departments or agencies, Walter acknowledged that the "suspension of belief only goes so far," explaining that if "they can't wrap their head around it, ...they'll suspend belief beyond what you want them to suspend. And then therefore their solutions will also be fantastic, and that's not what you're looking for." He was concerned with how "real" his scenarios were and how much his students might need to suspend their belief because he saw a need for a cohesion or an integration between the content and the format:

if you're trying to teach serious analytic, structured analytic techniques, and for the purpose of these students going out and getting a job, doing this for a living in the analytic career field, then you need to have the same rigor in your scenario as you demand in their products.

He returned to this idea later in the interview, suggesting the extent to which he valued such cohesion or integration: "do you just want to have fun with it, or do you want to teach them

serious skills? If you're teaching serious skills, build a serious scenario." This call for cohesion between the skills being taught and the scenario through which they will be taught seems to echo Ben's caveat that gamification needed to be "integrated" or "infused into the class." Similar to Ben's and Jeff's use of gamification as an overlay for a full-fledged game, Walter's use of it intended to foster greater involvement with the scenario game itself than he had seen in previous semesters (i.e., before he gamified the game). Ben, Jeff, and Walter all used the underlying game to provide students with a situation where they would be exposed to realistic data, would make decisions based on that data and concepts from the course, and see the consequences or outcomes of their decisions, while the additional game mechanics were intended to motivate deeper student engagement.

In one of her courses, Leslie used a combination of game mechanics that supported creativity, imagination, and musical composition, along with touchscreen tablet computers to make "musicianship" real for her students. She explained that the tablets, because of their touchscreen capabilities, "turn[ed] every musical instrument that you play into percussion because you're simply tapping and touching and sliding on the screen." This technology allowed "the musicianship that was alive in these students [to come] out in very unique ways" because it separated the skill of actually playing specific instruments from the skill of creating musical compositions using those instruments, as would be expected in a more traditional approach to teaching music, such as that "master class" Leslie described early in the interview. She explained, "So you don't have to have that skill, that 10 years of finding the A sharp on your violin, to make a sound that you want to use in a composition." With more traditional pedagogies, if "folks didn't have keyboard skills where they could play what was in their mind," then they could not fully realize or express "all [their] musicianship, all [their] music-making

potential.” In this way, the gamified approach turned developing that “musicianship” skill into a more concrete educational experience for Leslie’s students.

Dennis offered a cautionary perspective, expressing concern over the possibility that gamification “just becomes something that the instructor *thinks* is meaningful” (emphasis added). He said students “only have so many hours in the day,” so students are not likely to pay attention to any gamification activities that do not directly impact their course grade, regardless of how “meaningful” the instructor “thinks” the gamified activity is. He explained, “I think it [gamification] fundamentally shifts the way that we view the grade in the class.” He asked, “in the gamification context, just because you scored the top score in the class, what does that mean with relation to your actual grade in the class? And how legitimate is that comparison?” He expressed these concerns particularly “in light of accrediting boards” and with an eye toward “broad implementation” of gamification, cautioning that “the structure needs to be sort of appropriate before we move into how do we look at the mechanics.” Similar to Ben and Walter, Dennis seemed to be arguing in favor of some degree of cohesion or integration between the structure of the course and the mechanics used to gamify it. In this way, Dennis’s caveat about a schism between what “the instructor thinks is meaningful” and what students actually perceive to be meaningful echoed Walter’s rationale for matching the “serious[ness]” of the game with the “serious[ness]” of the course material.

Not all of the interviewees addressed the idea of “real” or “meaningful” learning experiences in depth, though some of them did demonstrate a concern that learning be “meaningful” in subtler ways. Sara, for example, explained that her pedagogical decisions were guided by showing respect, empathizing, and setting clear expectations, because “if you don’t have that, you never reach them with any kind of a meaningful message about your subject

matter.” The “meaningful message” she wanted to share with her students revolved around “perspectives on the meanings of their own existence” from the knowledge gained in her field. She identified students “getting...more appreciation and perspective” as her main goal because she acknowledged that “people aren’t really learning that much” but she also “[didn’t] want to waste their time,” as discussed earlier in this chapter. Since the development of her pedagogical approach for over a decade was an increasingly game-like experience for her students—to the point where her course could eventually be considered an actual game—and since her guiding principle had been to help her students develop “appreciation and perspective,” her choice to continually pursue gamified learning suggests that she perceived gamified learning to be conducive of developing that “appreciation and perspective.” This interpretation of her actions is supported by her perception that “people will learn *everything* about a game...and it just gets so absorbing that you can play it for hours.” She felt that if she could recreate that experience around her course material, “if people are in that mode when they’re playing [my course], then they’re learning [natural science] without it being difficult or painful,” and they might be “surprised” that the subject matter is “actually interesting.” Her description, “so absorbing that you can play it for hours,” is suggestive of a flow state (see “Flow” in Chapter 2 for a brief discussion) and may help to explain her perception that “people will learn *everything* about a game,” since a flow state leads to enjoyment and “heightened functioning” (Csíkszentmihályi, 1975, p. xiii). As noted in Chapter 2, “[t]hose activities and experiences that are most enjoyable will have a greater chance of being remembered” (Csíkszentmihályi, 1988b, p. 34), and this seems to be the effect that Sara wanted to replicate through her pedagogical approach.

Whether interviewees verbalized their desire to “increase [students’] experience” of their course or make learning experiences “more meaningful...than a canned problem set,” or whether

they implicitly described a pedagogical approach that prioritized making learning personally meaningful for their students, the interviewees all reported using game thinking, game mechanics, or a combination thereof to realize those goals. Their use of gamification is innovative, by and large, because they tried to “bridge formal and informal learning” to capitalize on aspects of informal learning contexts (i.e., being motivated by competition, feeling like part of a team when collaborating with others, facing a challenge, etc.) that are often underutilized in more “traditional” or “formal” learning contexts. Moreover, these interviewees were not simply tacking on common game mechanics, but were instead “infusing” or “integrating” the game thinking and game mechanics into the structure and content of their courses in such a way as to support the main goals of the course (i.e., developing students’ “real world” thinking, getting students to experience the decision-making process in a more “real” way than they could via lecture, etc.). Interviewees intended to create a positive learning experience, design a “fun” experience at the “gateway into learning,” and provide students with a “real” and “meaningful” learning experience through the application of opagogic methods, resulting in an “enriched educational experience.”

### **Opagogic Methods**

Since I have defined opagogy as “leading to the good life,”<sup>12</sup> opagogic methods are the methods that faculty deliberately employ in order to support a “positive,” “fun,” uplifting, or “enjoyable” learning experience—one in which students *want* to engage, and one that ideally encourages students to continually develop both their learning strategies and their knowledge base. Opagogic methods include the deliberate decision-making processes by which faculty implement game thinking and select game mechanics in accordance with flow, Self-

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<sup>12</sup> See footnote 6 toward the beginning of Chapter 4.

Determination Theory, mindset, or some combination thereof. As noted toward the beginning of this chapter, there is a certain degree of inextricable interconnectedness among faculty's rationale for choosing such tools and their methods for employing those tools.

**Flow.** Several *faculty who gamify* addressed the concept of providing students with a sufficient or “appropriate”—to use Dennis’s word—level of challenge (see Figure 2.4 in Chapter 2 for the flow diagram). Dennis, for example, spoke at length about the “challenge” (a game mechanic) his students faced in reconceptualizing how to teach basic statistical concepts that they had already learned. He explained that it was “easy” for them to “repackage” the professor’s notes, but that it was more of a “challenge” for them “to convey the idea...through a specific context.” In this way, Dennis toyed with different levels of “challenge” to determine what would push the boundaries of his students’ capabilities, thereby seeking to provide them with a “challenge” that was not too “easy,” but not too hard.

Some *faculty who gamify* adjusted the level of challenge by ensuring peers were competing with one another (i.e., students with roughly the same level of education and experience), while simultaneously offering a more difficult challenge for students who chose to pursue such challenges<sup>13</sup>. Jeff, for example, “challenged” his students to compete with one another for the top score in the game (i.e., extended the video game into the classroom through competition). He also posted a snapshot of his own progress in the game and “challenged [but did not require] students to top that score.” John took a similar approach in that he designed the gamified component of his course around the “challenge” for students’ algorithms to outperform one another. John also gave them bots that had been written in by former students to test their

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<sup>13</sup> This is one example where concepts from flow (appropriate level of challenge for students’ abilities) overlap with concepts from Self-Determination Theory (autonomy) in that students were not required to rise to the more difficult challenge, but it was there for them should they desire it.

algorithms against. In this way, his students could choose which bot(s)—and therefore what degree of challenge—to test their own algorithms against. Walter and Ben both took similar approaches, but with the collaboration mechanic added in; Walter and Ben both “challenged” each team to come up with the best (or most feasible) solution to a given problem.

Other *faculty who gamify*, like Sara, commented on the desire to make learning a more game-like experience so that it could be one in which students would willingly lose themselves, as discussed toward the end of the previous section: “people will learn *everything* about a game...and it just gets so absorbing that you can play it for hours.” This line of thinking led to Sara first adding a narration mechanic to her course, and later developing one section of it into a full-fledged game. It is important to note that though these faculty’s approach to employing game mechanics reflects a flow perspective, it does not mean that their students will necessarily experience a flow state while doing their work for the course. It simply means that these faculty were attempting to create the conditions conducive to their students experiencing a flow state.

**Self-Determination Theory.** Concepts from Self-Determination Theory (autonomy, relatedness, and competence—see Chapter 2 for a brief discussion of SDT) were apparent both explicitly and implicitly in the words and actions of most of the *faculty who gamify* group.

**Autonomy.** As discussed in the previous section, many *faculty who gamify* interviewed for this study gave students the choice of what degree of challenge to pursue, thereby allowing them opportunities to express autonomy. Mary allowed her students to choose whether or not to participate in the mini-challenge at the start of each class, and she eventually allowed them to help her redesign the achievement and reward structure that she used. Leslie, as has been discussed earlier in this chapter, gave her students autonomy over when, where, and how often to attempt their performance exam. John allowed some students to alter the game environment he



had created. Dennis gave his students free reign to make all decisions about how to teach statistical concepts; he described his role as an “adviser” who was there to make sure each project included all of the necessary components, “But I didn’t really get down to the mechanics of ‘You’re supposed to do this like this or that like that’”—he left those decisions to the students.

***Relatedness.*** The concept of relatedness also appeared in nearly all of the interviewees’ responses, as nearly all *faculty who gamify* used competition, collaboration, or both. Frank, for example, paired a more senior student with a more junior student with the aim of encouraging mentoring during the engineering competitions he would hold each spring. For Leslie, particularly for her performance music courses, collaborative projects were somewhat necessary due to the nature of the material she taught (i.e., it is not possible to be the sole member of an orchestra). Ben, Walter, Dennis, and John all included collaboration as part of the gamified components in their courses. However, those in the *faculty who gamify* group were fully aware of the dangers posed by what Ben called “the free rider effect” and what Walter called “the sleeper cell”—students who would put less effort into group work and hope to coast to a decent grade on the backs of their teammates. Ben sought to minimize this effect without compromising the collaborative learning that could happen by playing with the group dynamics (this will be discussed in more detail in the “Iterating on the gamified course(s)” subsection of “Enriched Educational Experiences” later in this chapter). Walter addressed this through applying a specific kind of game thinking known as team balancing:

any expectation you have during an exercise, you have to have a way to assess competency going into the exercise. Otherwise, you get a really mixed set of results. You’ll have a group of student who have familiarity with a particular technique, and they will carry the load for the rest of the team. That can cause problems, cause they’re

carrying the load for the rest of the team. So, and then you have mixed groups, so you have groups where the majority of the students have these skills and abilities, and then you have other teams that have very few, if any, and so there's a big imbalance on the results. So you want to try to level that out as much as you can.

John addressed this potential pitfall to collaborative activities by allowing groups to work together to learn the material, but requiring each individual student to turn in his/her own work and grading each individually. None of the faculty interviewed indicated that they avoided collaborative learning experiences due to the possible pitfalls; instead, they described the steps they had taken to mitigate potential negative effects of students who saw group work as an opportunity to do less work. Since most of those in the *faculty who gamify* group indicated that they saw value in what Dennis called “peer-to-peer learning,” it makes sense that they would attempt to preserve collaboration while seeking to minimize any negative impacts.

**Competence.** Fewer *faculty who gamify* addressed the competence aspect of Self-Determination Theory (at least, not to the extent that they addressed autonomy and relatedness). Those who did generally described scenarios where they intended to create learning experiences in which students could demonstrate mastery of course material. Leslie, for example, in her decision to allow students to decide when, where, and how often to record their performance exam efforts was doing just this—she swirled together autonomy, competence, mindset, and game thinking about failure to create a learning experience wherein students could judge their own progress and decide when they had successfully demonstrated their highest level of competence with a particular instrumental technique. John's approach to teaching programming was similar to Leslie's in that he gave students all of the tools they would need to continually assess their own performance and try to improve their algorithm's efficiency. Dennis explained

the motivation for his decisions to use gamification as a way to answer the question, “how can they get beyond that novice learner stage so that they become a more competent learner?” To that end, he designed the gamified component of his course to build off of and push the boundaries of the understanding of statistical concepts students had previously learned. Sara described a perspective similar to Dennis’s “more competent learners” when she explained what she thought students should get out of the postsecondary experience:

And part of that I think is things that challenge people and they’re *able to confidently overcome things that they didn’t think they could do*, but I don’t know that we’re doing that. I think we’re failing with most of the people. (emphasis added)

Sara’s description here, similar to Leslie’s, John’s, and Dennis’s approaches, not only captures the idea of competence, but is also suggestive of a growth mindset in that she wants people to be “able to confidently overcome things that they didn’t think they could do.” Game designer Jane McGonigal (2010) might call this an “epic win,” which she defined as “an outcome that is so extraordinarily positive you had no idea it was even possible until you achieved it...and when you get there, you’re shocked to discover what you’re truly capable of” (2:10-2:50).

**Mindset.** As indicated in the several preceding sub-sections, mindset was often considered in conjunction with flow and Self-Determination Theory. Dweck (2006) described both *fixed mindset* and *growth mindset*<sup>14</sup>, and both types of mindset were in evidence in the discussions I had with interviewees in the *faculty who gamify* group.

**Fixed mindset.** As described earlier in this chapter, Sara perceived that students were “scared” of math and that they “hated it”:

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<sup>14</sup> See Chapter 2 for a brief discussion of fixed vs. growth mindset.

They hated math in high school...they in many cases did very well. Most of them got As. But they didn't understand anything of what they were doing, and if forced to sort of mix the kinds of problems together, a lot of people would struggle. So they worked very hard at it to do well, but they didn't really understand it, and when math hit in college, it was very difficult if they took anything, you know, at a high level, and *they convinced themselves somewhere along the line that they weren't good at it.* (emphasis added)

Sara's perception of her students "convince[ing] themselves...they weren't good at it," especially in light of her claims that students no longer know how to study (as discussed earlier in this chapter), bears a striking resemblance to Dweck's (2008) recounting of how undergraduate students with a fixed mindset encountered studying and test-taking:

Many students study like this: They read the textbook and their class notes. If the material is really hard, they read them again. Or they might try to memorize everything they can, like a vacuum cleaner. That's how the students with the fixed mindset studied.

If they did poorly on the test, they concluded that chemistry was not their subject. (p. 61)

Similar ideas of students being "frightened," "scared," or otherwise reticent to participate in their own education appeared in Leslie's and Mary's interviews, as well, while Sara's, Frank's, and John's interviews also addressed students' reluctance to put effort into their learning. Dweck (2008) explained how such reluctance was symptomatic of a fixed mindset: "As soon as children become able to evaluate themselves, some of them become afraid of challenges. They become afraid of not being smart...and it's breathtaking how many reject an opportunity to learn" (p. 16). In order to move away from this pattern, several of the interviewees in the *faculty who gamify* group sought ways to encourage a growth mindset, instead.

**Growth mindset.** Several of those in the *faculty who gamify* group both demonstrated a growth mindset and indicated that they wanted to create educational experiences that could foster similar kinds of growth in their students. Leslie, for example, clearly had a growth mindset. Her emphatic “Let’s learn from the failure!” comment regarding her willingness to innovate suggests her desire for productive failure. This mindset is also reflected in her perception that “failure in school is permanent and it’s punitive,” as discussed earlier in this chapter. It is likewise apparent in her approach to designing educational experiences for her students, as well, particularly in her rationale for allowing them to determine when, where, and how often to attempt their performance exams, as discussed above. John also made comments suggesting he held a growth mindset, though less directly than Leslie had. For example, at one point in his interview, John said, “if there are other ways of teaching people and getting them to do well, *I’m all ears*” (emphasis added), suggesting that he would not shy away from new approaches as a person with a fixed mindset might. Mary also addressed a growth mindset, though she approached it from the perspective of getting students to see how different skills could build on one another to give them a more varied analytic toolbox. She also explained, “I was thinking about adding badges where it would be more explicit...making explicit certain skills” so students could see how they were making progress with specific skills. In this regard, she was planning out how to combine the growth mindset with game thinking and the feedback and progress-marking game mechanics.

**Gamification.** The term “gamification” arguably contains two parts: *game thinking* and *game mechanics*<sup>15</sup>. Simply adding game mechanics to a non-game situation without applying game thinking as well tends to lead to less than satisfying (and potentially ineffective) gamified experiences, and this perception is borne out in both the perspectives of the interviewees for this

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<sup>15</sup> See Table B.1 and the discussion that follows it in Appendix B for a clarification about the various definitions of gamification in the extant literature.

study, and in much of the empirical research that has been done on gamification in education over roughly the past decade (see Chapter 2 for a review of literature regarding gamification in education).

***Game thinking.*** Several of the interviewees explicitly linked the ways in which they sought to gain greater satisfaction with students' educational experiences directly to game thinking principles, and these were often explicitly or implicitly tied to flow, Self-Determination Theory, and/or mindset. For example, as discussed above, Sara demonstrated a high level of intentionality in wanting her course to be as "absorbing" as a game. She commented, "people will learn *everything* about a game" (emphasis hers), and wanted to create learning experiences in her course that students would want to engage with the way players engage with a game. Leslie similarly demonstrated game thinking in her denunciation of "the punitive cost of failure" and her desire to replicate the kind of productive failure found in games in her own courses. Mary likewise identified specific concepts from games (i.e., "leveling up" certain skills) to explain her rationale for how she thought about students developing skills through her course. While Sara, Leslie, and Mary described what I would consider conceptual game thinking, wherein they identified concepts that they felt were well done in games—for Sara, matching the level of challenge to students' abilities to encourage a flow state, for Leslie, making failure more productive, and for Mary, making progress more explicit through "leveling up" various skills—Ben's approach to game thinking seemed to reflect something of a systems perspective:

I do see this as sort of like a game, as gamification of a class, because there is sort of, there are set objectives, there are rules that they have to follow, there's a prize...it is an experience, it's an activity that has sort of the conditions of an actual game. I mean, there's a clearly defined objective, so people know when they've gotten to the end of the

game or not. It's rule-bound, so there's certain rules that go into the running of the simulation.

In other words, rather than trying to replicate the ways games present various concepts in his course, Ben approached game thinking by loosely defining what a game is—a “rule-bound” set of “objectives”—and replicating “the conditions of an actual game” in his course.

**Game mechanics.** If one were to attempt to compile a list of game mechanics identified by various game designers and gamification experts (cf. Fullerton, 2014; Kapp, 2012; Koster, 2005; McGonigal, 2011; Radoff, 2011; Salen & Zimmerman, 2004; Schell, 2008; Sheldon, 2012; Werbach & Hunter, 2012; Zichermann & Cunningham, 2011), there would probably be close to three or four dozen different game mechanics that one could use. However, the list of game mechanics that interviewees in the *faculty who gamify* group reported using was much shorter. Competition and collaboration seemed to be the most commonly used mechanics, followed closely by challenge, role-playing, and rewards. Less common were leaderboards; exploration of a space; “whimsy,” silliness, and humor; achievement systems; points; and badging.

As discussed in the “Relatedness” subsection above, competition and collaboration were likely the most commonly used mechanics among this study’s participants because of their explicit and implicit valuing of “peer-to-peer” learning experiences. Competition was also used, sometimes in conjunction with challenge, points, leaderboards, and some type of reward, to foster motivation. John was probably the most explicit in how he used competition to motivate his students: “And perhaps motivation is sort of the biggest, the biggest reason to gamify your classroom. It’s a lot of fun for a lot of people, and competition kind of drives people to excel and to work harder than they would otherwise.” Walter offered similar comments regarding competition (which he tracked via a leaderboard) and motivation:

Adding gamification did get students engaging in the scenario more than they had in previous semesters [i.e., prior to gamifying the game]... and we gamify—every week, we would post the results for the top analyst, and for—it took a couple weeks to get an accurate score, or people would start to separate, but we would post the top ten list as individual analysts, and then as team analysts...*the teams were competing now, so they were encouraging each other to study hard*, and they wanted to nail the problem.

(emphasis added)

For Walter, there was a causal connection between having added competition and seeing an increase in how much teams “were encouraging each other to study hard.”

Though there was considerable disagreement about whether badges should be considered a game mechanic, people on both sides of the argument (including *faculty who gamify*, pedagogy experts, and gamification experts, as well as some of the people who opted out of this study on the grounds that badges are *not* game mechanics) found badges useful for “making explicit certain skills” and to document students’ progress with these skills. Because those who viewed badges as a “microcredential” as Ben did, and those who viewed badges as a game mechanic, as Mary did, both intended them for the same *function*—to document students’ ability level with specific skills—this debate strikes me as fairly semantic, and it will not likely be resolved to everyone’s satisfaction. This is not to suggest that it is an unimportant discussion; the attention I have given terms and definitions throughout this dissertation, particularly regarding the term “gamification” and my arguments in favor of the term “pedagogy” in Chapters 4 and 5 should suggest the extent to which I value clear definitions of terms. However, in accurately reflecting the perspectives shared with me during the interviews conducted for this study, I necessarily must (re)present badges primarily as an either/or—*either* they are a “microcredential,” *or* they



are a game mechanic—because nearly all of the interviewees who commented on badges perceived them only one way. Only one of the *faculty who gamify* talked about badges as *both* a “microcredential” and a game mechanic. In her perspective, badges were a game mechanic if students used them for feedback, but they were “microcredentials” if employers reviewed them as part of a student’s résumé. Considering the audience for the badge and what information the badge provides for that audience may be one way to address this semantic debate. This solution would be in keeping with the perspectives of those in the *faculty who gamify* group who specifically discussed badges. Ben clarified why he considered them “microcredentials”:

I started to look at this idea of micro-credentials as a way for, when you sat down in front of an employer, and they said, “Well, what distinguishes your résumé from the other 50 people?” is that maybe your résumé can say, micro-credential in written communication. And what does that mean? It means I can, I’m skilled in analysis, and summarizing of evidence, and... you know, they would have a list of things I can do. And so the badge is sort of our stamp to say this person can do this. We certify this person to do this.

For Ben, the audience was clearly potential employers, and the purpose was to give them additional information about the candidate’s skills. This was not the case for Mary, who viewed badges as game mechanics:

I think my next focus would have been more on the games. I was thinking about adding badges where it would be more explicit that if you did this, for instance, if you successfully completed your phonetic transcription homework to a certain level, you would sort of become a Transcriptionist Level One or something like that. Kind of making explicit certain skills, or an ethnography badge. You weren’t, you know it was,

you could enter the apprenticeship or something like that. The idea that they would recognize, “Oh, I’m learning this skill and this skill.”

The differences in intended audience and purpose between these two examples are fairly clear. One of the pedagogy experts who was asked if he could comment on how he viewed badges suggested something along these lines, as well: “I’ve certainly seen badges used where gamification would not be, wouldn’t be considered gamification, I’ve seen it used where it would be. So, you know, have you used it for this reason or for that reason?”

Throughout the discussion above, the extent to which these different concepts overlap and interact with one another should be clear. Opagogic methods are not *just* adding game mechanics to a course; they are not *just* finding opportunities for students to make choices about their education; they are not *just* creating environments conducive to a growth mindset or a flow experience. Rather, opagogic methods lie at the intersection of these four areas and require a well-reasoned and deliberate approach to implementation in order to foster “enriched educational experiences.”

### **Enriched Educational Experiences**

“Enriched educational experiences” was one of the few *in vivo* codes to survive through the final rounds of coding because it succinctly captures what the *faculty who gamify* interviewees seemed to be striving for as they explored the pedagogic and opagogic options afforded by the combination of flow, Self-Determination Theory, mindset, and gamification. It points to a clear goal—that educational experiences *become richer* for students, regardless of the starting point—and implies some means of evaluating progress toward that goal. As the following paragraphs will establish, “enriching” educational experiences is an ongoing process

that relies on self-reflection, guidance from students' comments, or a combination of both, to drive iteration of the gamified elements.

Several of the interviewees used the word “enriched” or “enriching” to describe the gamified learning in their courses. Though other interviewees did not use the word “enrich,” they did describe conceptually similar goals. An “enriched” experience includes two facets: first, there is a prioritizing of *process* (how to learn, how to think, and how to make decisions) over content, and second, interviewees have described ways in which they attempt to immerse students in realistic situations wherein they have to actively combine content and process to solve a given challenge. Game thinking and game mechanics are generally employed to appeal to, motivate, and engage students in this learning experience, and to provide feedback about their progress. Several of the interviewees compared their use of gamification to the lecture format, claiming that this approach gave their students a “deeper understanding” of the course material or spoke of the “nuance” that might be conveyed better through gamified learning than through formal or traditional pedagogies.

Dennis, whose interview first sensitized me to the idea of “enriching” educational experiences in the context of gamification, claimed, “as a full experience, gamification can help that learning experience to be enriched.” He explained,

I think along those...more affective kinds of outcomes or impacts, that gamification does have a broader sort of influence than, you know, it engages students more. I think that if done right, it can really get students more motivated to learn, it can help students to I think *not only engage in the topic, but engage in the process of learning*, so it's not just them wrestling with the topic itself, but them wrestling with the topic with a group of people. (emphasis added)

The downtoning adverbial phrase “not only” suggests that “engag[ing] in the topic” is less important or less of a priority than “engag[ing] in the process of learning.” In Dennis’s perspective, learning the course material was only part of what the educational experience should provide for students—like the bare minimum needed to pass his course—whereas in an “enriched” educational experience, students would get more out of the experience by “engag[ing] in the process of learning.” At another point in the interview, Dennis asked, “how can [students] get beyond that novice learner stage so that they become a more competent learner?” This idea of “a more competent learner” reinforces the interpretation that, in Dennis’s perspective, an “enriched” educational experience teaches students both the course content *and* “the process of learning.”

For Dennis, this idea of “enriching” educational experiences emphasized “the process of learning” over basic information transmission. As an example, he reflected on his students’ attempting to gamify the statistical concept of a normal distribution:

it’s very easy for them just to take the professor’s notes and repackage it and say “Oh, ok that’s what a normal distribution looks like.” And it’s much much much more difficult for them to convey the idea of a normal distribution through a specific context, so how often things break, how often things arrive at a bus stop, those kinds of things that from a frequency perspective, people can get a sense over time that yeah, this looks like that kind of distribution or has the *feel* of that kind of distribution. So it’s much much more difficult for them to take that perspective, which really I think exhibits a deeper understanding than for them to simply take the instructor’s notes and say, “Well, yeah, this is what a normal distribution looks like.”

Dennis's desire for students to think about concepts "through a specific context [such as] how often things break, how often people arrive at a bus stop" echoes other interviewees' attempts to use "a real world context" and "real data" in their courses, as discussed earlier in this chapter. Having to think about "the process of learning" and "specific context[s]" for "follow-on students" as they gamified statistical concepts put Dennis's students into a situation where they were able to "exhibit a deeper understanding" of the material, as compared to "simply" replicating what was in "the instructor's notes." Dennis's point here is very similar to the point Ben made, as described in the previous section, about telling students an idea "in the abstract" versus giving them a specific, concrete situation in which they must think through the concept(s) for themselves.

Ben also talked about "enriching educational experiences" in a way similar to Dennis: "I think we've gotten to a different place where faculty want it to be an enriching educational experience, and so they're willing to try to experiment to make that happen." He juxtaposed the idea of "making [learning] real and connecting it [to students' lives]" with the idea of "enriching educational experiences." Early in the interview, Ben explained his desire to "increase [students'] experience" in his course: "I was trying to think about how do we make it, how do we sort of increase their experience of it, as opposed to sort of passively listening to a lecture." He later expounded on his desire to make learning "real" and "connected to the lives of these students":

I sort of think of it as...how do you make this learning experience real? And how can you make it concrete? And how can you make it connected to the lives of these students, you know, how do you make it where they can, they can see the value of it? And so to me, in order to accomplish that, it's less of me standing in the front of the room saying,

“This is the way the world is,” and it’s a little bit more of them struggling on their own, within the context of a class, to sort of figure out some of the challenges and trends and what have you in healthcare.

Ben’s language in this passage, particularly where he describes the learning experience as students “struggling on their own, within the context of a class, to sort of figure out some of the challenges...” echoes Dennis’s description of “enriched” learning, where students were “wrestling with the topic.” Both seemed to see “struggling” or “wrestling” with ideas as part of “the learning process,” but one that could be mitigated through a gamified approach; both indicated more concern for facilitating students’ learning than for merely conveying knowledge or information. For Ben, the idea of “enriching educational experiences” carried additional nuance compared to Dennis’s explanation of the term. When asked to clarify how he intended the term “enriching,” Ben explained, “it takes students from just sort of being passive recipients” to being in a position to figure out how to make decisions in context: “I’ve got to reduce...healthcare inequity by 30%. I have all of these decisions I can make...Which ones are going to have the biggest impact?...it forces you to...try things out to get to that goal” in a way that “listening to somebody tell you about the healthcare system” cannot. He added, “instead of having a superficial understanding of it...maybe you’re up to the six inch understanding of it. You’ve gone from an inch understanding to six inches to get to that goal.” This “six inch understanding” idea echoes Dennis’s claim that gamification leads to a “deeper understanding” of the material.

Walter also described the gamified learning in his course in language similar to Dennis and Ben. Walter made a clear distinction between the war-game scenarios around which his courses were built and the gamification (role-playing, collaboration, competition, challenge, and

reward mechanics) that overlaid the game-based learning, similar to the way Ben and Jeff gamified their use of video games. He described the war-game scenarios as having “a much deeper, I think, more enriching set of elements.” Though this “more enriching set of elements” is part of the serious game at the heart of the course, not the gamification, it is included here because Walter added the gamification intending for students to engage more fully in the “more enriching...elements” of the serious game. In other words, Walter did not view the gamification itself as “enriching,” but it did incentivize his students to engage more with the main pedagogical approach of his course—game-based learning—in a way that would give students more opportunity to interact with the “enriching set of elements” than they had done prior to his gamifying it. In this way, his students were invited to learn how to think through the decision-making process while accounting for both intelligence data and the “enriching...elements”—aspects of “personalities...and cultural nuance...and governance” that made his scenarios more realistic.

Though other interviewees did not use the word “enrich” to describe the educational experiences in their courses, they did express conceptually similar goals. One particular emergent concept in this regard was a prioritizing of “the learning process” over the content of the course. For example, Leslie expressed a concern for students’ engagement in the “process,” similar to Ben and Dennis:

In education, we have a fairly long history of teaching tasks and teaching knowledge. We don’t focus as much on process...it’s no longer important that we drown our students in knowledge, especially things that they can Google. We need to drown them in process. We need to take their own natural curiosities and help them, equip them with

ways in which to follow that interest, to find the answers that are most important to them, to pose questions that are meaningful in their lives.

Leslie argued that the course content—the “knowledge”—is accessible to students (i.e., “things that they can Google”), but knowing how to learn or to understand that knowledge is not necessarily accessible to them. Leslie suggested that knowing *how* to “pose questions that are meaningful in their lives” and “find the answers that are most important to them” is likely to be “meaningful” for students. In discussing how games and gamification might “change the way we learn,” Leslie claimed gamification “can instill new lessons of what to learn...but I think well done, it goes much deeper. It goes much deeper into structuring...how that new knowledge functions, how it’s used, how it’s accessed by students.” She expressed an idea similar to Dennis and Ben when she juxtaposed this repetition of gamification going “much deeper” with the idea of gamification as “a bridge between formal and informal learning.”

Mary commented that “I’ve been trying to...push them more into what’s really happening in the discipline, so that it’s not just, ‘Well, this is *what* we’ve discovered,’ but ‘this is *how* we discover things’” (emphasis added). John similarly explained,

I’m trying to teach them programming. I’m not trying to teach them *a* language, right? Students often misunderstand that...they think, “I know Java, so I can’t program in Python,” but that’s really wrong. If they’re taught right, they’re taught programming, how to develop an algorithm, how to think programmatically, and then it doesn’t really matter what the syntax of the language is that comes out of it at the end.

John’s repetition of “how to” suggests that he, like most of the interviewees, was more concerned with the “how,” or the process, rather than the “what”—the syntax of a specific programming language. Frank also felt that “the goal should be...to develop critical thinking



skills and these processes that I guess are part of the critical thinking.” He clarified that “these processes” included “the process of how do I get from...where I am to where I want to be,” and explained that “whether it’s engineering, or politics, or whatever, all of these have some process that it takes to get there...[regardless of the discipline] the processes that you would use, there’s probably a heck of a lot of overlap.”

The way most of the interviewees described it, “the topic” and “the process of learning” are two different things. Simple knowledge transmission seems to be perceived as the baseline of what should happen in a course, whereas deliberately designing learning experiences to encourage students to engage more deeply in “the process of learning” seems to lead to “enriched” educational experiences in that students are not being asked to learn “just” or “simply” the content of the course, but also to learn how to learn and how to think on a deeper level as well (this idea will be discussed in more detail in the “Faculty takeaways” section below). In other words, an educational experience is one where the student learns about the course content, whereas an “enriched” educational experience is one in which the student learns something about both the course content *and* “the process of learning.” This interpretation coheres with several interviewees’ expressed desire to help students become “more competent learners” (Dennis) or “lifelong learners” (Leslie), and to help students “lay the foundation...for an intellectual life” (John).

**Faculty takeaways.** Some interviewees reported both effective and ineffective attempts at innovating their pedagogical approach through gamification, though it should be noted that not all interviewees commented on how successful or unsuccessful their gamification attempts were. Some interviewees couched such responses more in terms of how they themselves perceived the

gamification experience. Others discussed the way their students responded to the experience; such commentary will be discussed in the next section, “Student reactions.”

As discussed earlier in this chapter, Jeff had gamified his courses two different ways; one was the gamified use of a video game, and the other was the use of an achievement system. Jeff’s comments on his use of the gamified video game were brief: he felt that “it was fun, interesting...[and] they liked it.” Jeff incorporated the gamified video game into his course most semesters, saying that the community that built up around it varied in helpfulness from one semester to the next, indicating that he wanted to figure out how to make it more consistently helpful in the future. He provided additional commentary on his use of the achievement system, though, which he had “tried embedding” into his course. The achievement system was designed to reward things like attending class regularly and earning high exam scores. However, he noted that “the achievements did not work as well as I would have liked.” In particular, he found the achievement system he had designed to be “too complicated to be handled easily within Excel or a Learning Management System.” This over-complication led to a “lack of transparency for students in terms of how their grades were calculated.” Jeff preferred a “clear grading system” and claimed that “an extra buffer is needed for large classes” that would allow for adjustments like dropping the lowest quiz grade. Because his achievement system was at odds with what he valued for his students and he was unable to rectify that issue through iterations of the achievement system, Jeff eventually discontinued its use.

Mary had also implemented an achievement and reward system in her course. She was “most interested in...the idea of earning points for the grade, and I think I did it with participation because that was something that was...traditionally poorly defined in a syllabus, but that’s really important.” In the achievement and reward system she created, students could

earn points toward a portion of their final grade by coming to class regularly, turning in homework on time, and so forth. She also “wanted to...give points for participating in discussion, but I ended up having a hard time tracking that.” This system went through several iterations because she had “started out with a pretty elaborate one” that did not suit her goals. She “simplif[ied]” her system for two reasons: first, she found it difficult to keep track of in-class participation, and second, she “didn’t want to overly reward the extroverts in class.” At one point, she asked her students what rewards they would be motivated to strive for, and she worked their chosen rewards into her system (i.e., if most of the class earned perfect participation scores, she would cancel a day of class). She noted, “That worked out pretty well, actually. I got much better attendance the semester when I started using points. I got much better attendance. I was surprised.”

Mary also briefly commented on her use of mini-challenges to introduce students to new material and to provide “non-threatening” practice with certain analytic skills. In discussing her rationale behind the implementation of the mini-challenges, she explained, “something that makes it more game-like versus less game-like is...a sense of whimsy is one element. I think if you require anything from students, there’s going to be some student who doesn’t like it.” This awareness that “requir[ing]” something will likely lead to “some student who doesn’t like it” suggests that she valued student autonomy. She said she tried to make the challenges “meaningful or just quirky,” but did not count them for credit, because she felt that requiring students to play would make them “hate it,” and that would undermine the “good mood” she wanted to set. She explained, “some students I noticed really tried to do it, and other students were like, they were catching up on their email and they were just waiting for us to go over the answer.” Reflecting on the two different kinds of gamification she had used in her courses, she

commented, “I think students, in some ways, were more intrigued by the participation points because there were rewards associated with them,” whereas the mini-challenges did not necessarily appeal to everyone.

In reflecting on what he has learned about pedagogy from three decades’ worth of teaching, Frank commented, “you try to do things that will emphasize or make the lessons you want to teach more interesting or more fun.” One of those “interesting” or “fun” elements, in his experience, was the game mechanic of competition: “students love competition. Any time you can make it competitive, they will learn a million times [laughing] more than if it’s just an assignment.” Because the nature and structure of Frank’s course were drastically different from the typical college course (i.e., the same students are in the course for more than one year, not for a single semester), I hesitate to extrapolate too much about the student experience in his course from his comments or actions. However, his deliberate and considered use of competition and collaboration game mechanics is clear: he used competition to create “fun” learning experiences, and he used collaboration with an older and a younger student with the “hope [for] mentoring” between them.

Walter found that adding gamification to his game-based course increased his students’ willingness to engage with the material because they wanted to compete for the Top Analyst prizes (winners would have their names engraved on a plaque in Walter’s office). Because he noticed that students “were encouraging each other to study hard, and they wanted to nail the problem,” he decided to expand his use of gamification: “I’ve extended this now to all three of my exercises, this gamification approach.” In addition to the motivation that the collaboration and competition mechanics fostered in his students, Walter also found that the gamification approach “increased the rigor of assessments...[and] gives me some insight on the overall kind

of knowledge and participation in the exercise,” which is something Walter found had “really [been] missing.” Adding the gamification layer gave him a better “view inside all of these teams” than he had prior to adding the game mechanics to his course. Walter also commented on the impact gamification had in “find[ing] that person who is carrying the weight as opposed to the sleeper, what I call the sleeper cell. The person who is literally sleeping during class or during the team meetings.” Walter explained that he wanted to be sure he was rewarding the people who were “carrying the weight” without also rewarding the “sleeping” behavior, and the game mechanics he added to his course allowed him to do that.

John acknowledged that it was difficult to know for sure how much students had learned in his course, since he was not necessarily sure what prior knowledge students brought with them to his course and he almost never saw them again after the semester ended. “What I do see,” he explained, “is that students that have zero algorithmic experience...sometimes end up looking up some standard AI, artificial intelligence algorithms, and they end up implementing them, like writing them themselves...just so they can do well in the game.” In his view, that represented “some evidence that they must be learning something, that they must be motivated to work hard, and that they get some results.” Toward the end of the interview, John commented, “I am concerned about my students actually learning well and...that they have achieved some minimum standards, but it’s certainly very welcome that students like the experience.” Like Walter, John also commented that “students that excel will be doing all the work for everybody else.” Because this was a concern for him, he decided to allow collaboration on the development of the algorithms, but required each student to submit his/her own bot, thereby capitalizing on the benefits of peer-to-peer collaboration while still individualizing students’ learning: “this

competitive game environment that individualizes performance forces every single student to make progress toward the learning objectives.”

Ben felt using the health-based video game and extending it into the course through role-playing, collaboration, and competition created “a better experience” for his students:

I do see this as sort of like a game, as gamification of a class, because there is sort of, there are set objectives, there are rules that they have to follow, there’s a prize. And I think it actually helps. I think it actually helps them...I think it’s a better way for the majority of the class. I think it gives them a better experience than just having to take a final, that final exam.

Ben’s repetition of “I think it actually helps” seems to suggest the extent to which he thought it “helps.” He commented at one point in the interview that students seeing “real utility...real value” in his gamified approach “for many years sort of kept me going with it.”

Similar to Mary, Walter, and John, Ben also noticed that “there always seemed...to be a percentage that just wasn’t either engaging in it,” and this was one impetus for him to continually iterate on the gamified elements. Also like Walter and John, Ben acknowledged “not everybody does equal amounts of work [as part of a team], and you try to put in some safe guards to make that happen, but you minimize the free rider effect.” To combat “the free rider effect,” Ben tried varying the balance of individual work and teamwork required, the size of the teams, and the timeline of the game-based activities throughout the semester. Ben’s perceptions, along with his students’ reactions to the gamified learning experiences, factored in to the ways in which he iterated the course over the years, as will be discussed in additional detail later in this chapter.

Though Dennis had originally intended to use gamification as a way “to get [students] more excited about learning” and to “restructure” difficult topics with the aim of making them

more effective for *future* students to learn. However, that is not necessarily what happened; he found that “the students going through it at the time, *they* were the benefactors of the gamification process. By forcing them to basically think about how to gamify, it reinforced their learning of the original material in the first place.” He described this finding as “both surprising and also sort of challenging,” adding that “it did shape the way I think about games in terms of...how much preparation is needed to understand the pedagogical component of games.” This idea is supported by his earlier comments about the flaws in gamification research, the lack of validation in published gamification studies, and his lack of a “tutor” through the gamification process. Dennis explained that “part of the expectation that we had was that [students] were further along...than they actually are.” He acknowledged that “when you’re done with a course, that doesn’t mean that you know...the materials presented in that course.” He realized that, when he saw students in “subsequent courses” and had to review material from earlier courses, it should have “alert[ed]” him to the fact that students were not retaining as much information as he expected them to. Some of the pedagogical concerns regarding Dennis’s use of gamification arose because “a lot of the assumptions we made were wrong.” Dennis explained that he “treated the project like I would a research project, and...did not account for the fact that you can’t expect students to know more than they know and to be motivated to learn those additional concepts” so that they had the prior knowledge he expected them to have going into the project. Another inaccurate assumption was that he “did not expect the groups themselves to be different,” though he acknowledged he “should have anticipated [that] because I’ve been teaching for a while, and students are students—they’re different.” These two takeaways—that students will not necessarily have the expected prior knowledge, and that students’ motivation to

engage in the gamification will vary from one person to the next—suggested ways for Dennis to modify his use of gamification as a pedagogical tool.

Because Sara had “used the same test bank” for assessment questions as she made her course increasingly gamified, she “was really able to compare” scores from students who took the course before and after the addition of certain game mechanics (i.e., narrative structure, mini-games). She found that “the test average went up by about ten percent,” which she felt “was awesome because I had always felt that the average needs to be at least over 70...but suddenly the test average was like 82.” She noticed that the increased test average also provided some positive affect, as well: “student morale is so much better when it’s 82...they’re just so much happier, because they feel like they are understanding the material if they get in the 80s. If they get in the 70s, they don’t think they’re understanding things.”

As noted earlier in this section, some interviewees reflected on what they, themselves, took away from these gamified experiences, some reflected on what students had told them about their experience, and some commented on both aspects. Of the interviewees who commented on student reactions to the gamified learning experience, the most common theme was that students generally “enjoyed” the experience, as will be discussed in the next section.

**Student reactions.** All of the student reactions discussed in this section are essentially seen through the faculty perspective, as the faculty themselves were the ones to provide me with this information. Though not all faculty commented on the student experience in depth, nearly every interviewee indicated that students “enjoyed” or “liked” the gamified learning experience and found it “fun.” Jeff, for example, simply said students in his economics course told him, “it was fun, interesting, they liked it” and it was “low-stakes.” Other faculty gave more detailed responses regarding their students’ reception of gamification.



John noted of his programming students, “they’re usually quite excited about the game, they can’t wait for that to begin, right, so that’s cool.” He added later in the interview, “It does motivate people, and students tell me afterwards that they’ve never worked as hard in their university career for any class.” He attributed this motivation and effort to the competition mechanic. He said sometimes his students were “kind of surprised at themselves that they worked so hard on this, and they say they learned something.” However, he also noted with a grin that “Sometimes they’re mad at me...for making them work so hard, for somewhat tricking them into working hard, but that makes me happy.”

Walter likewise felt that his students enjoyed the gamified format of the course. Though the “exercises” he referred to in the quote below represent the serious games at the heart of his course, he also indicated that his students seemed to like the competition mechanic he recently added to the course:

The students, once they get a taste of it, I think that they, you know, we have good problem solvers, so problem solving, critical thinking are all components of our major, and so it’s a good complement to that. They tend to be good culminating exercises. The students leave, it’s a work-out at the end, but they know that they’ve solved the problem, and so I think that they enjoy it.

Walter’s students also seemed to appreciate receiving an award for placing at the top of the class, and at least one student included the award on her résumé, suggesting that she perceived it as valuable.

Ben reported a somewhat different student experience than most of the other interviewees. He explained that most of his students seemed to “hate” the gamified learning experience at the beginning: “the experience...starts off where people actually, they hate it, they

hate doing it, it doesn't make any sense to them, but at the *end*...the vast majority of them...see that there's real utility in it, that there's real value in it." Ben had at least six semesters' worth of data that he had collected from his students at the end of his course:

At the end, they agree that this assignment increases their understanding of the complexity, 83%; challenges, 88%; factors that contribute to population health, 86%; basic concepts covered in the class, 80%. Eighty-six percent of students agree that the assignment gave them the opportunity to participate more than a normal lecture.

He continued, "I think it's a better way for the majority of the class" and explained that his students generally seemed "really...incentiviz[ed]" by some of the rewards he had built into the gamification architecture for the course (i.e., opting out of the final exam or earning bonus points toward assignments).

Only one interviewee shared what might be considered a less than positive student experience. Leslie related a situation that captured what she called the "success and failure of gamification." She had been teaching her undergraduate music education majors how to teach music to middle school students. She wanted to know if aspects of a popular video game that used musical instruments could engage middle school students in learning a new skill. She devised a study where she and her undergraduate students went into a middle school twice. On the first visit, she had her undergraduate students use parts of the video game to introduce the middle school students to the guitar. A week later, they returned with real guitars "and we showed them, 'Well, ok, you played a G on the controller this way, now move that finger to the bottom string. It's the same chord.' And then we played the songs they already knew." Leslie commented, "It was absolutely fascinating, and by the end of that one class session on the real guitars, the students were playing the tunes." At the end of the study, she had both the middle

school students and her undergraduate students rate the experience, and she identified a disparity between how the two groups viewed and valued the experience:

The middle school students ranked it as the most enjoyable and most meaningful part of their entire semester in general music...[over 70 percent said] they loved it...The majority of middle schoolers were like, “This is the most exciting part of class! We played Guitar Hero, and then we learned the song, and then we played it on guitar, and I can do this!” It was very much the opposite for my undergraduates. They rated it as a very questionable activity. They didn’t see the value in it...Their comments included just really questioning what the purpose of using this game was. And wouldn’t the students be better served if we just taught them more songs on the guitar versus trying this new approach.

Leslie said that from a pedagogical perspective, her “undergraduate students themselves did not see the value of gaming. They did not see the value of gamification.” She attributed their not seeing the value of it to their lack of experience with teaching, and she thought their own previous schooling experiences influenced that, as well: “They hadn’t learned it that way. So they didn’t really see the value in changing from what they had learned.” Her students’ resistance to changing pedagogical approaches meshes with discussions in Chapter 2 and earlier in this chapter regarding educators’ hesitance to adopt new or different pedagogies.

Interviewees generally spoke of using their own perceptions about how the gamification elements in their course worked, along with students’ responses or reactions to it, to make adjustments to their gamified pedagogical approach. All of the interviewees either spoke overtly about the need to iterate on a gamified course, or they spoke indirectly of what they changed

from one semester to the next. These efforts at iterating on gamification will be addressed in the next section.

**Iterating on the gamified course(s).** Interviewees generally acknowledged that gamification was not a one-and-done pedagogy, that it needed continual adjustments. They also commonly felt that it was better to make a series of small adjustments rather than large, sweeping changes when iterating on a gamified course. Jeff, for example, commented that “change could be big or small, so the up-front costs don’t have to be very big.” This approach agreed with advice from the pedagogy experts: “Most things you’re going to try, I always advocated for not a major overhaul, you know, to take some baby steps, and to implement things where you’re getting some ongoing feedback.”

Leslie explained that her initial ideas generally came from a variety of sources such as books, articles, or conference presentations, and she examined how each idea worked with a critical eye:

that’s kind of where the gamification came for me—an idea that bubbles up and be willing to risk it, and put it in your curriculum, and try it out, and then be critical of yourself—and the students help with that [chuckled]. Did it work? Did it not work?

And how could this be modified to be better, or just abandoned? There are many things

I’ve tried that just never resurface, and that’s fine.

Leslie also thought it best to start small when beginning to gamify a course, focusing on specific aspects that could use improvement rather than attempting to gamify the whole course at once:

“It’s probably highly unlikely that you can start a new class and I’m going to gamify everything.

So maybe it’s a unit. Maybe it’s a lesson. Maybe it is just one particular topic.”

She gave the example of having run one particular course several times where students needed to produce an original musical composition. In reflecting on the course, she identified students' lack of motivation as an aspect of the course she wanted to improve, so she devised a way to gamify the assignment in coordination with a museum on campus. Her students picked a display in the museum that appealed to them, then "They composed a new song based on that work, and it was absolutely fascinating." Those compositions were then sent over to the museum, where they were broadcast to museum patrons at each of the chosen displays. In this instance, she had not gamified the whole course, just one assignment for one specific purpose—to increase students' motivation for composing an original musical piece.

Ben also spoke about his efforts at iterating on the way the gamification works in his course. Toward the end of the interview, he commented,

Like anything else in life, it's going to be a constant, you can't just sort of create it, put it in the course, and leave it...you're going to have to constantly revisit it, and...I do that, certainly every year. We don't make major changes to ReThink from the fall to the spring, but we do make substantial changes from that spring to the following fall.

From one semester to the next, he might "make small changes, corrections, or add on things," reiterating that "that's a constant when you're trying to do something like this [gamification]." He acknowledged that some of the "small changes" to the way he uses gamified learning in his course were preventative, as he found some students trying to "game the simulation":

each batch of students will find new ways to, I mean...sometimes the students have spent more time sort of trying to find the way to game the simulation than actually work with the simulation. So you find out about those sort of cheats and what have you, and then you make corrections for it.

Other changes he made related to the collaboration among group members and what emphasis or perspectives students were being asked to assume. For example, over the years, Ben has altered the balance between large groups and small groups, since working in smaller groups allowed students to become immersed in assuming the role of a particular healthcare group:

So, originally...it was totally a [big] group project...Then, I moved to starting the semester off that each section was then sub-divided into smaller groups, and those smaller groups had to...assume a certain perspective on the healthcare system...federal government people, consumers, insurers, business, and state government.

He kept that format for several semesters, but “wasn’t really satisfied with it,” so he made two changes: one change was in group size, from larger groups to smaller groups, and the second change was related to the perspectives or roles students were asked to undertake. In the revised course, the smaller groups were “based on the clusters of intervention”:

there was a Capacity of Care cluster, so there were things like increase of the workforce, increasing efficiency. There was a Care cluster and that was all around improving the performance of the care system. Better coordination, reduction of hospital-acquired infections, and stuff like that.

He refined these down to “five small groups around these clusters,” and he “felt that was ok,” suggesting he was more satisfied with the course as a result of the two main revisions (team size and role-playing perspective) to the gamified learning experience.

Ben also iterated on the reward structure that he used to “incentivize” students to collaborate and compete for the most effective solutions to a healthcare problem he posed. He originally wanted to encourage participation, so he offered rewards (the top scorer could “opt out of the final exam,” and the top three students earned bonus points). His dissatisfaction with that

system was apparent when he asked, “So what keeps the rest of them [participating]?” In other words, once a student knew he/she could not place in the top three slots, there was much less incentive to keep putting effort into the gamified learning experience. He eventually adjusted the incentive structure:

now, it’s if your section can...meet certain metrics to get qualified to compete for that top slot, then you can get out of the final exam. And that, honest to God, that really does incentivize people. It really does. And they’ve come up with some really—each semester it does seem to get better.

The repetition of the idea that this system “really does incentivize people” and the emphatic adverbial phrase “honest to God,” suggest that he is substantially more satisfied with the incentive structure in its current iteration. That Ben juxtaposed this increased satisfaction with the incentive system with commentary on what he has seen his students produce (“they’ve come up with some really—...it does seem to get better”) suggests two possible implied antecedents for the dummy “it” in the clause “each semester it does seem to get better.” First, the “it” could mean the course as a whole, both what Ben designed the course to be, and what the students produce as a result. Second, “it” could be interpreted as the student participation, as a result of the incentive structure. In either interpretation, Ben’s comments in this regard are strongly suggestive of his becoming increasingly satisfied with the course over time—of moving the needle from “wasn’t really satisfied with it” to “it does seem to get better.”

In each stage of iteration, Ben made one or two manageable adjustments and ran the course, often for multiple semesters, to see what the effect would be. Through a series of such changes, Ben’s satisfaction with educational experience provided through the course increased. His actions over the years are strongly supportive of his claim, “you’re going to have to

constantly revisit it.” Additionally, the difference in Ben’s reaction to the team structure (“that was ok”) and his reaction to the current incentive structure (“honest to God, that really does incentivize people. It really does”) suggests that he will likely continue iterating on this course, at least until he feels the team structure is more than just “ok.”

John iterated on the gamification in his course in a slightly different way—by allowing some students to make changes to the game environment itself:

Sometimes I ask individual talented students to make some changes to it, or to give me an addition to it, because I find that sometimes it’s good to have additional tasks surrounding whatever you’re working on, so that people are appropriately challenged. This idea of being “appropriately challenged” meshes with both a flow perspective and a Self-Determination Theory perspective, as providing tasks that fall within students’ competence but still present a challenge is important for developing internal motivation, and John made it clear that motivating students was his “biggest reason” for gamifying his course. By allowing students to tweak the game environment, he can iterate on the game while potentially stimulating students’ internal motivation at the same time.

Regarding his use of the gamified video game assignment, Jeff described the difficulties he had soon after adopting that approach; he had “originally assigned it at the end of the semester, but students who had already earned all of their quiz grades tended not to participate,” so he chose to move the assignment earlier in the semester “to increase student participation.” He also provided incentives (i.e., double points on in-game achievements) for students to provide feedback about the game, which he then used to iterate on the gamified learning experience. He also commented that the community that grew up around the game each semester could be improved, saying that students hardly took advantage of it some semesters. Since he was



satisfied with when the assignment occurred, the next sticking point he wanted to address was making the game community more consistently useful for students, though he was not yet sure how he might accomplish that.

Mary had also tried to implement an achievement structure into her linguistics courses. However, it did not initially work the way she wanted it to, and she had to iterate on the rewards structure. The system addressed attendance and participation, as described in the “Faculty takeaways” section above. Though she “wanted to...give points for participating in discussion,” she found that she had “a hard time tracking that” because documenting who contributed to a discussion sometimes interfered with guiding the discussion. This realization led her to “simplify” the achievement system. She also found difficulty in balancing student participation due to students’ introverted or extroverted nature: “I wanted to make sure I didn’t penalize people who, for whatever reason, just would not speak up in class. I knew they were understanding it and processing it...I didn’t want to overly reward the extroverts in class.” She revisited the way she awarded participation points because she wanted to “lessen the penalty of it” for students who were not comfortable speaking in class. She wanted the achievement system to reflect that “It wasn’t a penalty, it was a reward,” in the hope of encouraging participation rather than forcing it.

Iterating on gamification sometimes leads to the creation of a full-fledged game, which is what eventually happened in Sara’s courses. Though some sections are still gamified (i.e., follow a narrative structure, but have no other game-like features), some have evolved to be more than that. In reflecting on the iterative process, Sara commented, “we watched what students were doing and improved it.” However, a little ironically, the game version is “not fun enough. I mean, there’s not like a timer or some kind of a thing that makes it fun. There’s a

score, but I don't think anyone's really engaging in that way." This represents one potential downside at the intersection of education and gamification—the so-called “chocolate-covered broccoli” effect (Chen, n.d.; Farber, 2014; Smith, 2017; Zichermann & Cunningham, 2011). As several of this study's participants have expressed, and as corroborated by researchers, gamification experts, and game designers, simply adding game mechanics will not necessarily make a situation “fun;” rather, it has to be well designed, “integrated,” and balanced (Cousins, 2004; Gee, 2013; Kapp, 2012; Koster, 2005; Nicholson, 2015; Radoff, 2011; Salen & Zimmerman, 2004; Schell, 2008; Sheldon, 2012; Werbach & Hunter, 2012; Zichermann & Cunningham, 2011). The chocolate-covered broccoli metaphor explains some of the flaws in how educational researchers have approached studying game mechanics (as discussed in Chapter 2; cf. Attali & Arieli-Attali, 2015 and Hanus & Fox, 2015 as examples). It also may address some of Dennis's concerns about the “examples of things that are done poorly” in the extant educational research on gamification. As several of this study's participants noted, it is important to continue iterating on the game thinking and game mechanics, since not all students respond to different game mechanics the same way. Participants generally agreed that having a variety of relevant mechanics and utilizing those mechanics in a way that is “integrated” with the course and aligns with what we know about motivational and learning theories is more likely to foster the kinds of educational experiences they wanted to encourage. They also agreed that iterating takes time and should incorporate feedback from students.

### **Summary of the Findings**

This study's findings were organized according to the model presented toward the beginning of this chapter and reiterated here for the reader's convenience.

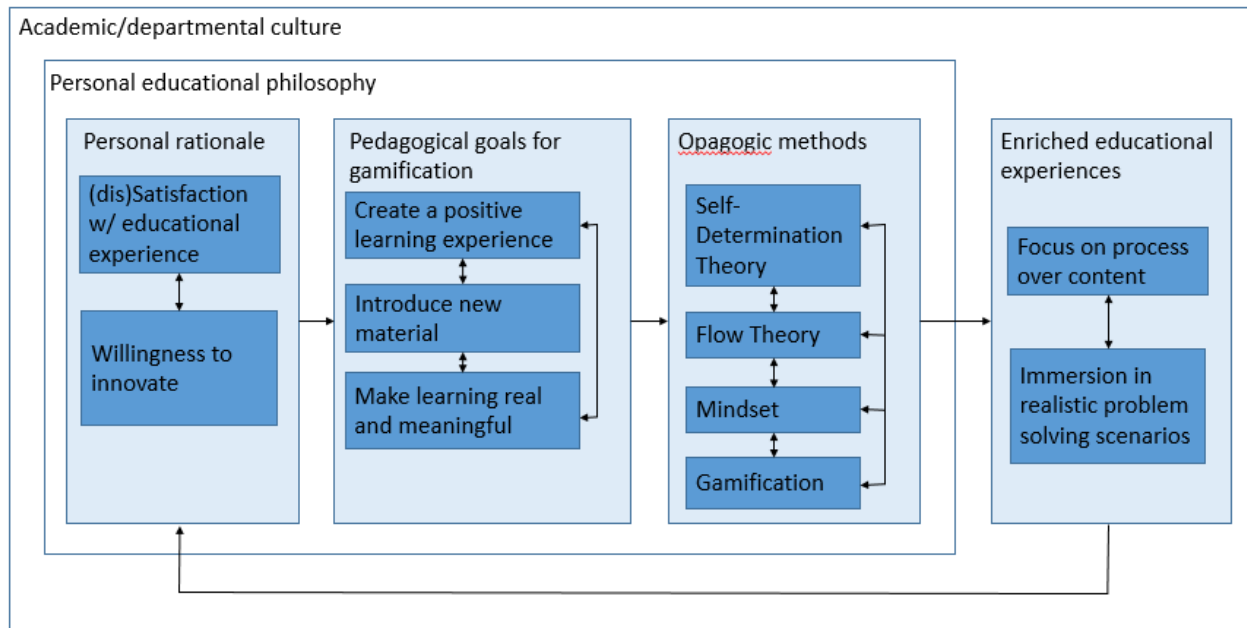


Figure 4.1: Reproduced for context

Interviewees’ perceptions of academic and departmental culture serve as a backdrop against which their own personal values and beliefs about education could be understood. There was often some degree of discrepancy between the culture within which interviewees were situated and how they believed education should occur or what the educational experience should be like. A combination of their varying (dis)satisfaction and their willingness to innovate led to their attempting to gamify their courses, generally with an eye toward making learning more enjoyable, catching students at the “gateway into learning” new material, and/or making learning “real” or “meaningful” for their students. These concepts formed an iterative process by which interviewees typically sought continual improvement of their teaching methodologies to foster “enriched” educational experiences for their students.

Interviewees’ perceptions of academic and departmental culture aligned with research on the cultures at institutions of higher education (Austin, 1994; Beyer, Taylor, and Gillmore, 2013; Bok, 2006; Brownell & Tanner, 2012; Halpern, 1994; Hendrickson, Lane, Harris, & Dorman 2013; Lattuca & Stark, 2011; Tierney & Bensimon, 1996; Virick and Strage, 2016). Directly or

indirectly, most interviewees indicated an educational philosophy that aligned with Self-Determination Theory (Deci & Ryan, 1985), Flow Theory (Csíkszentmihályi, 1975), and/or the concept of growth and fixed mindset (Dweck, 2006). (dis)Satisfactions they expressed included the lack of an incentive structure for innovation regarding pedagogy, the perception that students were not learning very much, and concerns over the effects students' prior educational experiences may have had on the students themselves. Most interviewees' attempts at innovation were not limited to gamification, nor were they necessarily limited by the confines of a given course (i.e., at least one participant spoke of departmental discussions about badging the undergraduate curriculum). Nearly all interviewees also acknowledged that innovation would be easier if more information (well-validated research, databases of examples and results, etc.) were available, or if they could be assured that a given innovation was likely to be more effective than their current approach. Interviewees generally spoke of wanting to make educational experiences less negative—or more positive—for students, particularly regarding motivation, engagement, and emotional impact. Several interviewees also expressed a desire to design learning experiences that might “surprise” students who had become apathetic about learning or were approaching new or difficult material for the first time. Nearly all interviewees expressed the belief that if learning were “fun,” “real,” “concrete,” and/or “meaningful,” then students would be more likely to remember, learn, and understand the course material, and they viewed gamification as *one* way (not the *only* way) to achieve that goal. Most interviewees also prioritized learning “process” over content and wanted to foster lifelong learning in their students.

## Chapter 5: Discussion and Conclusion

The discussions and conclusions presented in this chapter are an extension of the findings detailed in the previous chapter. After a brief recap of the similarities and differences among the *faculty who gamify* who were interviewed for this study for context, this chapter then provides discussion on the findings as they relate to each of the research questions that guided this inquiry. The model developed in Chapter 4 (see p. 163) provides a useful structure for responding to the second research question (what do we learn about pedagogy from faculty who gamify?), while discussion of the other two research questions is guided more by prevalence of the findings.

Some of the similarities and differences among the participants themselves, which were elaborated upon in detail throughout Chapter 4, will provide fresh context for the discussion that follows. For example, all participants in the *faculty who gamify* group clearly cared for their students' learning and well-being. All of them were seasoned educators with at least one decade of teaching experience prior to participating in the study. With only one exception, all interviewees in this group had intended to pursue a career in education. They all spoke with passion about their profession and their fields, though some also spoke with a tinge of frustration (e.g., Leslie's comments about the long history of the "master class" in Western music education, or Frank and Leslie's commentary about the lack of a reward structure supportive of innovation). With the possible exception of Jeff, all of the *faculty who gamify* interviewed for this study demonstrated a clear preference for learning facilitation over knowledge transmission (Kember & Gow, 1994; see Chapter 2 for a brief discussion). Some, like Leslie and Frank, spoke of trying a wide variety of approaches, while others, such as Ben and Walter, indicated that they kept the

same basic pedagogy (game-based learning for both of them) and continually iterated on that approach.

Those in the *faculty who gamify* group differed somewhat in their perceptions of academic culture, of the extent to which tenure gave them freedom with their teaching efforts, and the number and variety of pedagogies they had tried in their courses. They represented a wide range of academic fields, with only two interviewees coming from the same department. They also differed in the level of perceived support they reported within their academic units. Another point of difference among the *faculty who gamify* group is the extent to which they brought gamification into their courses (i.e., ranging from one assignment, to interspersing it throughout the whole semester) and their reasoning for doing so, as described in the previous chapter.

I indicated in Chapter 3 that this study intended to produce a substantive theory, and here I present the theory of opagogy: if we want students to care about their learning, and if we want students to develop a toolbox for learning that will serve them well throughout their personal and professional lives, then we need to use teaching methods that support the wellbeing of the whole student. If we graduate students out of a program and all they know is content, not process, then we have not fully equipped them. If we graduate students out of a program and they have developed an aversion to learning, then we have done them a disservice. This is where the theory of opagogy has value because it establishes a framework for teaching methodologies that builds on well-established constructs like flow, Self-Determination Theory, and mindset to encourage learning while drawing on the engagement and motivational aspects of game design in order to invite students to be active and willing participants in their own education. As depicted

via the use of direct quotes from interviewees throughout Chapter 4, this theory is grounded in the data provided by the interviewees in the *faculty who gamify* group.

Interviewees generally demonstrated a concern for the emotional impact of students' prior and current educational experiences, and for the extent to which prior and current educational experiences had taught students important processes (how to learn, how to think, how to study, etc.). Interviewees typically discussed the need to appeal to students in a quasi-rhetorical sense insofar as they (the rhetors) needed to appeal to their students (the audience) in order for their students to accept the lessons presented through the course (the message). In this way, *appeal* connotes both a request that students participate in the learning experience and a consideration for how to make course material attractive or interesting to students. That all of the interviewees commented on the extent to which students "liked" the gamified components of the course suggests these faculty were often successful in *appealing* to students and making the materials *appealing*, as well. In this way, the dual meanings of *appeal* closely parallel the goals of opagogy: make sure students are given the opportunity to learn both the process(es) and the content that they will need throughout their personal and professional lives, but do so in a way that is positive, learner-centered, and enjoyable so that learning does not become a mindless chore (cf. Mary's commentary on "rote" learning and Sara's explanation of students not understanding the meaning behind the words they were repeating in Chapter 4).

Because this theory of opagogy is newly emergent and the extent to which it may (or may not) be generalizable to other contexts (different institutional types, different academic fields, different student populations or subpopulations, etc.) is not known, it cannot be considered a formal theory yet, though it does meet the criteria to be a substantive theory and may be transferrable to other major research institutions ("What is Substantive Theory," n.d., para. 1).

The model, as it ties together and gives structure to the concepts that emerged as a result of this study, should also be addressed. My intention in conducting this study was to develop an understanding of how and why faculty make the pedagogical decisions they make when gamifying their course(s). To that end, it became clear that faculty were *choosing* to do something other than what had been done to them and/or other than they had done before. The left-most box in the model suggests that faculty who are satisfied (or, are not *dissatisfied*) with the educational experience may be less inclined to innovate through gamification. Likewise, faculty who are risk-averse may also be unlikely to add gamification to their pedagogical toolbox. Broadly stated, the interviewees in the *faculty who gamify* group chose to work with gamification because they saw room for pedagogical improvement in the way they taught their courses and/or they wanted to try something new or different. In terms of actually implementing game thinking and game mechanics, their decisions were primarily guided by wanting their students to “enjoy” the learning experience and by a desire to get students to engage with course material (particularly new or difficult material) in a “real” or “meaningful” way. As noted in the model, these three aspects—creating a positive experience, introducing new material, and making learning “real” or “meaningful”—are often interconnected. As a result of implementing gamification, typically with an eye, for flow, Self-Determination Theory, and/or mindset, the educational experience these faculty provide for students becomes “enriched,” as compared to the way they had previously taught the material (cf. Ben’s desire to “increase their experience” and Dennis’s realization that he was “losing” a majority of his students by using “pure lecture” methods), or compared to the way others in their respective fields typically teach the material (cf. Leslie’s pedagogical decisions as compared to the “master class” that continues to be the tradition for teaching in her field). As several interviewees noted, not all modifications will



result in the intended outcome (i.e., students might not find a particular game mechanic appealing, as Jeff and Mary discovered), so the model had to account for trial and error. The model also had to account for faculty making a series of small, incremental changes over several semesters, rather than attempting to overhaul an entire course at once. Both trial and error and the process of making small, incremental changes toward a more “enriched” learning experience could be captured by making the model circular to show the iteration that nearly all *faculty who gamify* identified as necessary. There is no clear end-point to this model; since more than half of the *faculty who gamify* felt that learning experiences could (and maybe even *should*) be continuously improved, the lack of a clear end-point fits with the data provided by this study’s participants.

## **Discussion**

To bring all of the information presented in this chapter together, the discussion is organized according to the three guiding research questions:

1. What do we learn about gamification as a pedagogical tool from faculty who implement it in the classroom?
2. What do we learn about pedagogy from faculty who gamify their courses?
3. To what extent does disciplinary pedagogical knowledge affect choices that faculty make, particularly regarding gamification as a pedagogical tool?

After addressing these questions, some additional commentary will address a pattern that seemed to emerge from the potential interviewees who declined to participate in this study (a concern that was also addressed by one faculty who gamified and at least one gamification expert and one pedagogy expert), with an eye toward how such issues might direct future research.

**What do we learn about gamification as a pedagogical tool?** Several points can be taken away from this study regarding the use of gamification as a pedagogical tool. First, gamification was generally not used as the primary pedagogy, meaning gamification's use as a supplement to pedagogy could be studied in more detail. Second, gamification that was not "integrated" or "infused" into the course typically did not work as well as intended. Third, gamification is still perceived as being "risky," and may carry other negative connotations, as well. These points will be discussed in additional detail in the paragraphs below.

The first takeaway of note is that most of the interviewees did not use gamification as the main pedagogy in their courses, but as sort of an augmentation to, or in supplement of, other pedagogies (often game-based or problem-based learning, though other approaches were also evident). The main pedagogy was typically something active or hands-on (but not always, since at least one participant spoke of gamifying a lecture-based course), and the gamification functioned to draw students in to the main pedagogical approach. In other words, the main pedagogy often determined how content would be delivered, while the gamification components were designed to encourage and/or motivate students to engage with the course content, their fellow students, and the instructor.

Throughout the course of this study, I have come to view gamification (and likely other techniques as well, beyond the scope of this study) as something that is not necessarily *a* pedagogy in and of itself, but that coexists *with* pedagogy and may be just as important for educators to consider. Game thinking and game mechanics were generally deployed to address student affect issues that might discourage or prevent students' willingness to engage with the course material (or, conversely, to further encourage such engagement). In this way, gamification was used as a pedagogical tool to smooth the way to learning by getting students

“excited” about learning, “motivating” them, and helping them “engage with” the course material. In other words, gamification was generally used by the interviewees to make learning “fun” and “meaningful,” to make learning something students would *want* to do. The use of game thinking and game mechanics also supported the goals of “enriched” educational experiences by helping interviewees shift the focus of the course from learning “the what” to learning “the how”—collaborative learning and competitive challenges encouraged students to dig “deeper” into the material and “struggle” or “wrestle” with decision-making processes in a way that “passively listening to a lecture” simply could not have done.

As noted in Chapter 2, Anderson (2009) defined pedagogy as “the professional knowledge of the teacher, and the enacted practice of teaching” (p. 2) situated within a theoretical, cultural, political, social, and intellectual context. This definition seems generally to agree with most of the participants’ definitions of the term, though this study suggests that *emotional context* be added to that list. All of the faculty who gamify interviewed for this study commented, directly or indirectly, on how much students “enjoyed” the gamified learning context, which suggests that student enjoyment is something these faculty were at least somewhat attuned to, possibly because they seemed to value it. Leslie was the most outspoken about how much importance she gave to students’ emotions (consider, for example, her denunciation of the “punitive cost” of failure, as described in Chapter 4). This perspective is supported by Flow Theory, which claims (as noted in Chapter 2), “[t]hose activities and experiences that are most enjoyable will have a greater chance of being remembered” (Csikszentmihályi, 1988b, p. 34). Dweck’s (2006) work on mindset suggests that the inverse is also true—if students have negative emotional reactions (and a fixed mindset), they may retreat

academically to a place where they can preserve their self-esteem rather than risk further damage to their sense of self.

It should also be noted that one pedagogy expert made the distinction between pedagogy for teaching children and andragogy for teaching adults. I would like to suggest a new term for tools like gamification that seem to be used primarily for their ability to improve affect rather than to effect content delivery: opagogy<sup>16</sup>. Opa, a Greek term meaning *the good life*, represents duality: it embraces happiness and meaningfulness in one's daily life while remaining aware of the potential dangers and responsibilities one may face (Pattakos, 2013). I chose the term "opa" because it captures both the desire for a "positive," "fun," and "meaningful" educational experience espoused by Leslie, Frank, Dennis, John, Ben, Mary, and Sara, while also recognizing the language of awareness and potential danger expressed by Leslie, Walter, Ben, Dennis, and Sara. It also pays homage, conceptually, to people like Jane McGonigal and James Paul Gee, whose claims that students can (and maybe should) enjoy learning inspired at least two interviewees (cf. Chapter 4, footnote 7). In this way, the theory of opagogy is grounded in the words and actions of this study's participants (additional examples of how opagogy is grounded in participants' data appears in the next paragraph, as well). Whereas *pedagogy*, etymologically speaking, means *leading children* ("Pedagogy," 2005; "Pedagogue," 2005) and *andragogy* by extension means *leading adults*, I intend the term *opagogy* to mean *leading to the good life*, which captures the purpose of education as suggested by more than half of the interviewees.

Opagogy might be considered something of a co-pedagogy and refers to the things we can intentionally do as educators to "lower the cost of failure" for students (Leslie, Sara); to

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<sup>16</sup> Additional discussion later in this chapter will further demonstrate the need for new terminology regarding gamification, since there was substantial indication, both from participants and from those who declined to participate, that the term "gamification" is receiving potentially undue pushback.

“increase their experience” in the classroom (Ben, Dennis, Walter, Leslie); to “motivate” and “engage” students in “the learning process” (John, Dennis, Leslie, Ben, Sara, Mary); to make learning “exciting,” “fun,” and “interesting” for students (Dennis, Jeff, John, Ben, Leslie, Sara, Mary, Frank); to give students a sense of “meaningful[ness]” in their studies (Sara, Leslie, Mary, Ben, Dennis); and to encourage “lifelong” learning (Leslie, John, Dennis). These are all ancillary to actually learning the course material, but research suggests that fostering affective aspects such as those listed above may make learning more likely to happen (Brom, Šisler, Slussareff, Selmbacherová, & Hlávka, 2016; Bye, Pushkar, & Conway, 2007; Heddy & Sinatra, 2013; Isen & Reeve, 2005; King, McInerney, Ganotice, & Villarosa, 2015; Konradt, Filip, & Hoffman, 2003; Schlenker, Schlenker, & Schlenker, 2013; Scoffham & Barnes, 2011). In other words, as Seligman, Ernst, Gillham, Reivich, and Linkins (2009) claimed, “*More well-being is synergistic with better learning*” (p. 294; emphasis theirs).

The positive aspects listed above are balanced by cautionary claims that students may come into our classrooms “hat[ing]” or fearing certain topics (Sara, Mary), that students should be “alert” (Dennis), that we ensure our students are “armed” appropriately for the tasks we give (Walter, Mary), that we “drown our students in process” (Leslie), and that we support students as they “struggle” or “wrestle” with difficult material (Ben, Dennis, Frank). In this dichotomy, we see a difference in connotation between the language used to describe how a student interacts with the course versus how a student interacts with the course *material*—the mood or mindset they are encouraged to adopt versus the thought process(es) involved with learning something new. In this way, pedagogic techniques, particularly gamification, can supplement any pedagogy, provided the game elements are “integrated” or “infused” into the structure of the course itself.

A second takeaway from this study is that gamification was “integrated” or “infused” into the course in such a way that it is supportive of and relevant to the main goals of the course. As Jeff and Mary discovered through their achievement and reward system, gamification does not always work the way an instructor intends for it to work, and at least half of the interviewees provided caveats to that effect. As Jeff and Dennis noted, students probably will not invest their time and effort into satisfying gamification requirements unless doing so will have an impact on their overall grade for the course; their claims further support the need for the gamification to be cohesive with the goals of the course. Ben expressed a similar concern when he said, “it’s not an add-on...you really need to integrate it...it’s not simply something you put on in the last week and say, ‘Oh, wasn’t that cute!’” This perspective aligns, wittingly or not, with the advice of several game designers, gamification proponents, and gamification critics (Kapp, 2012; Radoff, 2011; Robertson, 2010; Schell, 2008; Sheldon, 2012; Werbach & Hunter, 2012; Zichermann & Cunningham, 2011), who generally agree that simply tacking on superficial game mechanics is not likely to be as effective as a well-designed, balanced, and integrated gamified experience could be. Ben’s caveat that “it’s not an add-on” may also explain, to an extent, why some of the extant research on gamification is problematic, as discussed in Chapter 4.

One of the gamification experts weighed in on this concern, as well, claiming, “A lot of the gamification elements that are in common use today are unfortunately extrinsically motivating, things like points, leaderboards, that sort of thing. And so there’s a danger there.” The caveat “there’s a danger there” is supported by several research studies, which have found that providing extrinsic rewards such as points or badges for tasks people find intrinsically rewarding can actually lead to demotivation (Lamprinou & Paraskeva, 2015; Nicholson, 2015; Persico, 2017; Sailer, Hense, Mandl, & Klevers, 2013). While about one-half of the interviewees

described trying to use points systems and two indicated that they used leaderboards, those two game mechanics seemed to be secondary to the use of competition, collaboration, role-playing, challenge, and reward mechanics; to be fair, the competition mechanic is often—but not always—closely tied to points and/or leaderboard mechanics.

A third takeaway is that gamification specifically, and perhaps innovative pedagogies more broadly, continue to be considered “risky,” even by those who implement them. This perceived riskiness is potentially due to one or more of several causes, including but not limited to poorly implemented design (i.e., superficial use of game mechanics as described above), the inclusion of extrinsic rewards for courses in which students likely have high levels of intrinsic motivation, an over-reliance on poorly designed or poorly validated research on gamification, and/or attempting gamification in an academic or departmental culture that is less accepting of such innovations. Several of the interviewees, including most of the gamification and pedagogy experts who served as ancillary voices, expressed concern that early career faculty at the study site are sometimes discouraged from trying anything “risky” prior to earning tenure, as discussed in the previous chapter. Several interviewees and gamification experts also expressed the concern that gamification may be perceived as more risky than other innovations because of the negative cultural connotations of games. Ben, for example, claimed that some people perceive games as “lack[ing]...seriousness” and therefore find game-based learning less credible: “I guess the thing with the game, I think it lacks in some people’s minds...it lacks a certain level of seriousness about it.” Leslie addressed the negative connotations more directly when she claimed that gaming “has this connotation of being a waste of time, or brain-numbing, or in some cases, like inducement to violence...it’s like a whole spectrum of negative associations with gaming.” For Walter, however, this issue of “seriousness” fell under the purview of the

educator: “do you just want to have fun with it, or do you want to teach them serious skills? If you’re teaching serious skills, build a serious scenario.”

The perception that gamification in education was hampered by negative cultural connotations was borne out in the voices of the gamification experts, as well. One gamification expert said faculty he collaborated with at the study site “thought games were juvenile,” adding, “even just the term ‘games’ is a turn-off for a lot of people. They think they’re silly.” Another gamification expert said she felt there was “resistance” to using games and gamification in the classroom because “a lot of those gamification elements, because they come from games, people view them as not serious learning.” She used badging as an example:

in gaming, right, and FourSquare and all that, badging doesn’t have that negative connotation, and in Boy Scouts, it doesn’t, either. But as soon as you say, like, “Oh, yeah, your students are going to earn badges,” there’s immediate...there’s immediate suspicion around the validity of this learning experience for the students.

This persistent impression that games are “juvenile,” “silly,” “lack...seriousness,” or are deserving of “suspicion” was identified by several interviewees and gamification experts as one reason that it can be difficult to gain traction for innovating pedagogy through gamification. It may also begin to explain some of the pushback interviewees noted regarding the idea and terminology of gamification.

As noted in Chapter 3, several potential interviewees declined to participate in this study on the basis that they did not consider their use of badges to be gamification, nor did they consider badges to be a game mechanic. Ben, who expressed an interest in badging the entire undergraduate curriculum in his department, also shared this view—that badges are not game mechanics—which allowed me some insight into this perspective. Ben explained, “I see the



badges more as the micro-credential, and so what attracted me to the badges was entirely different than what attracted me to use SimHealth.” For him, badges-as-microcredentials served to “distinguish our graduates from other graduates” by providing potential employers with more information about each graduate’s skills, abilities, or accomplishments than would be possible through transcripts. In Ben’s perspective, badges were not game mechanics because they were not something for the student to earn for the student’s sake, but markers to verify *for potential employers* what level of competence a student had demonstrated in specific skills.

When Ben claimed the concept of games “lacks a certain level of seriousness,” he was speaking specifically about “the people who are doing the hiring” of graduates from his department. He went on to say “I think recasting it as sort of a microcredential” could restore some of that seriousness. This selectivity over wording suggests a deliberate avoidance of terms that could be considered “juvenile,” “silly,” or “lacking...seriousness” based on how he expected they would be perceived by people outside of academia (though, as two of the gamification experts suggested, many inside of academia scoff at game-related terminology in relation to education, as well). This pushback against the terminology further supports the coining and adoption of a new term that is free of the negative connotations game-related terminology often conveys (see discussion above regarding pedagogy).

**What do we learn about pedagogy from faculty who gamify?** The answers to this question can be couched in the model presented in Chapter 4 (see p. 179): pedagogical decision-making remains constrained by cultural expectations and perceptions within an academic and/or departmental context and is influenced by faculty’s personal educational philosophies. For example, several interviewees commented that their colleagues would be more accepting of innovative approaches like gamification “if you could demonstrate that it was successful.”

Because of the “risk” inherent in any kind of innovation it makes sense that those who are risk averse would wait for “demonstrate[d]...success,” while those who are “not that risk averse,” to borrow Ben’s wording, would be more willing to step out on a limb, as most of the interviewees in the *faculty who gamify* group did. Further complicating demands for proof of gamification’s pedagogic effectiveness is the problematic literature on gamification, as discussed in Chapters 2 and 4—this lack of a consensus in the literature suggests more research is needed at the intersection of gamification and pedagogy.

One recent and ongoing trend in academic culture at large is a push toward student- or learner-centered teaching methodologies (Cox et al., 2011; Grimes & White, 2015; Henderson et al., 2012; Lindholm & Astin, 2008; McManus, 2001; Michael, 2006; Myers, Myers, Stewart, & Nynas, 2015; Russell et al., 2016; Scott et al., 2016). Gamification can be, but is not necessarily, learner-centered, depending on how it is designed, particularly when instructors cede some control over the course (or some aspect of the course) to their students. For example, Mary saw more success with her achievement and reward system when she included students in designing it so that the rewards were actually valuable to them, as opposed to her selecting rewards that she *thought* they would perceive as valuable. John also reported ceding some control over his game environment: “Sometimes I ask people to...contribute to the game environment.” Leslie gave her students control over when, where, and how often they could attempt their performance exams, which was intended to reduce the stress associated with testing situations. Additionally, Frank let his students request lecture topics rather than lecturing on a specific topic on a specific day; though this was not within a gamification context, it demonstrates that this idea of ceding some level of control to students is not dependent upon a gamified approach.

These examples suggest that one way to make pedagogy more learner-centered may simply be to involve students in the design process and give them more autonomy over various aspects of the course. Giving students more autonomy or control over various aspects of a course is another way in which gamification and other innovative teaching approaches can be considered risky, but it is a risk that has the ability to empower both the instructor and the students. bell hooks (1994) argued, “that empowerment cannot happen if we [educators] refuse to be vulnerable while encouraging students to take risks” (p. 21). As several of the interviewees noted, they were not only taking risks with how their department heads and/or tenure review boards would perceive their innovations, but with how their students would see them, as well. More than half of the interviewees cautioned that taking those risks will not always pay off, since that is the nature of innovation. This is an especially important point to consider at the study site, where students’ evaluations of their professors at the end of the semester are sometimes the only way instructors’ teaching ability is evaluated (as explained through John’s perspective in Chapter 4).

The findings of this study also suggest that pedagogical change may be more of a grassroots, or bottom-up, movement rather than a top-down change directed by administrative or departmental policies. Mary, for example, explained, “But you can’t just—like if I didn’t believe in participation points and someone like my department chair said, ‘Well, you’re going to, instead of participation, you’re going to have participation points’ it probably wouldn’t have worked as well.” Such an approach may create an undue imposition on faculty autonomy. Contrasting Mary’s comments with Walter’s situation, where his dean encouraged but did not require him to use a game-based pedagogy, suggests that Walter’s autonomy was not subverted by the encouragement. This concept appears to agree with existing research. Cox et al. (2011),

for example, found that “institution-level policies have no more than a trivial relationship, either directly or indirectly through their influence on faculty culture, with the teaching practices employed by an institution’s faculty” (p. 822). In a similar vein, Brownell and Tanner (2012) noted that “there are pockets of [pedagogical] change driven by individual faculty” (p. 339), but no clear systemic move toward innovative pedagogies. This study provides some support for Brownell and Tanner’s (2012) claim, both in my hit-and-miss attempts to recruit participants via snowball sampling (see Chapter 3), and in the descriptions of loneliness and isolation several interviewees provided.

This study also contributes additional support to research studies claiming that pedagogy is slow to change, despite urgent and frequent calls for pedagogical improvement, and the reasons given by interviewees largely agree with the reasons given in published research on this topic, as discussed throughout Chapters 2 and 4 (Anderson et al., 2011; Beyer et al., 2013; Bok, 2006; Brownell & Tanner, 2012; Cox et al., 2011; D’Avanzo, 2009; Furco & Moely, 2012; Golter et al., 2012; Grimes & White, 2015; Handelsman et al., 2004; Henderson & Dancy, 2007; Henderson et al., 2012; Lattuca & Stark, 2011; Lavis et al., 2016; Macdonald et al., 2005; Mellow et al., 2015; Michael, 2006; Russell et al., 2016; Scott et al., 2016; Terenzini, 1999; Terenzini & Pascarella, 1994). It should also be noted, however, that though many of the interviewees *commented* on the existence of obstacles to pedagogical change (cf. “Context of the Study” in Chapter 2, and determinants, as discussed in Chapter 4), not all of them were actually *prevented* from enacting pedagogical change on their own, despite the lack of an external incentive structure, the substantial investment of time and labor needed to redesign a course using a different pedagogy, the lack of training, the lack of institutional support, the degree of career risk to which they felt they may be exposing themselves, or the balancing of content under

a different pedagogical approach. This suggests that the *faculty who gamify* interviewed for this study generally had sufficient self-motivation to persist in innovating their pedagogical approach through gamification despite facing a series of potential detractors. It may be the case that these faculty were able to persist because, as described in the “Personal Educational Philosophy” section of Chapter 4, they seemed to place a substantial value on teaching and learning. This valuing of teaching is captured clearly Leslie’s claim, “I am a teacher. I love teaching. I am invested in this field...”—she did not say, “I am a researcher and a teacher.” She spoke of her research later, but it was in light of her teaching:

I’m evaluated on my teaching and also my research production. And luckily, being an ed person, I know all this is researchable. It’s not, I imagine there are some people who, who don’t realize that you can research in your own teaching. You can have action research, you can research what you’re doing.

Leslie was not the only participant to have published on her own gamification efforts, either (more than half of the interviewees in the *faculty who gamify* group had published at least one article or book chapter about their gamification efforts).

**To what extent does disciplinary pedagogical knowledge affect choices?** Few respondents discussed disciplinary pedagogical knowledge directly, though several of them described the ways in which knowledge of teaching their subject area (Shulman, 1986; Shulman 1987) intersected with their gamification efforts. Interviewees who did touch on pedagogical content knowledge addressed how game thinking and/or game mechanics could make subject area knowledge more accessible for students and how they incorporated game thinking and/or game mechanics into evaluating students’ progress.

Leslie, for example, explained that gamification and technology worked well for teaching music because “it turns every musical instrument that you play into percussion because you’re simply tapping and touching and sliding on the screen,” thereby creating a unique way of learning about music. Rather than incorporating commonly used game mechanics like points, badges, and leaderboards (Brigham, 2015; Codish & Ravid, 2014; Werbach & Hunter, 2012; Zichermann & Cunningham, 2011), Leslie chose to gamify in a way that would support creativity and exploration within a musical space while using specific and easily-relatable musical skills (i.e., tapping as percussion) as the underpinnings for one of her gamification efforts. This approach allowed her students to think like a musician (i.e., explore and express their “musicianship”). John also found a synergy between gamification and the material he was teaching: “because you can automatically execute a program, see how well it does,” that immediacy maps well to the immediate feedback game mechanic, as discussed in Chapter 4. Since that game mechanic of immediate feedback is essentially built into the nature of computer programming, John was able to take advantage of that by designing a competitive/collaborative system around that core mechanic to motivate students.

By and large, most of the interviewees in the *faculty who gamify* group used similar game thinking and game mechanics, despite the wide range of subject areas they represented. Jeff (economics) and Mary (linguistics) both tried an achievement and reward system to encourage student participation, for example; in neither case did pedagogical content knowledge appear to have influenced their decision to use an achievement system, since both spoke about student behaviors (i.e., class attendance, participation in discussion) that are not specific to any one subject area. Walter and John (information science) and Ben (health) all used competition, collaboration, and role-playing mechanics. Competition and collaboration, similar to

achievement systems, are not specific to any one subject area; role-playing, on the other hand, does ask students to assume a subject-specific persona. Walter and Ben both used role-playing to get their students to think as professionals in their respective fields would think; John used role playing as a way of creating teams whose algorithms would compete with one another. This suggests that pedagogical content knowledge drives some, but not all, decisions when an instructor uses a gamified approach.

### **Theoretical Implications**

The concept of *gamification* has taken a prominent role throughout this dissertation, but in order to understand the potential theoretical implications of this work, it will be helpful to first take a step back and examine the idea of game mechanics more closely. A good way to get into that discussion is to look at some of the more commonly used game mechanics, both within this study and within the body of literature reviewed for this study. Competition and collaboration, for example, are generally considered game mechanics, but calling them game mechanics may obscure the fact that these are, at heart, social dynamics that predate the creation of the first game and that can be found among nearly all animals (and even some kinds of plants! cf. Simard, 2017). Therefore, competition and collaboration are not only not exclusive to games, they are not even exclusive to humankind, so calling them game mechanics in the same manner we call points or achievement systems game mechanics may undercut their importance in social contexts. Similarly, other *things* we call game mechanics can also be considered an abstraction of basic survival needs. For example, certain types of game mechanics revolve around the idea of collecting or accruing something (points, fame, recognition, badges, experience, etc.), and a parallel could be drawn to the idea of collecting resources necessary to survival (food, water, firewood, etc.).

In her book *Reality Is Broken*, game designer Jane McGonigal (2011) made the argument that people tend to turn to games to satisfy innate needs that are not being satisfied by their day-to-day lives, and that the pull of games can really be traced to satisfying such needs. Other game designers who have been critical of gamification (cf. Bogost, 2011; Radoff, 2011; Robertson, 2010) have similarly pointed out that the things we call game mechanics, in the context of gamification, are not necessarily the things at the heart of the game experience—the things that make players *want* to engage with the game. Robertson (2010), for example, argued,

What we're currently terming gamification is in fact the process of taking *the thing that is least essential to games* and representing it as the core of the experience. Points and badges have no closer a relationship to games than they do to websites and fitness apps and loyalty cards. They're great tools for communicating progress and acknowledging effort, but neither points nor badges in any way constitute a game.

(para. 6; emphasis in original)

Much of the research on gamification in education tends to revolve around the more superficial features of games (i.e., points, badges, leaderboards and so forth, as discussed in Chapter 4), but these aspects are not necessarily what make people *want* to play games or enjoy the gaming experience. However, the deeper, more meaningful aspects of games, such as competition, collaboration, challenges, and role-playing, were more present in the interviewees' descriptions of their gamification efforts. It may be that these deeper, more meaningful mechanics somehow satisfy psychological or emotional needs that other pedagogical approaches do not necessarily satisfy (consider, for example, how different the levels of challenge and the social dynamics are between passively listening to a lecture and actively collaborating with a team to solve a complex problem). It may be that the faculty who saw an improvement in their students'



motivation, their engagement, and, in some cases, the work their students produced were able to design learning experiences that were conducive to satisfying some deeper need in their students. Further, it may also be the case that there is some as yet unidentified connection between the main learning and motivational theories discussed throughout this dissertation (flow, Self-Determination Theory, and mindset) and the deeper mechanics that several of the *faculty who gamify* implemented (competition, collaboration, challenge, and role-playing).

I would also argue that the theory of opagogy may be more widely applicable within a higher education context than other pedagogies, insofar as the theories of learning and motivation that underpin it may also be useful for informing interactions with students in curricular, co-curricular, and extra-curricular contexts, as well. For example, some institutions have applied game thinking and game mechanics to address sustainability concerns on campus (Ellison, Wohn, & Heeter, 2014), suggesting that opagogic methods might likewise be impactful in those areas. Additionally, the model itself may be useful for examining faculty's decisions to implement other approaches to teaching. For example, by removing the block labeled "Opagogic Methods," and replacing it with the methodology of any other approach to teaching, the model should hold up as an explanation of how that process occurs. The overall model becomes something of a plug-and-play construct that may explain the adoption of alternative or innovative methodologies for a range of contexts.

### **Practical Implications**

Based on the findings detailed in Chapter 4 and the discussion above, several practical implications may be considered. Within the context of academic or departmental culture, the findings suggest that such cultures can influence faculty's decisions on whether or not to gamify. This influence is clear from the several interviewees who commented on the "loneliness" or

“isolation” they felt, as well as from the interviewees who felt their department and/or dean was supportive of their gamification efforts. Encouraging faculty members to talk with one another, to be more cognizant of what each other is attempting in the classroom may help to mitigate feelings of “isolation” while simultaneously fostering a departmental culture that is increasingly supportive of innovative efforts like gamification. It may also generate more opportunities for faculty members to engage in “action research” either individually or collaboratively, which could provide worthwhile contributions to the literature on gamification and pedagogy. Over time, this may decrease (but not eliminate) the “riskiness” of gamifying courses, as other educators and researchers more thoroughly investigate myriad game mechanics (and combinations thereof) and methods of applying game thinking to educational contexts.

Additionally, the findings from this study suggest that faculty should continually seek increased alignment between their personal educational philosophies and the pedagogical decisions they make, and this suggestion may be particularly poignant for faculty who place a high personal value on teaching. Leslie, for example, did not see value in the traditional exam scheduling (i.e., everyone goes to an appointed room on a set date and has only one chance to do well); she decided that her students’ success was of more value to her than abiding by a rigid exam schedule was, so she ceded some authority—and simultaneously increased students’ autonomy—regarding exams. In this way, Leslie was able to better align her personal educational philosophy with the pedagogical decisions she made by incorporating game thinking about failure (as discussed in Chapter 4). Though their efforts were less successful, Jeff’s and Mary’s achievement and reward systems were likewise an attempt to increase the alignment between their educational philosophies and what they were trying to accomplish in the classroom—in both of their situations, increased participation in class discussions was something

they felt would be of educational benefit to their students, so they developed a structure that intended to foster those interactions.

That interviewees reported a variety of ways in which they were (dis)satisfied with educational experiences should not be surprising. Postsecondary education in America has a rich and varied history, but that history can be something of a double-edged sword, particularly when pedagogies are passed down by tradition or habit (consider the prevalence of replicating what one's professors had done, combined with the continued prevalence of the lecture, as discussed in Chapters 2 and 4). This is likely one of many factors contributing to institutional inertia. However, since none of the interviewees in the *faculty who gamify* group reported having participated in a New Faculty Orientation or a faculty mentorship program, it may be worthwhile to investigate alternative strategies for disseminating educational research, particularly to those new to teaching in postsecondary environments and those whose subject area does not give them much opportunity to experience educational research. Such strategies might include online modules on various pedagogical styles being made available to all faculty, brown bag sessions for talking about teaching, or observing other faculty (both in one's own department and outside of it) who may be using atypical pedagogical approaches. The use of such strategies, along with encouraging more open dialogue among departmental colleagues (as discussed above), can also help to mitigate feelings of "isolation" while creating a departmental culture that is more open to innovative ideas like gamification.

For faculty who would like to try gamification in their courses, the findings from this study offer a few practical suggestions. The general consensus from interviewees in the *faculty who gamify* group, as well as the gamification and pedagogy experts, is to start small. One gamification expert suggested finding the "sticking points" where an assignment is not quite

working smoothly, then seeing what game mechanics—if any—might help grease the wheels. Those in the *faculty who gamify* group stressed the need for honest self-reflection on the gamification, along with listening to feedback from students, to tune the game mechanics for an enjoyable learning experience. Also, gamification may be helpful for introducing new topics or getting students to engage with a difficult topic—the “gateway into learning” Leslie discussed. Faculty new to gamification may want to start by gamifying an assignment, rather than a whole course (as mentioned above), and it may be prudent to start by gamifying an assignment that introduces new or difficult material.

Furthermore, gamifying a course should be done with careful consideration of the audience (what level are the students at? What prior knowledge can they be expected to know? Are they likely to be intrinsically motivated to succeed, or not?). Faculty should also have a clear goal in mind when selecting game mechanics, as the mechanics chosen will dictate what kind of educational experience their students will have. Some of the questions faculty might ask themselves include (but are not limited to):

- What do I want students to experience, and why? Is this experience “appropriate” for the overall course?
- What behaviors or ways of thinking do I want to encourage, and why?
- What game thinking or game concepts might be helpful in conveying this subject matter?
- Which mechanics seem to naturally align with my course objectives, personal instructional goals (i.e., increasing student participation), and/or course material?
- Would students benefit from collaborating and/or competing on this assignment? If so, how?

- Is the physical space of the classroom conducive to collaboration and/or competition (i.e., are the desks bolted to the floor, or can the room’s furniture be rearranged?)
- Is there an existing game that I could modify to suit my needs?
- What are the benefits and drawbacks of using a narrative structure in this course?
- Will giving students an avatar help them to engage more deeply with the course material, or will it alienate them by seeming too juvenile?

These are just a few examples of the kinds of questions that can help educators find alignment among their students’ needs, their course objectives, and the pedagogical tools available in the gamification toolbox. It is also important to bear in mind that gamification is *a* way of “enriching” educational experiences, but it is not *the only* way; it will not necessarily be the best choice, so educators should weigh the pros and cons of a variety of approaches. Educators should not try to force game thinking or game mechanics to fit into their course. Implementation of gamification should be well-reasoned and, when possible, supported by established learning and motivational theories (cf. discussion above regarding undermining intrinsic motivation).

Choosing game mechanics because they seem to be commonly used will probably not lead to an enriched educational experience (cf. Ben’s caveat “it’s not an add-on...you really need to integrate it”). Dennis explained, “we have enough evidence to suggest that you just should not apply all gamification techniques everywhere” and discussed the need for gamification to be applied “appropriately” for the given audience and the given situation. Gamification relying on points, badges, and leaderboards is likely more acceptable in a lower-level course, such as a general education course, where students are unlikely to have substantial intrinsic motivation (cf. discussion on Sara’s “just a gen ed” comment in Chapter 4). Upper-level students might benefit instead from the role-playing, competition, and collaboration combination used by several of the

interviewees, since it encourages students to think like a person in that field while simultaneously sidestepping the problem of undermining students' intrinsic motivation with external rewards.

### **Suggestions for Future Research**

This study contributes to the growing bodies of literature surrounding gamification and pedagogy, and it also suggests several avenues for future research. Interviewees' comments about the "loneliness" and "isolation" they feel, both in their departments and sometimes in their fields at large, suggest the need for ethnographic research that investigates faculty culture as it pertains to the adoption of innovative pedagogies, particularly those that may be plagued by negative perceptions, such as gamification. Such an ethnographic study may be able to identify opportunities for shaping departmental or academic culture moving forward to encourage collegiality and increase acceptance of pedagogical approaches, particularly gamification, that are currently considered "risky." Since this "risk" was often tied to one or more of the determinants discussed in Chapter 4 (including the myriad potential obstacles documented in existing research, as noted in Chapter 2), such determinants may bear additional investigation. In a similar vein, an examination of the extent to which faculty's personal educational philosophies do or do not align with their pedagogical decision-making may provide valuable information for future efforts to improve teaching and learning in institutions of higher education.

Findings from this dissertation also suggest that particular mechanics may work well with one another, regardless of disciplinary area. The combination of competition, collaboration, role-playing, and reward mechanics seems to have been effective for several of the interviewees across different disciplinary areas. Future research may examine this combination in other

subject areas. This suggestion differs from the points, badges, and leaderboard combination often found in gamification research and other publications on the topic (Brigham, 2015; Codish & Ravid, 2014; Werbach & Hunter, 2012; Zichermann & Cunningham, 2011) and may address concerns about the potential for demotivation posed by providing only extrinsic rewards (Lamprinou & Paraskeva, 2015; Nicholson, 2015; Persico, 2017; Sailer, Hense, Mandl, & Klevers, 2013). Such research should also explore how the use of game thinking and game mechanics may vary for different student subpopulations (i.e., first-generation college students, returning adults, or other historically underserved groups) and across the full range of institutional types.

## Appendix A: Draft of Interview Protocol

*Script: Thank you for taking the time to speak with me. As I indicated earlier, I am interested in understanding how and why faculty make the decisions they do when using gamification as a pedagogical tool. The questions I will ask you intend to help me understand the pedagogical decisions you've made when gamifying a course. If any any point you would prefer not to answer a question, or if you would like to end the interview, please let me know.*

I. Let's start at the beginning. How did you get into teaching?

A. Prompts: Did you always want to be an educator, or had you had other career plans? Have you spent any time in the workforce outside of academia? If so, could you talk a little bit about what you did outside of academia and how that may have influenced your views on education? When did you start teaching, and what department (and what institution) did you start in? When you were an undergraduate, did any of your professors stand out to you as examples of good (or bad) teachers, and did those examples influence how you approached your own teaching? Do you have a particularly positive memory of your educational experiences as a student? A particularly negative one? If they (the teachers or your experiences as a student) did influence you, can you elaborate?

II. Can you tell me about your very first teaching experience (how you felt, how you prepared your first course, what you thought worked well for you as an educator and what you felt did not), and how you feel your experiences as an educator have changed since you first began teaching?

A. Prompts: When you first started teaching, what pedagogy did you use, and how much consideration did you give to your pedagogy? And now, how much consideration do you give it? Have you experimented with other pedagogical approaches (aside from gamification)? If so, could you describe those experiences and what prompted you to experiment? If you have reflected on the differences between other pedagogies or modes of teaching, could you share some of your reflections with me?

III. I'd like to get a better sense of who and/or what has helped to shape or influence your teaching methods. Are there particular sources (books, articles, websites/blogs, videos, etc.) that you have found helpful in developing your pedagogy(-ies)? If so, could you elaborate? [or ask them to send me a list of sources they've found most helpful?] Similarly, is there anyone who has encouraged you or mentored you regarding your teaching methods? If so, could you describe how that person (or those persons) have influenced you? Have you sought out other resources for learning about pedagogy, like workshops, faculty groups, or professional development offerings? If so, could you elaborate?

IV. You've been asked to participate in this study because you utilize (or have utilized) gamification as a pedagogical tool. I'd like to hear you talk about that, but first could you tell me how you define the term "gamification"?

A. Prompts: Could you give some examples of what you would and would not consider gamification? How did you come to that understanding? To what extent do you consider gamification a pedagogical tool?



V. I'd like to better understand why you first decided to try gamification in the classroom. Why gamification? Can you talk a little about how and why you made that decision?

A. Probe for tenure status

B. Prompts: How did you first hear about gamification being used in the classroom? When did you first bring gamification into the classroom -- was there anything specific that made you think, "I should try that in my classroom"? Could you describe any experience you have, either as a designer or a user, of other gamified systems? Did those other instances of gamification influence your decision to adopt gamification as a pedagogical tool? If so, can you explain how and why they influenced you? If they do are not tenured: Do you feel your use of gamification as a pedagogical tool will positively impact, negatively impact, or have no impact on your tenure portfolio? What makes you feel this way?

VI. Can you talk me through the process of gamifying your course?

A. Prompts: Did you revise an existing syllabus and assignment sheets, or did you start from scratch? Why? How did you decide which game mechanics to use? What mechanics did you wind up using and why -- what were you hoping to achieve by using those particular mechanics? Which aspects of the course (attendance, participation, assignments, etc.) did you decide to gamify, and why? If they revised an existing set of assignment sheets to be gamified: In what way(s) did you envision the assignments changing based on the addition of game mechanics? What kinds of considerations have you found important when gamifying? Conversely, is there anything you realized after the fact that you should have given more attention to (from a design perspective)? To what extent do you think that gamification is suited to your field of study? Do you feel that particular game mechanics are especially well-suited to the course content? If so, could you elaborate? If they have experimented with other pedagogies: Can you talk a little about how the preparation time might vary for a gamified course as opposed to a course based on another pedagogy?

VII. Can you talk about the technology aspect of gamifying your course?

A. Prompts: What aspects of the gamified course rely on technology? What kinds of technology, if any, have you found useful? Do you consider yourself adept at using technology, or did you get assistance for the technology component? If so, from whom? If you had less technical know-how or less access to technology, would that impact how you gamified a course? If so, could you elaborate? Are there game mechanics you would like to experiment with but have not because of technical limitations? If so, what limitations do you face, and what are they preventing you from doing?

VIII. What are your thoughts on gamifying other courses in the future?

A. Prompts: Based on your experiences with gamifying previously, would you approach gamifying a future course in the same way or differently? Why?

IX. If you have gamified more than one course, could you talk some about how those experiences may have varied?

A. Prompts: Did you think through how to apply gamification differently for the different courses? Why/why not? Could you elaborate on what was similar about the ways you gamified your various courses and what was different?

X. I would also like to get a better sense of what kinds of obstacles and/or supports faculty who gamify may experience. Are your colleagues in your department aware of your efforts at gamification? If so, could you talk a little about what their reactions have been like? Has anyone in your department been outright either disdainful, critical, interested, or supportive of your interest in gamification? Could you talk about that a little more? On the whole, would you say your department (or academic unit) is generally supportive of or resistant to your efforts at gamification? What, specifically, makes you feel that way?

A. Probe for differences in rank and tenure status; probe for the culture of the department

B. Prompts: Were you given access to resources to assist your efforts? If so, what kinds of resources did you find helpful? Conversely, were there resources that could have been helpful that you were denied access to?

XI. If a colleague told you she wanted to try gamification in her course, what advice would you give her, and why?

## Appendix B: Definitions

For clarification, definitions for key terms appear below. In cases where the definitions were drawn largely from particular sources, citations have been provided. I have provided a table for the comparison of the varying definitions of the term *gamification* in the next section.

**Academic culture:** “faculty cultures include the culture of the academic profession, the culture of the academy as an organization, the cultures of particular disciplines, the cultures of institutional types, and the culture of the particular department or unit where the faculty member has a position” (Austin, 1994, p. 48)

**Active learning:** an umbrella term for any instructional activity or pedagogy that attempts to engage students in the learning process through a variety of activities in lieu of sitting as passive receptors of information (McManus, 2001)

**Active pedagogy:** “a student-centered approach [that] involves students actively in their own learning, assures their involvement with the material (i.e., their world), teaches skills for problem-solving rather than instilling information for occasional regurgitation, and prepares students to be engaged citizens and competent participants in society...It is also profoundly about teachers” (“Notes on Active Pedagogy: This is what you’re in for!,” n.d., paras. 2 & 4). While the term “active learning” is a broader umbrella term, “active pedagogy” attempts to capture the instructor’s agency in *designing* and *creating* a situation where active learning can flourish.

**Game thinking:** leveraging current knowledge about psychology, anthropology, and design to create an experience for players (Schell, 2008); “The mind-set required to deploy fun in a considered and directed way” (Werbach & Hunter, 2012, p. 36)

**Gamelike learning:** “an approach to learning that draws on the intrinsic qualities of games and their design to engage students in a deep exploration of subject matter, with twenty-first century learning at its core” (Salen, Torres, Wolozin, Rufo-Tepper, & Shapiro, 2011, p. 10)

**Gamification:** While I intend this term to mean the application of game thinking and game mechanics to non-game situations, this is not a unanimously accepted definition. I have included Table B.1 below to demonstrate the variety of definitions of “gamification” that can be found in gamification, game design, and educational research. In this document, the term “gamification” does *not* include the use of full-fledged games (like board/card games, video games, or simulations); I make this distinction to focus more specifically on gamification as a pedagogy rather than the use of games as an educational activity.

**Pedagogy:** “the professional knowledge of the teacher, and the enacted practice of teaching, set within the context of theories of human development and learning, cultural reproduction and transformation, political and social progress, and intellectual engagement” (Anderson, 2009, p. 2); pedagogy is distinctly different from educational activities in that pedagogy seems to encompass a broader perspective. Whereas an educational activity is specifically what is happening in a classroom or other educational setting at a given moment, pedagogy implies the philosophy behind choosing that particular educational activity for that particular topic. An *Ed Tech Now* article claimed there are five important principles behind an effective pedagogy: motivation, exposition, direction of activity, criticism, and encourages imitation (“Five principles of pedagogy,” 2013, para. 2). This list also suggests that the educational activity should be directed by the pedagogy, implying they are not necessarily the same thing, though we often use the same or similar

terminology for both (consider the lecture as a pedagogy vs. the lecture as an educational activity, for example)

**Student engagement:** a literature review on the topic of student engagement by Taylor and Parsons (2011) suggests that there is no single commonly accepted definition of “student engagement,” but they noted several areas in which student engagement is often studied: “academic, cognitive, intellectual, institutional, emotional, behavioral, social, and psychological to name a few” (p. 4). Similarly, the National Survey of Student Engagement (NSSE) uses ten engagement indicators to describe four broad categories for engagement: academic challenge, learning with peers, experiences with faculty, and campus environment (“Engagement indicators & high-impact practices,” 2015).

### Comparison of Varying Definitions

There is considerable disagreement about the definitions of some common terms, like *gamification*, *game mechanic*, and *game dynamic* even among game designers and gamification experts. To give the reader a sense of these discrepancies, I have included Table B.1 below, which compares common definitions of gamification, broken down by the type of information the definition conveys. The definition that most closely resembles how I intend the term is bolded in the table below.

Table B.1: Varying Definitions of Gamification

<b>Definition</b>	<b>Authors Using This Definition</b>
<i>A Basic Definition</i>	
“the use [or application] of game elements in non-game settings”	(Attali & Arieli-Attali, 2015; Barata et al., 2013; Brigham, 2015; Deterding et al., 2011, p. 10; Dicheva, Dichev, Agre, & Angelova, 2015; Domínguez et al., 2013; Hanus & Fox, 2015, p. 152; Knaving & Björk, 2013; Sailer, Hense, Mandl, & Klevers, 2013; Tulloch, 2014; Werbach & Hunter, 2012)
<i>Definition Includes Purpose</i>	

“the use of game components such as score, challenge, and achievement to learning objectives in an effort to motivate and engage the student”	(Banfield & Wilkerson, 2014, p. 292)
“the application of game design (accruing points or badges, reaching significant levels of accomplishment, or other reward elements) in a non-game context to motivate or influence participation”	(Drace, 2013, p. 273)
“the use of game design elements in non-game settings to engage participants and encourage desired behaviors”	(Ibanez et al., 2014, p. 291)
“us[ing] game mechanics and techniques for the purpose of students’ engagement and motivation”	(Lamprinou & Paraskeva, 2015, p. 406)
<i>Definition Indicates Actual Process or Thought Process</i>	
“the application of game mechanisms in non-gaming environments with the aim of enhancing the processes enacted and the experience of those involved”	(Caponetto, Earp, & Ott, 2014, p. 50)
“the process of recreating [an engaging and motivating] experience [found in games] in systems that are not typically considered games”	(Cheong, Filippou, & Cheong, 2014, p. 233)
<b>“the use of game thinking, game mechanics, game dynamics and frameworks in a non-game context in order to engage users, solve problems, improve user experience, and promote desired behaviors”</b>	(Eleftheria et al., 2013, pp. 1–2)
“the use of game mechanics to make learning and instruction more fun” by incorporating “engagement, story, autonomy, and meaning”	(Kapp, 2012, p. xxi)
“the process of applying game mechanics and game thinking to the real world to solve problems and engage users”	(Felker, 2014, p. 20)
“the process of game-thinking and game mechanics to engage users and solve problems”	(Zichermann & Cunningham, 2011, p. xiv)

The distinctions among these varying definitions are significant because they offer a window into the authors’ understanding of the concept of gamification. For example, the most commonly cited definition (the first definition provided in Table B.1 above) is quite broad and

answers only the question “what,” not “how” or “why” as the other categories of definitions attempt to do. Having read several books and close to one hundred articles on games and gamification in education, I am convinced that a more specific definition (such as those in the third segment in Table B.1) is preferable to the broad one proposed by Deterding, et al (2011) and echoed by dozens of other educational researchers (see Table B.1 for citations). I have come to agree with many game designers and gamification experts who argue that the how and the why are crucial questions to answer when developing a game design or a gamified system (Bogost, 2011; Kapp, 2012; Koster, 2005; McGonigal, 2011; Salen & Zimmerman, 2004; Schell, 2008)—so crucial that leaving those aspects out of the definition of “gamification” may do a disservice both to the field and to other researchers attempting to quantify and/or qualify gamification in education.

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## Curriculum Vita for Pamela C. Snyder

### **EDUCATION**

Ph.D. in Higher Education, Pennsylvania State University 2018  
M.A. in English, Rutgers, The State University 2008  
B.A. in English (writing emphasis), Lock Haven University of PA 2005

### **RESEARCH EXPERIENCE**

Graduate Research Assistant. Center for the Study of Higher Education. 2015-2018  
Supervisor: Dr. Leticia Oseguera; evaluation of  
Computational Materials Education and Training (CoMET) Program  
Researcher/Writer. The Education Alliance at Brown University. 2006

### **SELECTED TEACHING EXPERIENCE**

Lecturer. Pennsylvania State University 2014-2015  
English Department: English Composition  
Multicultural Resource Center: Language and Literacy Education  
Instructor. Pennsylvania College of Technology 2008-2014  
Remedial English  
English Composition I  
English Composition II  
Orientation  
Instructor. Rutgers, The State University 2007-2008  
Honors Composition I  
Composition II  
Instructor. Camden County College 2006-2007  
Basic Writing Skills

### **SELECTED PUBLICATIONS**

Snyder, P. & Custer, D. (2017). An examination of graduation rates at small, liberal arts colleges. *Higher Education in Review*, Special Edition.  
Snyder, P. (2016). Book Review—"The Tyranny of the Meritocracy: Democratizing Higher Education in America." *American Journal of Education*, 122(4), 634-639.  
Derreth, R.T., Hulbert, A., Montgomery, R. & Snyder, P. (2016). State authorization of online education: Implications for the reauthorization of the Higher Education Act. *Higher Education in Review*, Special Edition.  
Snyder, P. (2015). Book Review—Academically Adrift: Limited Learning on College Campuses. *Higher Education in Review Online*.

### **SELECTED CONFERENCES AND PRESENTATIONS** (invited talks indicated with \*)

\*Beck, C., Derreth, R.T., Li, A. & Snyder, P. (2016). Schreyer Honors College: Perceptions of Prestige. Pennsylvania State University.  
Montgomery, R. \* Snyder, P. (2016). Exploring college student perceptions: Sociological motivations for peer leadership and personal involvement. College of Education Graduate Student Research Symposium. Pennsylvania State University.  
\*Snyder, P. (2017). Gamification. Lycoming College.