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GAMEFUL DESIGN IN THE DEVELOPMENT OF ASYNCHRONOUS ONLINE
DISCUSSION ACTIVITIES: A CASE STUDY

by

William Michael Trest

A Dissertation
Submitted to the Graduate School
and the Department of Curriculum, Instruction, and Special Education
at The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

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ABSTRACT

GAMEFUL DESIGN IN THE DEVELOPMENT OF ASYNCHRONOUS ONLINE DISCUSSION ACTIVITIES: A CASE STUDY

by William Michael Trest

December 2016

This study investigates gameful design as a method to improve the development and implementation of Asynchronous Online Discussions in online learning environments. A qualitative methodology, an instrumental case study design, was used to examine the effectiveness of this design method by exploring the experiences of the participants and the meaning they gave to those experiences. Data was collected through observation, discussion transcript analysis, and pre/post-course interviews. Validity was strengthened by triangulation of these sources.

The findings showed that gameful design was an effective method to encourage the development of a connected and engaged learning community within an online class and promoted social knowledge construction among the students. Students participated not because they had to get a grade, but because they enjoyed the activity and sharing with their classmates.

Implications and recommendations are discussed as well as other uses for gameful design and further research possibilities.

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DEDICATION

I dedicate my dissertation to my beloved mother. She always believed that I could accomplish great things for the glory of God. This dissertation is also dedicated to my grandmother and grandfather, Joyce and Dennis Herrington, who have been there supporting me, praying for me, and worrying about me for a long time. We made it, Gran!

I want to thank Dr. Barry Morris, Dr. Eugene Owens, and Dr. Stanley Ellis for believing that I could achieve this degree even before I considered a Ph.D. Their encouragement helped me accomplish what I once thought to be an impossibility.

I would like to thank my wife, Dawn, as well as my wonderful children, Anne and Liam, for their incredible patience and fortitude. I could never thank you enough for sticking by me during all of the late nights and these long years. To my father and the whole host of my family and friends: I could not have accomplished this without your care, love, and prayers. You will never know how much you mean to me.

Finally, I would be amiss if I did not give thanks to the source of my strength and the reason why any of this was possible. I dedicate this paper to my Lord, Jesus Christ. “Now to him who is able to do far more abundantly than all we ask or think, according to the power at work within us, to him be the glory in the church and in Christ Jesus throughout all generations, forever, and ever. Amen.” – Ephesians 3:20 ESV

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LIST OF ABBREVIATIONS

<i>AOD</i>	Asynchronous Online Discussions
<i>SDT</i>	Self-Determination Theory
<i>ZPD</i>	Zone of Proximal Development
<i>IAM</i>	Interaction Analysis Model
<i>MDA</i>	Mechanics Dynamics Aesthetics
<i>CET</i>	Cognitive Evaluation Theory
<i>QDA</i>	Qualitative Data Analysis

CHAPTER I - INTRODUCTION

Online education is often criticized for physically isolating learners from each other and lacking many of the social opportunities that traditional, face-to-face learning experiences offer (Xie & Ke, 2011). Social constructivists like Vygotsky (1978) argue that learners reach their highest developmental potential when they are socially interacting with each other through what is known as social knowledge construction (S. Wang, 2009). This is an obstacle for educators and instructional designers when attempting to create high-quality online learning experiences. Educators often address this challenge by using communication tools to help bring social connectivity to online environments (Hrastinski, 2008).

Asynchronous Online Discussions (AOD) are communication tools used to provide a social element to online learning environments (Vonderwell, Liang, & Alderman, 2007). AODs are generally text-based Web pages that allow users to communicate with each other without being constrained by time or physical location (Hew, Cheung, & Ng, 2010). Participants work at their own pace to carefully craft and edit their thoughts while considering presented arguments. AOD activities can be used to promote higher order thinking and personal reflection in addition to providing social interaction opportunities (Vonderwell & Boboc, 2013). AODs are venues where multiple perspectives can be shared, ideas exchanged, presumptions challenged, and ultimately knowledge can be socially constructed (Küçük, Genç-Kumtepe, & Taşcı, 2010). The act of crafting an opinion, defending it, considering others' views, and expanding knowledge are all pedagogically sound practices for social constructivist activities like AODs (Black, 2005).

Research has shown, however, that placing AOD activities into online learning environments does not automatically result in positive learning experiences (Chan, Hew, & Cheung, 2009). AODs must be well-designed (Ke & Xie, 2009) and developed from the principles of social constructivism (Dennen, 2008) to be effective in the manner described above. Also, learners must participate and be actively engaged to achieve the maximum benefit from this tool (Hew et al., 2010). Furthermore, research has shown that the “quantity” of participation does not necessarily guarantee the effectiveness of the tool; instead participants must invest effort into the activity as well as high-quality participation (Xie & Ke, 2011). Research suggests that student motivation levels play a key role into how much (or how little) participants engage in the activities (Hew et al., 2010). Educators often have attempted to motivate students by looking outside of education for inspiration to “mine” non-academic trends and tools for their motivational qualities (Dickey, 2005).

Deterding (2014) suggested that motivational design, a form of persuasive design, be considered as a method for designers wishing to elicit engaged participation from people. He proposed the motivational design method, “gameful design,” be used to support intrinsic motivation and target specific experiences when attempting to increase participation. Gameful design is based on Deci and Ryan’s (1985) Self-Determination Theory (SDT) and relies on development strategies commonly used by video game designers (Deterding, 2014) such as Playcentric Design (Fullerton, Swain, & Hoffman, 2008) and the Mechanics, Dynamics, Aesthetics (MDA) model for game design (Hunicke, LeBlanc, & Zubek, 2004). The goal for gameful design is to systematically target participant experiences during the design phase of activity development and to

support the psychological needs required for self-determined motivation in the implementation phase to increase participation and engagement (Deterding, 2014). This is not to be confused with gamification, which is a form of activity modification that adds patterns commonly found in digital games (i.e., points, badges, levels) to non-game activities in attempts to make them more game-like.

Gameful design hinges upon the SDT principles that people are more likely to have self-determined motivation when they are inherently interested in what they are doing and when their activities support the three psychological needs of autonomy, competence, and relatedness (Deterding, 2012). Gameful design is based on game design strategies that target specific participant experiences and require systematic adjustments to mechanics of those activities to encourage the intended experiences (Deterding, 2014). Participants are more likely to engage in activities when their psychological needs are met and more likely to achieve the target experience goals when activities are systematically designed with those needs in mind (Deterding, 2013).

Gameful design has been mostly researched outside of education as a method of activity design to be used in any field or activity type. This study applied gameful design methods to the development of educational AOD activities. First, specific participant experiences were identified as target experience goals. The target experience goals for AOD activities were (a) connectedness with classmates through shared interests, (b) social knowledge construction, (c) the enjoyment of meaningful discussions, and (d) critical thinking opportunities. These have been described in previous research as being desirable outcomes in social constructivist activities (Gunawardena, Lowe, & Anderson, 1997; Hew et al., 2010). The mechanics of the AOD activities were chosen and

developed to support self-determined motivation and encourage the experience goals listed above. These mechanics were described in previous research as (a) participant interaction requirements, (b) scoring and instructor feedback, and (c) challenging and interesting discussion topics (Hew et al., 2010; Ke & Xie, 2009; Niemiec & Ryan, 2009). AOD activities developed according to gameful design methods inherently encouraged high-quality engagement and intrinsic motivation by placing participants' experiences as the driver for every design decision.

Statement of the Problem

AOD activities have become widely utilized and an important part of online learning environments, such as academic online classes and online training modules. Benefits for incorporating this tool include higher-order thinking, deep learning, and meaningful social connections (Vonderwell & Boboc, 2013). Online learning is often criticized for not providing these benefits for students, but well-designed AOD activities can meet these needs (Hew et al., 2010; Xie & Ke, 2011). AODs must be designed in a manner consistent with social constructivism, and students must participate in a high-quality manner in order for the activities to be effective (Hew et al., 2010). The lack of quality participation, however, is a widespread problem in AOD research. Often the lack of participation can be attributed to a lack of participant motivation (Xie & Ke, 2011).

Gameful design is an approach available to instructional designers based on the principles of SDT and employs the strategies of game designers (Deterding, 2014). This is done in order to develop activities that support participant motivation and systematically targets specific participant experiences. However, there is currently no model, documented design, or practice that demonstrates how AOD activities, which are

developed according to gameful design methods, might influence student participation and motivation.

Purpose of the Study

The purpose of this study was to investigate how gameful design methods influenced students' participation, motivation, and learning outcomes in AOD activities. Gameful design is a form of motivational design used to encourage self-determined participation for activities (Deterding, 2014). The primary aim of this study was to explore the possible application of gameful design methods for AOD activity development. These activities were AOD learning reflections and topic-based discussions. Students were observed as they interacted with each other in these AOD activities. Through qualitative interviews, observations, and documentation, I was able to witness the successes of this implementation as well as any challenges that emerged. A model of gameful design methods for use in AOD activity development served as a framework for this study and possibly for future research. This model, which is explained in detail in Chapter II, was a guide for AOD activity design and shows how each component could be addressed according to gameful design methods. Using interviews conducted at the beginning and the end of the study, I was able to gain a deeper understanding of the meaning the participants gave to their experiences during these activities.

Research Questions

This qualitative study was designed to identify how gameful design methods could impact student participation, motivation, and the learning experiences of graduate students in a fully-online class. Research questions for this study were:

1. How do AOD activities, which have been developed according to gameful design methods, influence student participation and learning in an online environment?
2. What are students' experiences when participating in a course with AOD activities that have been developed according to gameful design methods?
3. What meaning do they give to their experiences?
4. Based on students' experiences, how well do gameful design methods apply to the development of AOD activities?

Significance of the Study

This research was significant for a number of reasons. First, the widespread problem of low-quality participation in AOD activities pointed to the need for more effective design methods (Hew et al., 2010). Often, AOD designs do not encourage intrinsically motivated participation. Motivational design methods, such as gameful design, could help address the issue of low-quality participation (Deterding, 2014). An extensive search of relevant literature through sources like EBSCOhost and Google Scholar yielded no results for research focused on gameful design and AOD activities. This study was to help address this gap in the literature by creating a detailed model for gameful design in AOD activities and implementing it in an online learning environment.

Next, this study made an important contribution to the growing body of research surrounding the use of gameful design methods in education. Research about gameful design as a motivational design method is a relatively new idea (Deterding, 2014) that is just beginning to be explored in different fields of study. Application user interface research has been the primary focus for gameful design research. This project helped

researchers consider the benefits, if any, that gameful design has in the development of online social constructivist learning activities.

Finally, this study was beneficial for online instructors who want to create social constructivist learning environments and/or instructors who wish to increase participation by supporting student motivation according to the principles of SDT. Gameful design methods support the psychological needs of students to encourage intrinsic motivation and self-determined participation. The model that was created for this study could serve as a framework for future design in AOD activities and help provide a springboard for other activities to be developed according to gameful design methods. The experiences of students and the instructor, as they are recorded in this study, should be valuable to others by giving insight into the challenges and strengths of implementing such a design.

Assumptions and Limitations

An assumption of this study is that a gameful design of AOD activities works as intended to develop successful educational activities to increase student participation by supporting student motivation. Like other forms of instructional design, gameful design is based on the assumption that systematically designing for specific goals is beneficial to the activity participants. The methods of gameful design specifically target participant experiences and attempt to support participant motivation through systematic changes to the mechanics of course activities. These changes are made under the assumption that modifications could increase the likelihood that participants should experience the benefits of well-designed AOD activities.

A limitation of this study is that findings are only based on the experiences of a small group of M.Ed. students attending a private university in south Mississippi. Thus,

the small participant pool for this study cannot be largely generalized. This study is also limited by the implementation of being in a fully online course. Dynamics of interactions can be different from courses that are hybrid or only supplemental to face-to-face sections. Finally, the course was only 10 weeks long. This limited the amount of time that activity mechanics could be modified to ensure participant experience goals were being met.

There are two delimitations of this study. First, the pool of participants was limited to 11 students with only four being male students. Four female students volunteered to participate in the study, and the remaining seven students did not. There is not a complete picture of the male and female students from this particular class. Also, the instructor is the researcher, and though care was taken to ensure validity and the ethical standard of the study remain high, there may have been some impact on what the participants felt they could say or do.

Definitions

Several terms need to be defined related to the study. These terms are provided below.

- Amotivated – not motivated. This term is commonly found in Self-Determination Theory (SDT) research.
- Asynchronous Online Discussions (AOD) – Internet-based communication tools that are not constrained to time or physical location. The most common is a threaded discussion that allows people to post and read each other's responses.

- Instructional Design – used to describe the method of planning an educational activity prior to implementation.
- Gameful design – a form of motivational design that is based on SDT to form an understanding of participant motivation and that employs design and development concepts commonly found in game design.
- Interaction – any point of contact that participants have with each other or with the instructor in AOD activities. An interaction could be reading, making original posts, or posting replies.
- Motivational Design – a form of persuasive design that is centered on a goal of purposeful change of a behavior of a target audience.
- Playcentric Design – a systematic method of video game design. This method begins with a target player experience that the game designer wants players to experience. An early version of a game is given to players, and their experiences are noted. Mechanics of the game are tweaked, and then a new iteration of the game is given to a new group of players to observe their experiences. This happens over and over until the player and the original target experiences align.
- Post – in AODs, this is the core mechanic for participant communication. Posts are generally text-based and can be made in response to an original topic or in reply to another participant. Posts are open for the entire group to see and respond.
- Voice Over Internet Protocol (VOIP) – a synchronous online communication tool that allows two or more participants to use video and audio. Skype,

Google Hangouts, and Apple Facetime are common examples of this type of tool.

Summary

Social connection in online learning environments is greatly needed, and communication tools like AODs have been found to help provide those connections. This can only occur when students are actively engaged with each other and participating in a high quality manner. High quality participation and high levels of participant motivation have often been associated with active and engaged learners. The design and implementation of AOD activities within online learning environments is a critical part of supporting learner motivation and enhancing students' learning experiences. This qualitative study explored the experiences of learners as they interacted with each other in AOD activities that were developed according to gameful design methods in order to understand their experiences, motivations, and learning processes as well as the meaning they gave to their experiences.

Chapter I laid a foundation for the study and helped to provide an understanding for the need of this research. Chapter II expands on the information provided in Chapter I by addressing, in detail, the major ideas, theoretical principles, and constructs that make up this study. Chapter III explains the methodological approach for this study and provides a justification for why this particular qualitative approach has been selected. In addition, methods of data collection and data analysis are discussed. Chapter IV explores the results of the study by examining the data gathered and the experiences of the students. Chapter V concludes this study by discussing the implications of the findings,

benefits and problems with gameful design methods, and recommendations for future research.

CHAPTER II – LITERATURE REVIEW

This chapter discusses Asynchronous Online Discussions (AOD), the motivational design method known as gameful design, and the development of a model of AOD activities based on that design method. First, some background information about AODs is covered, such as the theoretical principles of social constructivism and the benefits and challenges for the use of AODs. Next, issues of activity design and learner participation are examined as they relate to successful AOD implementation. Third, the motivational design method for gameful design is examined. Finally, a model based on gameful design methods for AOD activities is developed for use in online learning environments

Asynchronous Online Discussions

AODs are Internet-based communication tools that allow users to write and publish messages for groups of people to view and respond (Hew et al., 2010). Messages, often called posts, remain visible so that others can engage by reading and possibly posting replies or follow-up with responses to the original author and/or others who join in the conversation. AODs allow for people to interact, exchange ideas, debate, and share knowledge without having to be in the same physical location or be concerned with the time of day.

The most widely used version of AOD divides topics of interest into separate “forums” to make for easier conversation (Hew & Cheung, 2008). Users select a topic or category of interest to read about, ask questions, and publish messages. A post becomes a “thread” after others publish replies. The conversation may continue until the thread dies (i.e., everyone stops posting) or is closed. AODs are one of the most commonly used

communication tools in Computer Supported Collaborative Learning (CSCL) environments (Cheung & Hew, 2004; De Wever, Schellens, Valcke, & Van Keer, 2006; Hew & Cheung, 2008; Lee, 2013; Putman, Ford, & Tancock, 2012; Xie, Debacker, & Ferguson, 2006). Second to email, the AOD forum is the most commonly used communication tool in this type of environment and context (De Wever et al., 2006). AODs are used around the world in fully online CSCL environments and in face-to-face classes where AODs are used to complement classroom time (Lee, 2013).

Benefits

The use of the AOD allows learners to exchange ideas within online learning environments. Students interact with each other in AODs by reading what others have written and then responding to the topic or others' posts (Putman et al., 2012). Students in these activities often share personal knowledge, explore information concerning different aspects of course content, and discover solutions to problems collaboratively.

Promoting Social Knowledge Construction. Collaborative engagement among learners is a key component for the success of distance education and is rooted in social constructivism (Rovai, 2007). This theory is based on the belief that people learn best when they work together and hinges on the principle known as the Zone of Proximal Development (ZPD) (Vygotsky, 1978).

Vygotsky explained that learners have two important levels of development (Hew & Cheung, 2003). The first level, known as the actual development level, is the amount of learning a student can obtain by independent efforts. The second level, known as the level of potential development, is the amount of learning a student can obtain through collaborative engagement with competent peers and guidance from an expert. The

difference between the two levels, the ZPD, is the range of development in which students can optimally construct knowledge. This is not to say that learners cannot obtain knowledge in isolation, but rather students achieve their maximum developmental potential when learning in relation to others in a socially-connected environment (Cheung & Hew, 2004).

Learners interact with each other by bringing their own perspectives and viewpoints to social constructivist-based learning environments (Ertmer et al., 2007). Students present ideas to each other, which are then challenged, critiqued, and/or endorsed. Learners involved in social negotiation of knowledge are given the opportunity to refine assumptions and preconceived ideas based on the collaborative input of other members. In other words, learners in a social constructivist learning environment contribute to public knowledge and challenge each other's views through the sharing of differing perspectives (Gunawardena et al., 1997).

AODs are natural venues for learners to participate in social knowledge construction because they have the opportunity to interact with others' arguments, opinions, and ideas by engaging in meaningful discussion without the constraints of physical location or time of day (Hewitt, 2005; Putman et al., 2012). Participants, with the aid of a content expert (i.e., an instructor), can help each other to pass their actual level of development to greater knowledge construction and deeper understanding of course material and to engage in meaningful learning experiences that would not be possible without such a tool (Cheung & Hew, 2004). Such learning experiences help promote naturally-occurring knowledge construction processes that encourage higher-

order learning and critical-thinking skills (Ertmer et al., 2007; Hew et al., 2010; Lee, 2013; Putman et al., 2012; Xie et al., 2006).

Providing Flexibility for Learners. AODs in online learning environments provide flexibility for students to communicate and learn (Hrastinski, 2008; Xie & Ke, 2011). AODs give the opportunity for low stress critical discussions where students are given the opportunity first to write their thoughts and to reflect on instructional topics, and then to critique other people's arguments (Rovai, 2007). Unlike face-to-face conversations or in-class discussions where students are required to "think on their feet" and give quick, off-the-cuff responses to questions, AODs allow students time to think about and reflect on their answers before they make a reply (Vonderwell & Boboc, 2013). Students can work at their own pace and carefully craft their responses while considering others' viewpoints, opinions, and arguments. Participants may make revisions and consider others' responses before contributing their own posts. Participants can also view and review posts as many times as needed without having to be worried about the information going away or becoming inaccessible (Hew & Cheung, 2011). Low-pressure, community interaction opportunities provided by AOD activities are beneficial to students across cultures and languages (Bassett, 2011).

Connecting Students. AODs help users connect in online courses by giving them opportunities to interact with each other through real and meaningful discourse (Xie & Ke, 2011). AODs can reduce the feeling of isolation and provide avenues for increased communication between students and the instructor (Palmer, Holt, & Bray, 2008). Because of this, students are more likely to participate and thus, to complete their coursework when they are actively engaged and supported by their peers. AODs help

students close the gap between course content and real-life experiences through personal connections that provide context and relevance to online learning.

Personal connections and opposing viewpoints allow students to participate in metacognitive activities and reflective thought about their own posts as well as those of their classmates (Lee & Tsai, 2011). Students have the opportunity to develop critical thinking skills and higher order learning when instructors model and encourage students to use Socratic questioning when interacting with each other (Hew & Cheung, 2011). For example, instructors can encourage students to dig deeper into assumptions that are made by their classmates and not simply agree with everything that is written. Socratic questioning reveals weaknesses and strengths of arguments, discovers assumptions and biases, and always looks for evidence on which to base information. This type of questioning requires reflective and critical thought as well as an openness to social knowledge negotiation and construction. Some researchers argue that this level of reflection cannot be matched in a traditional face-to-face classroom (Putman et al., 2012). Participants in well-designed AOD activities have the opportunity to gain a deep understanding of the topics in the class and of the views of others (Y. Wang & Chen, 2010).

Challenges

There are many challenges for the successful implementation of AODs, including successful activity design (Hew et al., 2010; Xie et al., 2006) and high quality student participation (Hew et al., 2010). AOD activities must be designed in a manner consistent with social constructivist principles (Dennen, 2008; Ke & Xie, 2009). Also, quality

participation is required for students to engage in social knowledge construction and benefit from taking part in AOD activities (Hrastinski, 2008).

Successful Activity Design. Research suggests that poor activity design reduces the effectiveness of discussions in online learning environments (Ke & Xie, 2009). Well-designed AOD activities, which are the central focus of course interaction, tend to provide the most opportunities for social knowledge construction. AOD activities have been shown to increase student enjoyment and interaction within online learning environments when they are designed in a manner consistent with the principles of social constructivism.

Low-Quality Student Participation. Low quality participation is a common and widespread problem throughout academic uses of AOD activities (Chan et al., 2009). Low student participation and contribution has been defined as students who make very few posts and/or students who post only enough to receive credit for their participation. These participants generally make little or no effort to engage in knowledge negotiation, Socratic questioning, critical thinking exercises, or social knowledge construction.

AOD Implementation

The benefits of AODs can only remain *potential* benefits unless AOD activities are designed and implemented in such a way that encourages socially connected and engaged behaviors (Hew et al., 2010). AODs do not automatically result in connected, engaged, critical thinkers, and the benefits of AODs can only be realized if associated activities are designed in such a way that encourages high quality participation (Hew et al., 2010; Xie et al., 2006). Exactly what defines high quality participation and the

characteristics of this type of student contribution in AODs has been an issue of contention among researchers (Hrastinski, 2008).

Activity Design

AODs offer a wide range of design options for instructors because activities are easily adjusted to match the objectives and goals of the course (Dennen, 2008).

Discussion activities are often modified based upon the instructor's epistemological beliefs, as well as the needs for the course or learning situation. The resulting activities can generally be grouped into one of three design categories known as a product, a process, or a blended design. There can also be a wide range of task types within each category. These tasks have been categorized as open, closed, and integrated discussion tasks (Ke & Xie, 2009).

Epistemological Design. Dennen (2008) explained that the product-oriented design of some AODs closely aligns with the Cognitive Information Processing psychological theories of learning. Participants are instructed to use the discussion board primarily as a place to demonstrate their own knowledge about a given topic. She explained that learners can moderately influence classmates' opinions and viewpoints by giving each other feedback after posts are made. However, the main purpose of this type of activity is to allow individuals to demonstrate what they have learned to the content expert (generally the instructor). Participants' input is often assessed for accuracy and relevancy by the expert. For example, an AOD activity that requires participants to read a scholarly article and then write a summarization in the discussion board is considered a product-oriented activity. All students would generally be given the same article to summarize and explain what they have gathered from the reading. In addition to their

original posts, they may have to make comments about their classmates' posts, but these comments are generally an affirmation or recognition of shared ideas. "I agree with your post . . ." and "I like what you said about . . ." are commonly made comments in this type of discussion. The primary focus for the participants (and instructor) is the initial contribution and demonstrated understanding of the assigned reading (Dennen, 2008).

Dennen (2008) contrasted product-oriented activities with process-oriented activities. She explained that process-oriented activities adhere better to a social constructivist understanding of learning and knowledge construction. Participants in this type of activity share their personal experiences, ideas, views, and understanding of a topic so that, when combined, they may collaboratively construct knowledge. She stated that participants must keep an open mind about others' viewpoints, ideas, and opinions to be successful in the activity. Understanding the content of the course is required, but engaging with each other in meaningful discourse is the most important aspect of this type of design. Dennen continued by stating that learners who open themselves up to the group, who let their knowledge be extended, and who allow themselves to be "interdependent" with the rest of the group can benefit from this type of activity. An example of this may be a discussion activity where students are provided a topic to discuss concerns related to the content of the course. The students submit their ideas based upon their understanding of facts and experiences and then respond to their classmates' posts. These responses should challenge, critique, and/or affirm other ideas presented so that the social negotiation process can occur.

Process-oriented discussions, when guided by an instructor, often result in refined understanding about the content, shared personal experiences, and relevant issues. Social

knowledge is constructed by the learning community and extends to everyone who participates (Dennen, 2008). Participants in this type of discussion are challenged in their views, much like in a face-to-face debate or brainstorming session, prompted to provide justification for their stances, and often acquiesce to new ideas presented by members of the group.

Many instructors rely on a blended version of both process and product AOD design (Dennen, 2008). For example, participants have to write a post demonstrating understanding of a subject, but are also required to describe past experiences and personal viewpoints to supplement the facts of the topic. Dennen (2008) called this type of activity a discursive learning activity and explained that the focus is both on demonstrating knowledge and highlighting participants' experiences in a social forum. While there is nothing pedagogically wrong with product-oriented designs for AOD activities, the most effective design method is a blended or a product learning design as it affords more opportunities for social knowledge construction (Dennen, 2008).

Question Types. AOD design and implementation methods are important, but the types of questions chosen to be used in those activities are just as important (Ke & Xie, 2009). Discussion question types have been classified as being closed-ended, open-ended, or integrated tasks. Closed-ended tasks generally are focused around questions that have a specific answer and are more often found in product-oriented designs of AOD activities. An example of a closed-ended AOD task is asking a student to read about and explain what social constructivism is. This type of question has a direct answer that is well-documented and has a clear right or wrong response. Closed-ended AOD tasks, when made the primary AOD task type of a course, are linked to lower student

satisfaction, lower social engagement, and provide the lowest number of opportunities for social knowledge construction. This can lead to poorer overall performance in the online learning environment.

In contrast to closed-ended tasks, open-ended tasks help participants reflect on their experiences, perspectives, and their own learning processes by looking at broad topics, situations, and generally open-ended questions. An example of an open-ended AOD task is asking students to explain and describe their own experiences in social constructivist learning environments. Open-ended discussions have been associated with higher order thinking, greater social interactions, and more opportunities for knowledge construction.

Integrated discussion tasks involve the use of both open and closed types of questions. Integrated discussions have also been associated with greater student satisfaction and social knowledge construction than the exclusive use of closed-ended tasks. The combination of fact-based, closed questions and the experiential, open-ended questions may appeal to more types of learners.

Discussion activities must be designed with process-oriented or blended design methods and a focus on open-ended tasks to achieve many of the benefits that AODs have to offer. Activity and task design, however, is only half of the solution to unlocking the full potential that AODs have to offer.

Student Participation

The second challenge for successfully implementing AOD activities in online learning environments is quality student participation.

Identifying Quality Student Participation. Hrastinski (2008) defined participation in online learning environments as “a process of learning by taking part and maintaining relations with others. It is a complex process comprising doing, communicating, thinking, feeling and belonging, which occurs both online and offline” (p. 1761). Researchers agree that student participation in online learning environments is a good thing and has a positive impact on learning, but they do not agree on how the construct should be defined and conceptualized. To illustrate this point, Hrastinski (2008) reviewed relevant research and identified six ways that researchers characterized online learners’ participation:

1. Logging into the course and navigating to the discussion board.
2. Writing a required number of posts in the discussion board.
3. Writing quality posts in the discussion board. These studies defined what quality posts were and then counted students as participating or not, based on the number of those kinds of posts.
4. Writing a required number of posts and also reading posts. These studies identified students as actively engaged with the discussions based on the number of posts they read and wrote. Hrastinski pointed out that the reading portion of this type of participation was important for a segment of participants called lurkers. These are students who read many posts before joining the discussion.
5. Writing posts that are recognized by classmates as important.
6. Engaging in open dialogue and social interaction within the activity instead of simply posting.

The many different ways researchers have used to determine AOD participation highlight the problem of identifying exactly what is needed in order to encourage more of it. Much has been done detailing the nuances and details of all the different participation types, but they are not all discussed in this literature review because they are outside the scope of this study.

Interestingly, some researchers have suggested that the best way to identify high quality participation can be found by looking at the contributing factors of “low quality participation” to gain insight into the reasons students choose not to participate (or only do so begrudgingly) (Hew et al., 2010). Though high quality participation can be defined in many different ways and includes many abstract qualities, low quality participation in online learning environments is generally more concrete and often described as students simply not participating or, if they do, contributing only the minimum that is required. Low student participation can often be addressed by modifying activity and course designs.

Reasons for Low-Quality Participation. Hew et. al. (2010) conducted an extensive literature review to identify common factors that contribute to low participation rates in AODs and found seven common issues. They suggested that five of these issues could be addressed by making changes to existing models of AOD design. These included:

1. Participants having trouble keeping track of discussions.
2. Participants not knowing what to contribute.
3. Learners’ personalities hindering participation.
4. Students hindered from participating by other members of the class.
5. Participants having technical issues with the learning management system.

Hew et al. (2010) suggested these issues could be addressed by making changes to the design of the entire course or simply by modifying teaching strategies in AOD activities. These changes include clarifying ground rules, visually demonstrating how to participate in discussion boards, using questions with “note-starters,” and ensuring that all students are able to navigate the learning management system at the beginning of the course. These issues, while important, are not the primary focus of the current study. The primary focus of this study is upon the final two issues that deal specifically with participant motivation and that can be addressed by modifying the core design of AOD activities (Hew et al., 2010). These include:

1. Participants not contributing anything other than “surface level” posts.
2. Participants not being aware of the inherent value for participating in AODs.

These issues are directly related to participant motivation and must be addressed through the design of AOD activities if social knowledge construction and high quality student participation is to occur (Hew et al., 2010). Inherent problems that current AOD activities have concerning these issues of participant motivation must be understood if they are to be addressed in an alternative design model.

AOD Activities Designed for “Surface-Level” Interactions

Low quality participation in AODs is commonly associated with surface-level learning and is contrasted by deep learning (Offir, Lev, & Bezalel, 2008). Surface-learning processing is when students simply comprehend and remember new information. An example of surface-learning in AODs is a student who repeats stated information without adding any new facts or personal experience. Deep learning happens when learners allow new information to have an influence on their ways of thinking, beliefs,

and existing understanding. Characteristics of deep learning often occur when students make hypotheses about new ideas, ask critical questions, connect existing understandings with new ideas, and challenge assumptions with constructive arguments.

Surface-learning in AODS is often characterized by single posts and simple responses of agreement about the original author's ideas (Hew et al., 2010). Students often enter posts, responses, and questions that are generally limited to the least amount that is required to get credit for the assignment even though the frequency of posts that participants make may be adequate (Palmer et al., 2008). According to Hew et. al. (2010), students do not know how to progress into deeper discussions because they have never developed an understanding of critical thinking skills. Without such an understanding, there is very little they can do because students simply do not know how to offer arguments and supporting statements to justify their viewpoints. Also, participants may be amotivated to make their posts anything other than surface-level regardless of whether they understand critical thinking strategies or not (Lee, 2013). Instructors need an understanding of the levels of interaction in order to effectively design activities in a manner that promotes critical learning and meaningful discourse (Ng, Cheung, & Hew, 2012).

Gunawardena et al. (1997) developed an outline called the Interaction Analysis Model (IAM) that mapped the stages of knowledge construction in online learning environments. The model represents the process of meaning negotiation which groups must go through to achieve new, socially constructed knowledge. The model contains five phases. Phase 1 is the most basic and consists of only sharing information. Phase 2 is discovery of disagreement and the beginning of deep-learning in AOD activities. Phase 3

involves meaning negotiation and the starting place for social knowledge construction. Phase 4 is where new meaning and knowledge begin to be refined. Phase 5 is when new meaning is constructed and accepted by the group. The levels of learning (from surface to deep) coincide directly with the levels of knowledge construction presented by Vygotsky (1978) and help give insight into low-quality participation (Hew et al., 2010). This model also begins to shed light on how student motivation plays a role in the social knowledge construction process of AODs.

The IAM model provides insight into the development and evolution of discussions (Ng et al., 2012). Instructors should teach and model instructional methods to encourage the use of Socratic questioning and critical thinking skills in AOD activities (Hew et al., 2010). These skills are critical for participants to move past Phase 1 to engage in deeper discussions. Critically-thinking learning communities, however, will not reach Phase 5 in every discussion, nor will every discussion be meaningful. Participants who approach AOD activities thinking critically will not always be motivated to progress beyond Phase 1 for every discussion. Gunawardena et al. (1997) explained this point by stating that many discussions simply end at Phase 1. In fact, their own study in which they developed this model, yielded 191 Phase 1 posts and less than 20 Phase 2-5 posts. They stated that discussions did not often end in the resolution of disagreements. Instead participants simply agreed to disagree or accept each other's viewpoints as valid, but continued to be separate. These discussions were not all considered failures or lesser quality discussions, but simply situations where participants became aware of each other's ideas. Regardless, instructors with the IAM model in mind can create AOD

activities in a way that facilitates movement between levels, encourages critical thinking, and helps foster deep learning along with higher quality participation (Hew et al., 2010).

Inherent Value of Participating in AOD Activities is Not Obvious

Students who do not understand or perceive a need for online discussions generally will not participate in an activity or will only contribute the minimum amount of effort that they must in order to obtain credit. Hew et. al. (2010) provide examples of students being asked to talk about homework assignments that have already been submitted or discussion activities being required for classes that also meet face-to-face on a weekly basis. These discussions may seem redundant and unnecessary for students. Work that is perceived as arbitrary, useless, or otherwise meaningless will not evoke high levels of participation because there is little incentive for students to take part.

Students will not deeply engage in activities if they do not know how much to contribute, what their contributions should look like, or what they will receive in return for participation (Hew et al., 2010). Unclear expectations, convoluted instructions, and/or coercive incentives implemented by the instructor can also add to the inability of students to see the need for participation. This ultimately has a negative impact on student participation.

Hew et al. (2010) explained that research was clear on the fact that students needed to feel as though their efforts were beneficial and had value. They stated that four major ways that previous research has attempted to overcome this barrier were by: (1) making discussion topics relevant, (2) giving grades or other incentives for participation, (3) providing clear and concise expectations/directions, and (4) having deadlines for participation.

Of all these methods, Hew et al. (2010) pointed to research that suggested grades and other external incentives have been found to impact participation rates the most. Unfortunately, this was only found to increase the frequency of postings and not the quality of postings. Xie and Ke (2011) suggested that participants who were motivated not by grades or incentives, but by their own desire to participate, had increased quality of contributions in AOD activities. Overcoming low quality participation in AOD activities, once again, seems to be related to issues of participant motivation.

Relevance to Current Study

Effective activity design and student motivation are two of the most common problems facing successful implementation of constructivist AOD activities in online learning environments (Hew et al., 2010). This study attempted to address both of these issues by approaching the design of AOD activities with a form of motivational design called gameful design.

Motivational Design – Gameful Design

Levels of participation have been identified as a key link between student outcomes and motivation (Giannetto, Chao, & Fontana, 2013). Levels of participation have been associated with corresponding levels of task interest, self-involvement, goal creation, and task persistence (Reeve, Jang, Carrell, Jeon, & Barch, 2004). For example, students with low levels of participation often achieve less and have lower motivation levels than students who are actively engaged.

One way to address this link between student outcomes and motivation is by considering what Deterding (2014) called “motivational design” when creating systems and activities. He described motivational design as a subset of persuasive design (Zhang,

2008) that is primarily concerned with systematic, targeted changes in participant behavior. Similarly, Keller (2010) described motivational design as systematic processes that address specific methods used for making instruction appealing. Motivational design is used to create systems and activities in a way that supports participant motivation and encourages participation (Deterding, 2014). Relational properties between participants and objects in the design process are defined as “motivational affordances” (Zhang, 2008, p. 145). Motivational affordances can be considered when designing activities in order to support target experiences. This is done through holistic design methods and not by manipulating activities by adding external motivators (Deterding, 2014).

Gameful design is one form of motivational design that can be used to address motivational affordances. Gameful design is based on Deci and Ryan’s (1985) Self-Determination Theory (SDT) and methods of video game designers (Deterding, 2014), like Playcentric Design (Fullerton et al., 2008) and the Mechanics, Dynamics, Aesthetics (MDA) model for game design (Hunicke et al., 2004).

The idea of applying game design methods to the design process of activities is fundamentally different from previous applications of games and gamification (Deterding, 2014). Video games have often been used in education, and learning activities have been made into games. Also, gamification, which is a form of activity modification, has tried to add patterns commonly found in digital games (i.e., points, badges, levels) to non-game activities in attempt to make them more game-like. Gameful design is fundamentally different in that it approaches activity design by systematically supporting participant motivation and targeting specific participant experience goals during the early phases of the design process (Deterding, 2014).

Origin of Gameful Design

Educators, instructional designers, and researchers have historically looked to mainstream technology tools and non-academic trends for innovative ideas to improve the motivational qualities of learning experiences (Dickey, 2005; Hew et al., 2010). Recent examples include the television, personal computer, movies, comic books, and many varieties of software applications. The video game is a form of digital entertainment that has been brought to the forefront of educational and motivational research (Dickey, 2005). The video game industry has specifically been noted for its dramatic rise in popularity due in part to exceptionally high levels of player motivation in popular games, which often borders on addiction (Giannetto et al., 2013; Ryan, Rigby, & Przybylski, 2006).

Since the early 1980's, the popularity of video games has skyrocketed (Dickey, 2005). The Entertainment Software Association (2014) reported that the U.S. market for video games has grown to 21.5 billion dollars with 59% of Americans reporting they play video games. Video game players in 2013 were not limited to any particular age, gender, SES, or defining demographic. This rise in popularity has been noted by researchers, educators, and instructional designers who have attempted to mine video games for the qualities that makes them so appealing to such a wide range of people (Dickey, 2005; Egenfeldt-Nielsen, 2006).

Video games are well-suited for educational purposes because of the active role that participants play while consuming the product (Fullerton et al., 2008). Few other human activities require consumers (players) to be such active participants to be entertained. Most other aesthetic activities place consumers as passive bystanders who

enjoy the experience from a distance. For example, movie goers watch a cinematic story played out in front of them, but they are not generally actively participating in the experience. Games however, place consumers as active participants in the center of the experience as they are required to build worlds, move the story along, make meaningful decisions about the progression of the game, or simply jump over holes. The type of game is not important, but the fact that games require active participation in order to be successful and that good games support high levels of motivation and engagement is relevant to educational needs (Fullerton et al., 2008).

Using Games in Education. Educational experiences that included graphical video games characterized the first attempts to tap into the motivational qualities that games had to offer (Egenfeldt-Nielsen, 2006; Ryan et al., 2006). Video games that have been used in educational experiences can generally be categorized into one of three categories (Egenfeldt-Nielsen, 2006). Commercial games that are created for educating and entertaining have been called “Edutainment” games. These are games that attempt to incorporate educational skills in a videogame (e.g., MathBlaster™) (Squire, 2006). The second category includes researchers’ and educators’ attempts to employ commercial games they believe have inherent educational values (e.g., Civilization™, Sim City™) (Hoffmann, 2009). This category also includes attempts by educators to use non-educational commercial games and glean educational principles from them (e.g., Lord of the Rings Online™ for literature studies and World of Warcraft™ for publishing in an online context) (Clayton, 2015; Shultz Colby & Colby, 2008). The final category is a classification of games that are research-based and similar to edutainment, but are more sophisticated in that they do not focus on simple repetition or memorization of basic

skills (e.g., Where in the World is Carmen Sandiego? TM, The Oregon Trail TM) (Egenfeldt-Nielsen, 2006; Shultz Colby & Colby, 2008). These attempts have been met with mixed success for various reasons; nevertheless to date, no widespread use of digital games within education has had the success that commercial games have had upon the general market (Egenfeldt-Nielsen, 2006).

From Games to Gamification. Around 2008, researchers and advertisers began shifting their focus from using actual games and toward deriving common patterns and themes found within successful games (Deterding, Dixon, Khaled, & Nacke, 2011). The term Gamification was emerging in industry and advertising circles as a method of activity design that places game-like patterns on non-game activities to promote participation and engagement (Deterding, 2014; Deterding et al., 2011; Huotari & Hamari, 2012). For example, the popular mobile app *Foursquare* provided incentives to people for repeated visits to local restaurants and other attractions by giving visitors points, levels, and badges to make visits more fun and game-like. Deterding (2014) pointed out that incentives like these were intended to motivate people to engage in behaviors, compete with each other, and turn non-game tasks into something that resembled a game. He explained that the practice of ‘gamifying’ things has been used in many different areas, including marketing, advertising, loyalty programs, employee incentives, and academia.

Gamification has been marketed as a way to ‘spice up’ activities, increase participant engagement, and encourage people to take part in activities in ways that are manageable, trackable, and predictive (Monu & Ralph, 2013; Park & Bae, 2014; Wells et al., 2014). Gamification was argued to be beneficial for participants of tasks and for those

who were administering the tasks (Deterding, 2012). The participants seemed to be having fun while they were participating, and administrators could increase activity engagement in ways that were relatively inexpensive and manageable, while producing valuable user data (Wells et al., 2014). Gamification quickly became a household term in marketing and design, but it also became a polarizing issue (Deterding, 2012; Nicholson, 2012). One side argued that gamification was a great motivator for otherwise boring tasks (Zichermann & Cunningham, 2011), while the other side argued that it was unethical and completely non game-like (Robertson, 2010).

Deterding (2014) explained that there was no specific design problem that required things to be gamified. He argued that gamification was a solution in search of a problem and was not really a design method, but a collection of design patterns (points, badges, levels.) loosely joined together and called “gamey” because they were commonly seen in video games. He continued by stating that common gamification patterns (points, badges, levels) were also found in many other situations and gave the example of grades in educational activities. He stated that grades were similar in pattern to the gamification strategy of adding points to an activity. Points do not, in and of themselves, make games fun, nor do grades make educational activities fun. He stated that much of what had become known as gamification involved simple external regulation and forms of control. Because of the reliance on external motivational sources, the fun in gamification could not last, learning would be less likely to persist, and participation levels would not be sustainable.

From Gamification to Gameful Design. The notion that activity design can somehow be influenced by the motivational factors that are inherent in video games

continues to inspire researchers to explore gamification in a different light (Deterding, 2014). Instead of approaching activity design with gamification in mind (adding game-like patterns to non-games), researchers are now looking at the fundamental ways that game designers approach the development and design of successful games through a method called gameful design (Deterding, 2014).

Well-designed games inherently motivate people to participate, so it is plausible that other activities can be designed in a similar manner to illicit such participation (Deterding, 2014). This is an advance from previous methods of integrating games, game-like activities, or “gamey” patterns into educational activities that places participant experiences and their psychological needs for motivation in the center for every development decision, much like the design process of well-designed video games.

Gameful design is a form of activity design that is based on (a) the motivational theory of SDT and (b) design and development strategies of game designers (Deterding, 2014). This approach looks at activity design from a motivational perspective by considering the participants’ psychological needs as explained in SDT (Deci & Ryan, 1985). Then, with an understanding of players’ innate needs, designers consider how to develop and implement those activities. Gameful design relies on methods of design and development that are common to video-game designers, such as the MDA model and playcentric design, which systematically adjusts designs and development strategies based on player experiences (Fullerton et al., 2008).

The next sections of the literature review take a closer look at SDT and game design methods. These are the two primary components of gameful design (Deterding, 2014). First, SDT is discussed to develop an understanding of learner motivation and how

gameful design employs these principles to support participant engagement. Then development strategies of game designers will be explored to determine how they can be applied to the design of non-game activities. Finally, these principles will be examined as they relate to the design of AOD activities.

Self-Determination Theory: Theoretical Foundations of Gameful Design

Participant motivation has many theories and ideas associated with it (Simpson, 2008). Self-determination theory has been extensively studied and consistently verified in the fields of sport (Cox & Williams, 2008; Mallet, 2005), digital games (Deterding, 2014; Ryan et al., 2006; Sheldon & Filak, 2008), and education (Cox & Williams, 2008; Deci & Ryan, 1985; Jang, Reeve, Ryan, & Kim, 2009; Moos & Honkomp, 2011; Reeve & Jang, 2006; Sørenbø & Hæhre, 2012) among others, and this theory is specifically relevant to the topic of distance and online education (Simpson, 2008).

Self-Determination Theory. Xie and Ke (2011) stated that motivation is a type of influence that compels a person to take action. Though motivation is not the only influence that affects people's behavior, it is a crucial element for learning and must be considered when looking at participation in activities (Deterding, 2014). Ryan and Deci (2000a) described motivational levels as the amount of motivation a person has to participate in an activity. They explained that motivation exists as two types: intrinsic and extrinsic. Each may fluctuate and originate from different sources. Motivation type is focused on "why" motivation exists and is determined by a person's reasons and feelings for participating in an activity.

Intrinsic Motivation

Ryan and Deci (1985) described a person who was compelled to action for no other reason than that an activity was enjoyable and self-satisfying as being intrinsically motivated. They explained that no external reason or influence for participation could be observed for intrinsically motivated behaviors because the act was pursued only for the sake of the activity. This can be observed in natural human behaviors and is a key part of human development that can be seen throughout the developmental stages of life (Ryan & Deci, 2000b). Behaviors due to internal curiosity, inherent fun, simply finding something interesting, the satisfaction of overcoming a challenge, and self-satisfaction through enjoyment of an activity can all be considered intrinsically motivated. Ryan and Deci (2000c) explained that humans were intrinsically motivated to participate in some activities because the activity was interesting and met three basic psychological needs of autonomy, competence, and relatedness.

The SDT approach to intrinsic motivation developed as a reaction to more behavioral approaches to motivation, such as Operant Theory (Skinner, 1953). These theories argued that activities, which have no externally observable rewards, were the rewards in and of themselves. Learning theorists, such as Hull (1943), recognized that behaviors occurred with no external rewards because psychological needs had been met by the behavior itself. Deci and Ryan (1985) identified the basic psychological needs as autonomy, competence, and relatedness. They explained that activities which were inherently interesting and met those psychological needs resulted in a behavior that was intrinsically motivated. Research has shown that behaviors that are the result of intrinsic motivation, especially in education, result in higher quality learning, greater levels of

participation, longer task persistence, and enhanced creativity (Cerasoli & Ford, 2014; Cerasoli, Nicklin, & Ford, 2014; Cordova & Lepper, 1996; Xie & Ke, 2011).

Many tasks in education fail to support autonomy, competence, and relatedness (Niemic & Ryan, 2009). All of SDT and its sub-theories hinge on these three needs being met for human behavior to be self-determined, but often educational tasks do not meet these needs, nor are the tasks specifically designed to be interesting to students (Ryan & Deci, 2000a). This results in students who are not highly motivated to participate and who are not actively engaged. Manipulating and changing the design of activities does not directly influence participants' intrinsic motivation levels, but may serve to (a) increase the inherent *interest* of the activity and (b) help to support the psychological needs that are required for behavior to be intrinsically motivated. Intrinsic motivation cannot be manufactured or manipulated by any external influence (Ryan & Deci, 2000a).

Intrinsic motivation, according to Deci and Ryan (2000a), is “catalyzed (rather than *caused*) when individuals are in conditions that are conducive toward its expression” (p. 58). They explained that task manipulation must focus on facilitating participant autonomy, competence, and relatedness, instead of trying to somehow change the activity to be more intrinsically motivating.

In Cognitive Evaluation Theory (CET), a sub-theory of SDT, the importance of two of the three psychological needs are explained (Deci & Ryan, 1985). Deci and Ryan (2000a) explained that competence is facilitated when participants are given supportive feedback, safety from humiliation and embarrassment, that proper challenges. Competence is only a piece of the puzzle, however, and alone will not lead to greater

levels of intrinsic motivation by itself. They stated that people must also feel that they are in control and able to maintain a sense of autonomy throughout the task in order to be self-determined. In other words, participants must have a high internal perceived locus of causality (DeCharms, 1968). Participants must feel competent and that they are able to make self-determined decisions to participate (or not) in order to be intrinsically motivated. Finally, relatedness is the feeling of connectedness to others in the activity (Ryan & Deci, 2000a).

The other important distinction to note is that the opposite of facilitating intrinsic motivation is undermining it (Ryan & Deci, 2000c). Reducing support for autonomy and competence reduces the chance that behavior will be intrinsically motivated. Also, as mentioned before, activities must be in and of themselves interesting. This is a major problem in education because many tasks students are required to participate in are not purposefully designed to be inherently interesting, so they undermine intrinsic motivation (Ryan & Deci, 2000a). Still, people participate in these activities (if reluctantly) because of extrinsic motivation.

Extrinsic Motivation

Extrinsic motivation represents the idea that someone does something in order to change an end result (Deci, Koestner, & Ryan, 2001). This is not to say that an activity cannot be enjoyed if it is extrinsically motivated, but that the source of the motivation is external. Traditional views of extrinsic motivation have portrayed extrinsic motivation as a more shallow form of motivation when compared to the intrinsic form (Ryan & Deci, 2000a). SDT proponents argue that there are different types of extrinsic motivation and place the level of autonomy on a continuum. External motivation levels range from a

shallow form that allows for no autonomy to a form that would almost appear to be completely self-determined and allow for nearly complete autonomy. For example, students may begrudgingly participate in a discussion board activity solely to receive a grade (least amount of autonomy) or may willingly participate because they have accepted that the activity has value and participate as much as is desirable (greatest amount of autonomy). Both examples may begin with students being inherently disinterested in participating in an activity, but the end results differ greatly. The first scenario compels students to do only enough to get credit for participation, but the second scenario compels students to actively participate and produces most (if not all) of the benefits of a person who is intrinsically interested and motivated to participate in the activity.

The different forms of extrinsic motivation can be found in a second sub-theory of SDT called Organismic Integration Theory (Ryan & Deci, 2000a). Organismic Integration Theory is focused on areas that “promote or hinder internalization and integration of behavioral regulations” (Deci and Ryan, 1985). The process of adopting and making a particular behavior one’s own is fundamental to the idea that extrinsic motivation can range from non-autonomous (no integration or internalization) to fully autonomous (values completely adopted and self-determined behaviors) (Ryan & Deci, 2000a).

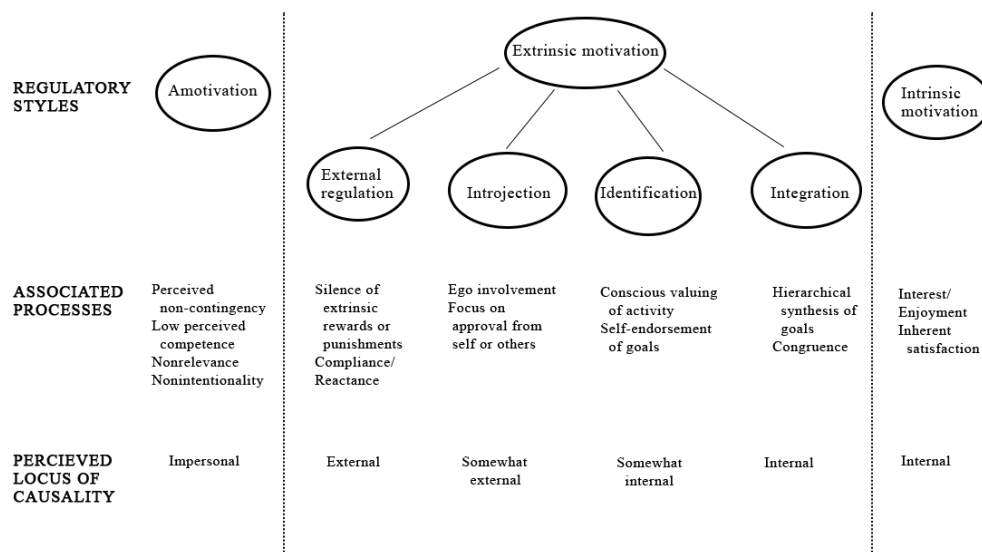


Figure 1. Taxonomy of Human Motivation.

(Ryan & Deci, 2000a).

Ryan and Deci (2000a) explained that the scale of motivation begins with a person having no reason to participate or being in an amotivated state (see Figure 1). Extrinsic motivation is divided into four categories. External regulation represents the least autonomous form of extrinsic motivation. Participants that are compelled to act due to this type of motivation generally are seeking to achieve a requirement, avoid a type of punishment, or receive some type of reward. An example of this may be the students mentioned before who participate in a discussion activity only as much required in order to receive the desired grade. Participants in this situation have the least amount of autonomy and feel controlled by the requirements, so they feel “forced” to take part in the activity. Their locus of causality, or where they feel control is being placed, is completely external (DeCharms, 1968). This is the traditional behaviorist form of motivation as seen in operant conditioning (Skinner, 1953).

This next form is introjected motivation that still does not allow for much autonomy, but is more internalized than external regulation (Ryan & Deci, 2000a). This type of regulation involves feelings of pride, guilt, and other internal pressures that push people to complete desired behaviors. An example of this may be students who participate in a discussion activity to enhance their own self-worth and pride to avoid guilt that would accompany non-participation (Simpson, 2008). The locus of causality is more internal than external regulation, but still originates from outside (if even from an imaginary audience or sources). Participants at this point have internalized the regulation in such a way that they feel competent enough to participate in the activity and related enough to feel enough connection to others in the group to care about a negative appearance (Gagné & Deci, 2005).

Following the introjected form of extrinsic motivation is a regulation type known as identification, which is a form of regulation that begins to become more internalized and self-determined (Ryan & Deci, 2000a). This is when participants begin to adopt the importance and value of the activity and accept it as necessary to achieve personal goals. An example of this is students who participate in a discussion activity because they value the topics being discussed to help them become better in their profession, thereby serving in their long term goals. The locus of causality is now more internal because they have decided that they still must participate in an activity to acquire what they want and have internalized the value of the assignment. They also have begun to integrate this activity, and by making it their own, they begin to feel control over the regulation instead of the other way around. They participate mostly by their own choice instead of submitting to a controlling regulation (Ryan & Deci, 2000a).

Finally, the last form of extrinsic motivation is known as integrated regulation and is the most autonomous form of extrinsic motivation as defined by Self-Determination Theory (Ryan & Deci, 2000a). This happens when students completely internalize the value of the activity and participate by their own will. Ryan and Deci (2000a) argued that regulation can only happen when a person has completely and wholly internalized the values of the behavior and accepted the behavior as their own through self-determination. This can look very much like intrinsic motivation in both benefit and quality, but the difference is that participation happens in order to change an outcome and not simply because of interest in the activity (Gagné & Deci, 2005). An example of this is students who participate in discussion activities because they have adopted the inherent value of taking part in a learning community. Their participation is not limited to the minimum requirements, but they exhibit high quality participation and find new ways to deepen the discussions. Ryan and Deci (2000a) explained that the locus of causality for these students is completely internal because they are entirely self-determined to participate in the activity in the best way that they can and are no way controlled by the regulation. The value of participation stems from their own values and behaviors being reinforced by the internalized behavior when they take part in the activity. Ryan and Deci (2000a) continued by stating that people who have integrated motivational regulations do not feel controlled by external sources but exhibit qualities similar to those who are intrinsically motivated.

Another important fact about the taxonomies of extrinsic motivation is that they are not levels that someone must progress through in order to reach the highest level, but a person may start and stop at any point on the scale (Chemolli & Gagné, 2014). For

example, students may be completely amotivated, then though initially prompted by an external regulation to take part in an activity, may genuinely adopt the values and benefits of the activity internally as a more integrated regulation type. At the same time, students may begin by being genuinely interested in the benefits of a given activity, but feel controlled by the regulatory elements, not competent in the task, and not related to others so that internalization and integration does not take place. This would result in a situation where all motivational regulations are externally situated, and students participate only to receive credit for the assignment.

There is some disagreement in the literature and current researchers about the role that extrinsic regulations have on motivation (Cerasoli et al., 2014). A long held belief of SDT is that extrinsic regulations serve to undermine intrinsic motivation. This is a major problem when dealing with educational activities that are not always inherently interesting so that instructors must rely on extrinsic motivations (Deci and Ryan, 2000). Current research is focused on the role that each type of motivation plays, on whether they exist independently of one another, and on whether they can be used in tandem (Cerasoli & Ford, 2014). Cerasoli and Ford (2014) found that intrinsic motivation could help predict high quality participation, and extrinsic motivation could help predict high quantity participation. Their research also suggested that intrinsic motivation was influenced less by extrinsic motivators when incentives and rewards were not directly tied to performance. Finally, they found that intrinsic motivation and extrinsic rewards, when not tied directly to performance, should be studied together.

A generally acceptable practice has been to use extrinsic regulations to build initial interest until integrated regulation or intrinsic motivation becomes the driver for

participation. However, there is very little empirical research to argue the benefits and drawbacks of this practice or to show that this connection between extrinsic and intrinsic motivation even occurs (Cerasoli et al., 2014). The research is clear that extrinsic regulations should not be the sole motivators, as this can undermine intrinsic motivations that participants may have or could develop towards an activity (Ryan & Deci, 2000c).

Self-Determination Theory in Gameful Design. Games inherently support the psychological needs that participants must have to be motivated (Aguilar et al., 2013; Deterding, 2014; Deterding et al., 2011). Activities that are developed according to gameful design methods are those that fundamentally support autonomy, competence, and relatedness so that intrinsic motivation is not undermined, and self-determined extrinsic motivation is encouraged.

Autonomy

Gameful design is patterned after well-designed video games, in part because they generally provide extremely high levels of participant autonomy (Deterding, 2014).

Video games are normally voluntary activities because participants can choose if and when they want to play them (Ryan et al., 2006). Also, games often allow for players to play how they want, become who they want, choose the goals they want to pursue, and decide which course of action they want to take in order to reach those goals.

An activity that is designed to support the psychological need of autonomy will provide participants with meaningful choices and allow them, as much as possible, to choose their own path (Deterding, Björk, Nacke, Dixon, & Lawley, 2013). Activity designers should take every care to lessen the reliance upon external motivators/punishments. If an external regulator is required (i.e., grades in an educational

setting) every attempt should be made to distance the desired behavior from the external regulator (Deci et al., 2001).

Competence

Gameful design addresses competence by purposefully looking at tasks and challenges that participants are asked to take part in (Deterding, 2013). Gameful design methods ask:

1. Is the task interesting?
2. What are the goals?
3. What are the rules of the task?
4. What are the actions that the participants must take?
5. How is feedback given?

The most important required element for participants to engage in an activity is that the task must be interesting (Ryan & Deci, 2000a). Participants are not self-determined to participate in an activity if they do not see the value of the activity. The task must be interesting, and the value of the activity be apparent to the participants (Ryan & Deci, 2000a).

Like well-designed games, activities developed according to gameful design methods support the need for competence by providing meaningful challenges and providing players with a sense of “effectance” (Ryan et al., 2006, p. 350). Deterding (2013) explained that this means players are often faced with new obstacles and opportunities to learn new ways to overcome challenges by receiving feedback therefore, becoming more competent. Often these challenges are built into game systems whereby one piece of knowledge is built upon previous information so that every challenge is

meaningful and relevant to others. He stated that every obstacle is designed in such a way that the player is constantly improving while being challenged with more difficult tasks to overcome. In fact, this process of trying, failing, learning, trying again, and mastering challenges is what Raph Koster (2013) says is the very thing that makes games fun and even addicting. He said that “Fun is just another word for learning” (p.46). The challenges in a well-designed game are made up of interesting tasks, goals, rules, and feedback (Deterding et al., 2011). With interesting tasks and challenges come goals for completion. Often games have checkpoints within levels that help the players know they are on the right track (Fullerton et al., 2008). These sub-goals add to minor goals that in turn add up to major victories. These goals are imperative for the feedback and for participants to feel competent in the task at hand. Goals should not be too easy nor should they be unattainable in order for participants to remain engaged and interested in a task.

The rules of the challenge are important because they establish boundaries by which all players must play and everyone knows if the task is a success or a failure. The rules must be clear yet forgiving. This means that there must be clear rules for success or failure, but for every failure, there must be a way to learn from mistakes. Often games have a save feature or a checkpoint that allows players a chance to retry. Gameful activities also allow for “redo’s” and learning from mistakes. The inherent safety of a gameful activity does not penalize for mistakes, but instead turns every error into a learning opportunity that increases participant competence.

Ryan et. al. (2006) explained that players approach each task with a set of skills. These may be earned inside the game (i.e., levels) or they may have gained them from any previous experience (i.e., experience playing chess). Every task has a goal (i.e., find

the princess in the castle, beat the other player) and those goals can be achieved by adhering to rules of the game (i.e., finish the level before the time is up). They argued that game tasks support competence because games have efficient feedback loops (Garris, Ahlers, & Driskell, 2002) and scaffolding (Vygotsky, 1978). The player achieves the goal, receives feedback for accomplishing the feat, and then moves on to the harder challenge. Another person who is defeated by the task receives positive feedback that encourages learning from his mistakes and is given another chance to improve.

This feedback loop is important because autonomy can be lessened or competence can be enhanced based on the feedback that is received (Deterding, 2012). Feedback that is perceived as controlling only serves to lessen autonomy and undermine competence which in turn undermines self-determined and intrinsic motivation (Deci et al., 2001). Feedback that supports competence, however, also supports autonomy, intrinsic motivation, and self-determined behaviors.

Finally, meaningful feedback is fundamental to gameful design methods. Feedback must be timely, appropriate, and forgiving (Deterding, 2013). Immediate feedback is important to give participants an idea of how well they do on the task, and the more quickly the feedback is given the more influential the feedback will be. The feedback cannot be controlling, as mentioned above, but should be positive, reflective of the participant's progress, and designed so that the participant feels accomplishment for completing the task. Feedback is not the same as an external reward that is expected or promised as this undermines intrinsic motivation and self-determined behaviors. Participants should feel accomplished and competent upon the successful completion of a task in order to support intrinsic motivation to continue to engage in future activities.

Relatedness

Relatedness is the psychological need for participants to feel connected to others during an activity or task (Ryan et al., 2006). People feel connected to others when they play games that are “multiplayer” that allow them compete or cooperate with each other. People can feel connected to others when they share experiences around games in external communities, when they watch people play games, when they share game strategies and help with each other, and when they become involved and invested in future developments surrounding the games they enjoy (Gee, 2003).

Relatedness, in gameful design methods, can affect the interest levels in activities, support feedback, and help participants feel as though they belong (Deterding, 2013). Relatedness also helps increase task persistence that accompanies higher levels of intrinsic and self-determined motivation (Ryan & Deci, 2000a). Relatedness supports autonomy and competence by enhancing the safety and feelings of competence within a community. Every competent and connected member of a community should feel that his or her voice is valuable for encouragement and constructive conversation that leads to valuable feedback and greater feelings of autonomy and competence.

Self-determination theory drives every design decision for the learning experience in this study. The design of every question, grading method, and instructor interaction is guided by these principles and is explained in more detail in the following sections and in Chapter III.

Practical Design and Development Methods of Gameful Design

The theoretical aspects of gameful design may seem abstract as they deal with psychological needs and the nuances of human motivation, but the other side of gameful

design deals with formalized systems and strategies of game designers (Deterding, 2014). The MDA model (Mechanics, Dynamics, Aesthetics) (Hunicke et al., 2004) helps bring the experiences of games into a formalized system of design. Playcentric design is also an important aspect of gameful design methods (Deterding, 2014). Playcentric design is a systematic process of iteration and modification that carefully adjusts game mechanics until the desired player experiences are achieved by the dynamics of the game (Fullerton et al., 2008). These two systems serve as practical design and implementation frameworks for the use of gameful design.

The Mechanics Dynamics Aesthetics (MDA) Model of Game Design. The MDA model (Hunicke et al., 2004) is a formalized design framework that considers both the consumer's and the creator's role in the game design process. Designers and developers have a much different perspective about a game than players do. The designer must consider the underlying rules and systems that make the game work, whereas the player generally plays the game because it is fun or aesthetically pleasing. This difference in perspective is demonstrated in Figure 2.

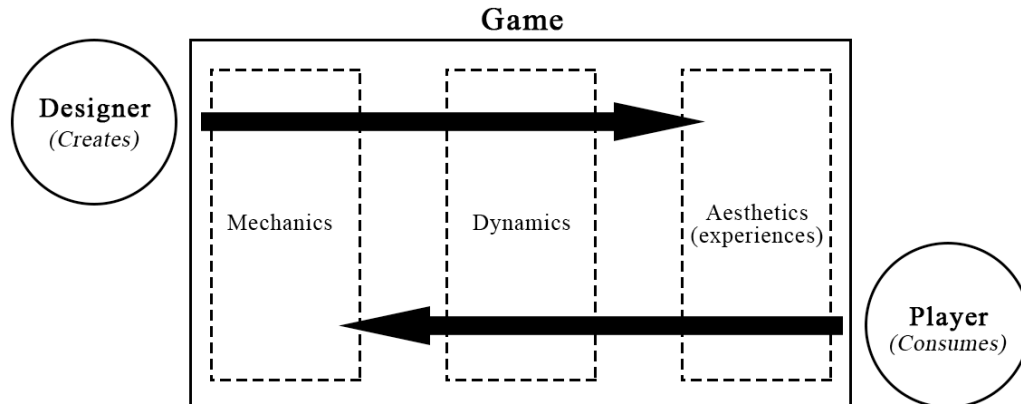


Figure 2. MDA framework model.

(Hunicke et al., 2004)

Game mechanics are the underlying rules, systems, and data structures of a game. Mechanics, from the designer's perspective, are what cause the dynamics between the game and the player and lead to the aesthetics of the game. For example, two mechanics of a card game like poker are betting and bluffing.

Dynamics are the actions of the game that happen as players interact with mechanics (Hunicke et al., 2004). Looking back at the example of the card game, players must choose when to use the bluffing mechanics and when to bet. The players' engagement with and decision making based on the game's mechanics create the dynamics of game that generate the players' aesthetic experiences.

Aesthetics is the experience that the player has when interacting with the game mechanics (Hunicke et al., 2004). The systematic nature of the MDA model encourages designers to create a taxonomy of experiences that players may feel when interacting with the game. Some common aesthetic terms are:

- Sensation – The game is a source of pleasure for the player.
- Fantasy – The game provides an imaginary context.
- Narrative – There is a sense of dramatic tension within the game.
- Challenge – The game presents a series of obstacles to overcome.
- Fellowship – The game accomplished with other players.
- Discovery – There is an unknown element to the game that the player must learn.
- Expression – The game helps the player understand something about herself.
- Submission – The game helps the player “unwind” without mental strain.

Hunicke et al. (2004) stated that this list of aesthetics is not all encompassing, but can help illustrate the kinds of experiences that game designers can attempt to create and the importance of describing aesthetic experiences in specific terms. In the poker example, many people simply call the game fun, but for a designer, it is more beneficial to look at the different aspects of challenge, fellowship, discovery, and sensation, so that the mechanics associated with each aesthetic experience can be adjusted until the players’ experience becomes what the designers originally hoped for. They explain that designers must keep in mind all three processes when making changes to the mechanics of the game because even small changes to mechanics can have a large influence on the dynamics and overall aesthetics of the game.

Hunicke et al. (2004) continued by stating that remembering the different perspectives that players and designers have is important. Players do not approach games by looking at game mechanics as a designer would. Players approach games by experiencing the aesthetics. Players are presented with aesthetics and the tone of games

even before they begin to interact with the mechanics. A balance must be reached between the focus on mechanics and aesthetics for a game to be designed well. Designers who rely solely on the mechanics of the game without putting effort into aesthetically pleasing components often find their game is feature-rich but an overall bland experience. Conversely, designers that primarily focus primarily on the aesthetics of a game may create a beautiful, attractive experience, but one that ultimately lacks the depth and engagement that interesting game mechanics can bring.

Playcentric Design. The balance between mechanics and aesthetic experiences is one of the greatest challenges for game design (Fullerton et al., 2008). Game designers begin projects with specific aesthetic experiences that they want their players to have, but often the dynamics between the game mechanics and perceived aesthetics create entirely different experiences than those originally intended. Playcentric design is a systematic process that builds upon the MDA model and ensures that the player's perspective remains central to every stage of design and development in order to bring the actual player experiences closer in line with those that were originally intended. This process begins with setting player experience goals and is followed by detailed prototyping and playtesting.

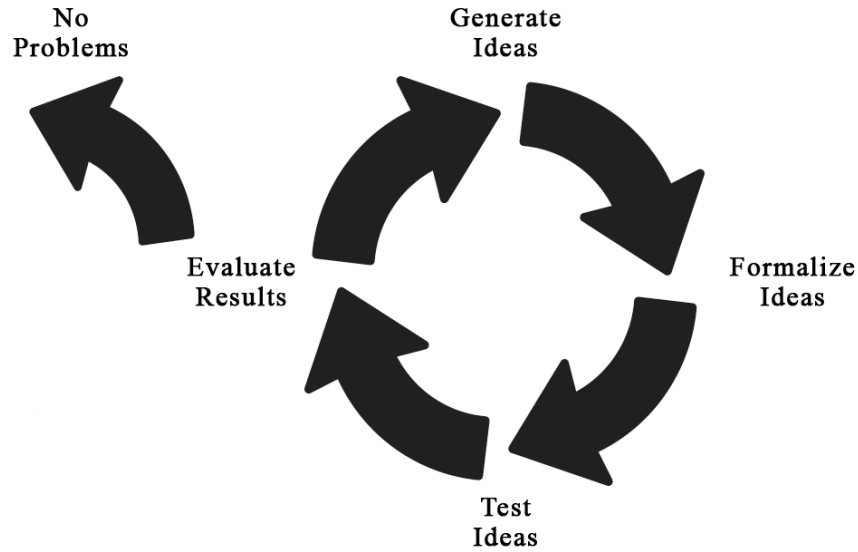


Figure 3. Playcentric iterative process.

(Fullerton et al., 2008).

Fullerton (2008) explained that every game design must go through many iterations before being finalized. This simply means that every mechanic is tested over and over to ensure that player experience goals are met. She stated that the playcentric design process looks carefully and systematically at every part of the system to identify problematic areas and then attempts to correct them through iterations of design and development. She continued by stating that prototypes were developed and then implemented in testing scenarios where the development team took notes of the players' actions and experiences. Following this test, the mechanics of the game are fine-tuned, and another prototype is built and then tested. This cycle continues until players have the experiences that the designers originally hoped for in their initial game concepts.

Application for MDA and Playcentric Design Methods in Gameful Design.

Deterding (2014) said that a successful gameful design should determine participant experience goals for an activity by examining the motivational experiences that

participants will have and then should “engage in iterative experiential prototyping until the total prototyped socio-technical system affords the targeted motivational experiences” (p.319). Using the methods of game designers, instead of actual games or patterns found in games, allows activity designers to target specific participant experiences from the initial activity conception through every stage of development and implementation that follows (Deterding, 2014). This will result in an activity that is designed purposefully to encourage participants to have the target experiences intended by the designer while supporting autonomy, competence, and relatedness in order to reduce the chances for undermining self-determined motivation.

An Overview of Gameful Design Methods for AOD Activity Development

Gameful design methods are not limited to any particular activity or field of study, but are a set of design principles that can be applied to a wide range of activities and user interaction experiences (Deterding, 2014). This study explores an application of gameful design methods for the development of AOD activities to determine if this method can systematically address the problems of design and participant motivation as pointed in previous research (Hew et al., 2010). AOD activity design that is based on gameful design methods should adapt principles found in the MDA model (Hunicke et al., 2004), in playcentric design (Fullerton et al., 2008), in gameful design research (Deterding, 2014), and Self-Determination Theory (Deci & Ryan, 1985). AOD activity design that is based on gameful design methods targets specific experiences that the designer wants the participants to have (Deterding, 2014). These experiences are: (a) connectedness with classmates through shared interests, (b) social knowledge construction, (c) the enjoyment of meaningful discussions, and (d) critical thinking

opportunities (Hew et al., 2010). These target experiences are the aspects of AOD activities that can only be achieved through high quality participation and high levels of self-determined motivation (Hew et al., 2010; Xie & Ke, 2011).

Next, the designer should identify the specific mechanics of the AOD activities that will be utilized. These include elements like assignment instructions, instructor demonstrations, feedback, grading rubrics, participant posts and replies, and activity questions/discussion topics. Careful consideration should be placed on the design of mechanics to support autonomy, competence, and relatedness (Deterding, 2013). The activity must be designed to be inherently interesting and meaningful to the participants (Ryan & Deci, 2000a). These must be designed and implemented in accordance with the experiences that have already been identified as the participant experience goals.

Fullerton (2008) suggested that the top three mechanics should be described in a short synopsis called “concept documents” to ensure all details have been thought through. In addition to this document, dynamics models for feedback systems should be included to allow the designer to visualize the flow of interaction and experience in a formalized and systematic way (Hunicke et al., 2004). This way each type of mechanic, interaction, and experience can be modified in future versions of the activity prototype until the AOD activity helps promote self-determined, high quality participation and excellent experiences for the majority of the participants.

The designer will develop each mechanic based on the design document and models. Decisions can then be made about the best ways to implement the mechanics in order to achieve the selected participant experience goals. Use of extrinsic regulators should be considered here as well. Extrinsic regulators have to be used to elicit

participation if the discussions do not have much value to the participants, but measures should be taken to lessen the controlling nature that those regulations will have on the participants (Cerasoli et al., 2014). The activity should support feelings of autonomy in the participants by giving them as much control and choice in the activity as possible (Deterding, 2014). This should also be done using as few extrinsic regulators as possible, instead relying on meaningful choices. For example, activity grading must be considered as an external regulation and necessary in the activity, but the design of the instructions, instructor feedback, the inherent value, and amount of meaningful choice in the discussion topic can lessen the undermining effect that external regulation has on self-determined behaviors and any intrinsic motivation of participants (Deci et al., 2001).

Deterding (2013) explained that gameful activity design should support competence by creating a safe supportive environment where questions are encouraged, failure is supported, and multiple attempts are allowed to achieve correct answers. This helps facilitate competence. In AODs, this type of design should encourage participants to contribute new ideas outside of initial questions/topics for discussion (Hew et al., 2010). Constructive deviations from the original question or topic should be encouraged, but guidance by the instructor or a moderator is acceptable to help guide and encourage deeper exploration or help direct misinformed assumptions (Xie et al., 2006). This guidance should never shut down discussions or shame students because that will reduce competence and discourage deeper discussion (Hew et al., 2010). Suggestions for competence support could include guidance for future research and discussion, as well as the presentation of new information to help guide students back on track. This type of guidance should be done sparingly so as not to inhibit student participation. Finally,

relatedness should be supported by emphasizing the aspects of the activity that support competence. This includes safety for asking questions and helping encourage connectedness outside of the formal activity with the instructor and most importantly, with the other classmates (Ryan & Deci, 2000a).

Following the identification and initial design of the AOD activity mechanics, the designer should begin the prototyping and iteration process (Fullerton et al., 2008).

Unlike game design, course design must often be used in a “live” situation where the activities must be tested during a real learning environment. This is not dissimilar to instructional design models such as the ADDIE model (Q. Wang, 2009). The ADDIE model relies on a similar practice of cyclical iteration where instructional materials go through a process of refinement until the designers’ goals are reached consistently. Also, important is to note that every class situation is different, and adjustments to the mechanics need to be made accordingly. Some of the mechanics, like the instructions, grading rubrics, and discussion topics, remain the same, but some classes have different and unanticipated questions. This is important to note because every implementation of these activities need to be iterated to ensure the maximum effectiveness for every class.

AOD activities can be implemented at the beginning of the course in lower stakes situations that can serve the same function as a testing scenario would in game design (Fullerton et al., 2008). This could include introductory discussions and “getting to know the course” types of discussions. These are lower stakes activities that serve multiple purposes. These initial discussions help build the classroom community, help acclimate students to using the discussion boards, and help ensure that early prototypes are successful (Hew et al., 2010). For example, simple discussions topics, such as “What are

you expecting from this course and why?” could be used to prototype and test activity instructions, feedback systems, rubric design, and community engagement. These early activities are vital in that they help generate interest in the course, the value of the activity, and the safety of the community so that the later iterations are able to build on the early successes and allow for deep learning and social knowledge construction (Hew et al., 2010). Also, many problems and misunderstandings that may inhibit participants from actively engaging can be addressed in these early discussions.

Careful notes should be taken during the iteration process (Fullerton et al., 2008). These notes should cover all aspects of the design process, the mechanics, the dynamics, and perceived student experiences. Instructors should include information about areas that did or did not work, problems that arose, solutions, interesting occurrences, and unforeseen questions. These notes should then be combined with student feedback into a design document that is employed for future iterations and courses. The design document becomes a continually growing and changing collection of information that helps the designer more rapidly iterate future activities and address any problems that arise (Fullerton et al., 2008).

To summarize, an AOD activity that is based on gameful design methods is centrally focused on the experiences of students and places participant motivation at the core of every part of the activity. Systematic and purposeful prototype iterations are made throughout the entirety of the course to ensure these target experiences are reached and participants are given the opportunity to use the AOD to its fullest potential.

A Model for Gameful Design in AOD Development

This section ties all of the concepts together that have been covered in this review of literature. The result is an initial model for gameful design to be applied when developing AOD activities. The model does not create a new type of AOD activity, but guides the development process by using gameful design methods in the creation and design of the activity. Often this will result in characteristics similar to standard AOD activities and produce in some characteristics that are different, but the major difference with an activity based on gameful design methods is that everything is done to (a) meet target participant experience goals and (b) support the psychological needs described in SDT. For example, an instructor may follow this design model and develop AOD activities that have very similar questions to someone who did not use the model, but the instructor who uses the model knows the reasoning behind the questions, understands the psychological needs those questions are designed to support, and realizes how those questions can be modified if they do not elicit the target participant experience goals during the course. Someone who simply puts AOD activities in their course without a guide or model will not be able to do this.

This is a high-level, generalizable model for instructors to work from when implementing AOD activities into their online courses. Every class, activity, and learning environment will have different needs that require careful consideration when determining experience goals, activity mechanics, and methods of playtesting.

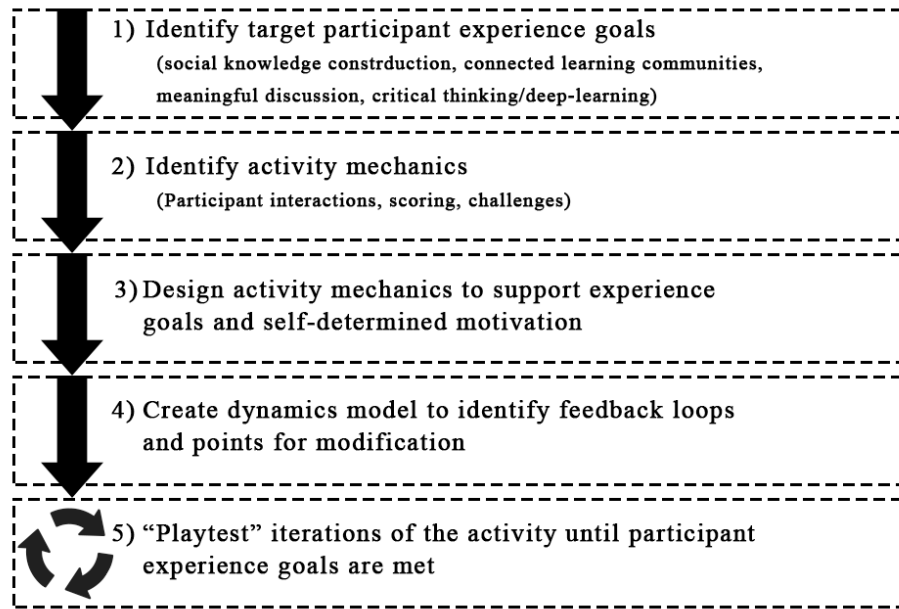


Figure 4. Gameful design for AOD activities.

This section will describe each of the steps in the gameful design process by:

1. identifying the target participant experience goals for AOD activities;
2. listing the mechanics of AOD activities, explaining each of them in a concept synopsis, and discussing how they will be designed to support participant experience goals and self-determined motivation;
3. proposing a dynamics model for feedback systems within an AOD activity to show how the mechanics will come into play and to determine where modifications can be made after each iteration of the activity; and
4. describing the iteration process between activities within the course.

Target AOD Participant Experience Goals

The target experience goals for AOD activities are the very benefits that have been identified by previous research (Hew et al., 2010). These are (a) connectedness with classmates through shared interests, (b) social knowledge construction, (c) the enjoyment

of meaningful discussions, and (d) critical thinking opportunities. These experience goals should be considered during every stage of design and development and should help guide the design of the activity mechanics.

Activity Mechanics

Gameful AOD activity mechanics are created during the design and consistently monitored during the implementation of the activity through the perspective of each participants' experience. This is done by making every effort to adjust the design and implementation of those mechanics to provide the targeted experience goals (Fullerton et al., 2008). Common AOD activity mechanics are participant interactions, scoring, and challenges. All activity mechanic adjustments should be done in a way that supports the target participant experience goals and the psychological needs of participants as explained in SDT (Deci & Ryan, 1985).

Table 1

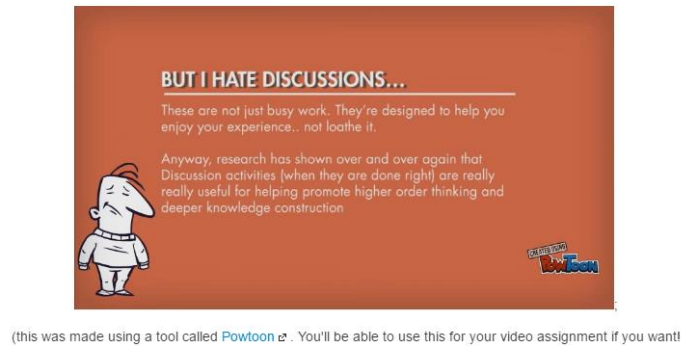
AOD activity mechanics and proposed adjustments

Activity mechanic	Standard AOD Design	AOD Design based on Gameful Design	Psychological needs
Participant Interactions (<i>making original post, replying to posts</i>)	Little to no instructor demonstration, modeling or promoting the value of the activity	Detailed instructor demonstration, explanation, modeling, promoting the value of the activity	Competence, Relatedness
	General instructions	Detailed activity instructions	Competence
	Quick overview of what is expected to receive a passing grade	Detailed and necessary rules of engagement	Competence
Scoring (<i>instructor feedback, grades</i>)	Little to no instructor feedback	Detailed instructor feedback	Autonomy, competence, relatedness
	No opportunity for revisions	Opportunity for revisions	Competence
	Grade given with no explanation	Informational grades and grading rubric	Autonomy, competence
	Perfect score for meeting the minimum requirement	Perfect score for exceeding the minimum requirements	Autonomy
Challenges (<i>topics, questions</i>)	Product oriented and based on research articles	Process oriented and based on Interesting and relevant topics	Autonomy, competence
	Closed ended questions	Open ended questions	Autonomy, competence
	Little choice in discussion task	Many Choices	Autonomy
	Repetitive tasks.	Questions/topics that get increasingly difficult (thought provoking, controversial, engaging, etc.) as the course progresses	Competence

Activity Mechanic: Participant Interactions. The core activity mechanic of AOD activities is participant interaction. Well-designed and orchestrated interactions can support the participant experience goals that are identified earlier, as well as encourage a deep sense of autonomy and relatedness (Ke & Xie, 2009). Participant interactions occur when making an original post and when responding to another person's post. This mechanic, while seemingly simple, has a great deal of variety as explained in the sections above concerning AOD participation, deep learning, and the levels of interaction according to Gunawardena et. al. (1997).

Interactions can be planned and guided in a number of ways. First, the instructor should begin with demonstrations that explain exactly how to critically interact with questions and assumption challenges. The instructor should ensure that students understand how to give constructive feedback, ask Socratic questions, and think critically (Hew et al., 2010). In the current study, video demonstrations model proper AOD behavior and interactions to participants. This is a segment of the introduction to the course video. The content is informal with a light-hearted tone that is entertaining to watch, yet effective in communicating the importance of these types of interactions in AODs. An example of this can be seen in figure #5 for which I made a text and cartoon-based video to help me explain the importance of AODs in my online course.

Learning in EDU 625



What have I gotten myself into?

Well you've found yourself in possibly one of the most fun and useful classes in your degree (I'm not just tooting my own horn, but thats what students have told me). You're going to be learning about how to put tech tools in your classrooms and discussing lots of things with your classmates. Yes, we're going to use discussions alot! If you'll think about it, they are really the only good way for you to make a connection to the rest of your classmates in an online course.

Figure 5. Relaying the value of AODs to students.

A video and corresponding text helping to express the need for discussions in an online course. Screenshot of a portion of a page in Canvas LMS (Learning in EDU 625, video by Michael Trest, 2016).

This supports competence by helping participants know exactly what is expected of them, helping drive interest in the activities through the excitement shown in the videos, and supporting relatedness as students become ready to interact with classmates.

Next, activity instructions should guide participant interactions during each activity (Hew et al., 2010). These should be clearly written instructions that describe the function of the activity and its value in the course. For example, activity instructions in this study are found in the course syllabus and the weekly video created by the instructor that are attached to each instance of AOD activity. The importance and value of AOD activities is a theme repeated throughout the course.

The description in the syllabus, assignment instructions, instructor feedback, activity introductions, and videos should explain the purpose and reiterate the importance and need for AOD activities, reassure students that the activities are not busy-work, and

encourage participation. Looking at the course in this study, activity instructions are addressed in the introductory and weekly videos made by the instructor. The instructor should be careful when presenting activity instructions to continuously reiterate the relevance and need for these discussions. Also, the instructor needs to explain and demonstrate how to locate and operate the AOD forums in the Learning Management System. In addition, the instructor should model and encourage open-ended questions to help students feel competent to move past surface level engagements. This communication is important because it can give students confidence in what they are supposed to do, in how they are supposed to interact, in how to use the discussion forums, and in generally interacting in the discussions (Hew et al., 2010).

Next, the designer should consider the rules of the activities to determine if they a) are necessary and b) support the target participant experiences as well as self-determined motivation. These may include:

1. Is there a way for student to edit their posts after they have been submitted?
2. Is there a way for students to delete their posts after they have been submitted?
3. Is there a time limit for submission?
4. Are there due dates?

Rules such as these should have specific purposes for their inclusion in an activity. For instance, are students allowed to edit their own posts after submission? If not, is this feature built into the Learning Management System or is this part of the activity design? What is the purpose for allowing or disallowing editing of posts? Does this rule help or hinder students to achieve the activity experience goals? The design of

this course allows students to edit their own posts because this helps support self-determined motivation by providing as safe an environment as possible (Ryan & Deci, 2000a). Students should be able to edit their posts, delete their posts (as long as no one else has responded), and be given the opportunity to revise their posts after they have been graded. There should be specific deadlines to help promote prompt discussions and to encourage participation so that students receive the maximum benefit from the activities

Activity Mechanic: Scoring. Scoring is, perhaps, one of the most pivotal mechanics in AOD activity design when considering gameful design methods for increasing participation by supporting motivation (Hew et al., 2010). Grades and scoring have often been seen as a way to incentivize students' behaviors, and indeed, research has shown the need to offer some sort of reward or incentive in order to increase participation in AOD activities (Hew et al., 2010). External regulators such as grades, however, can undermine intrinsic motivation and internalization thereby reducing self-determined and intrinsically motivated behaviors (Niemic & Ryan, 2009; Ryan & Deci, 2000c). This undermining effect reduces the quality of learning experiences by stifling autonomy, but can be minimized by shifting the focus of the activity (Deci et al., 2001). The undermining effect can be somewhat mitigated by placing less importance on external regulations, making tasks more interesting, providing high levels of choice within activities, ensuring tasks are challenging, and lessening the association between behaviors and grades (Deci et al., 2001).

First, Deci et al. (2001) pointed out that interpersonal rewards in the form of positive feedback can support intrinsic motivation while tangible rewards (i.e., rewards

given based on performance or task-completion) undermine intrinsic motivation.

Instructor feedback will support intrinsic motivation and internalization as long as it is perceived as supportive and informational rather than controlling (Deterding, 2014).

Instructors have the opportunity to give student feedback when scores are given. This feedback is pivotal and must be (a) relevant, (b) meaningful, (c) timely, and (d) positive (Deterding, 2013; Hew et al., 2010). This type of feedback supports competence and relatedness in students as they feel that the instructor is there to support them and help them improve. As students improve upon their mistakes and build upon their strengths, they feel more confident and competent to participate in ways that they may not have felt before receiving the feedback (Hew et al., 2010; Xie & Ke, 2011). Instructor feedback should also avoid simple statements of agreement, but should take the opportunity to inject thoughtful follow-up questions that promote further thought concerning the topic of discussion to support critical thinking and deeper learning. Instructor feedback can also help support relatedness among participants. Niemiec and Ryan (2009) stated that students are more likely to internalize behaviors when they feel that their instructor genuinely cares, respects, and values them. Genuine feedback is a must for this type of relatedness to occur and help to reduce the undermining effect of activity scores.

Second, the issue of grades and scoring reducing intrinsic motivation can be addressed by lessening the controlling aspect of these regulations (Niemiec & Ryan, 2009). Like the interpersonal feedback, grades should be seen as informational instead of controlling. This can be done by taking the opportunity to use scores and ratings for informing students how they can improve current and future interactions to receive greater benefits from the activities (not necessarily just a better grade). This study utilizes

rubrics (see Appendix A & B) that not only inform students about how they did, but also explain exactly what was required so that they could revise, improve, and reap greater benefits from each activity. The purpose of this approach is to lessen the focus on the inherently controlling aspects of grades and to place the focus on the value of the activity, on the choices that students have, and on the importance of their input for the success of the activity and social learning experience.

Activity Mechanic: Challenges. The challenges of AOD activities stem from many different areas, including topics of discussion, course content, and the depth/quality of participant interactions. Activities that are not challenging (i.e., do not require much thought or research) do not elicit great student competence or great participation (Hew et al., 2010). The opposite of that is activities that are optimally challenging which support competence (Niemic & Ryan, 2009). This in turn helps students test and push the limits to their academic abilities and facilitates intrinsic and self-determined motivation.

Activities should be challenging and interesting, requiring both research and experiential knowledge. These types of activities help promote student investment, higher-quality participation, critical questions, and meaning negotiation. Once again, design of the activity instructions and the questions/topics is pivotal to the successful achievement of participant experience goals. Instructors should avoid closed-ended questions and product-oriented AOD activities as much as possible, as explained above in the section discussion the epistemological design of AOD activities.

Finally, the actual topics and discussion questions should become increasingly more challenging to allow for student growth and to provide the optimal challenge (Niemic & Ryan, 2009). This is done by beginning with general questions and topics

(i.e., “The role of blogs in the classroom,” “How important is technology use in education?” “What are you hoping to gain from this class?”) and then advancing to more controversial topics as students begin to feel more competent and find their voices in the discussion boards (i.e., the “Flipped Classroom,” Ken Robinson’s TED talk “Are Schools Killing Creativity?” “Technology, ADHD, and the Classroom”). The goal for these types of challenges is that people will be able to stretch themselves and express disagreement in order to progress through the levels of the IAM (Gunawardena et al., 1997).

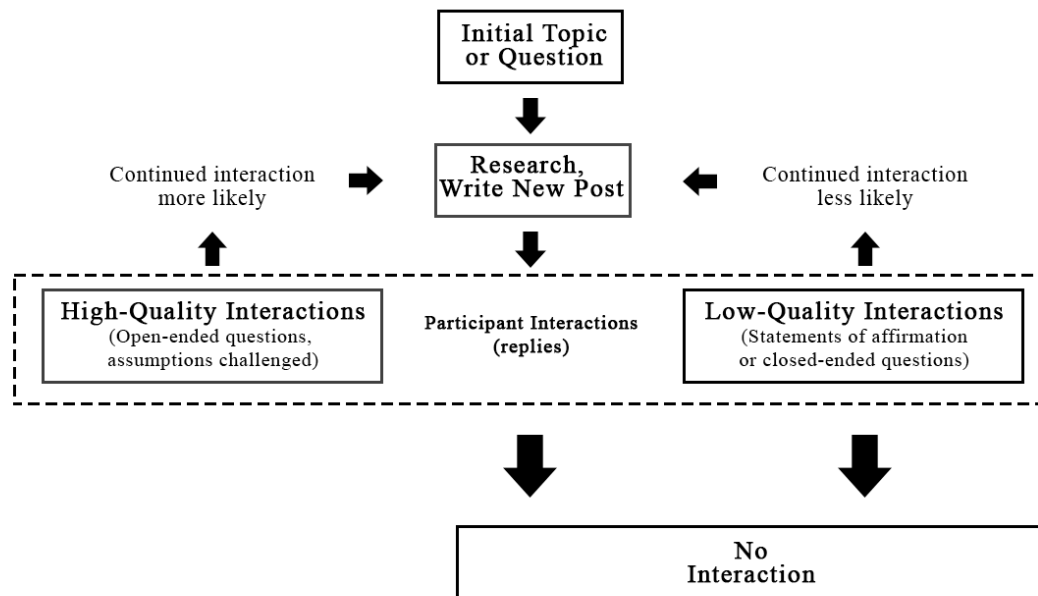


Figure 6. Proposed dynamics model.

Dynamics model representing the feedback loop for AOD activities based on the MDA model(Hunicke et al., 2004) and the IAM (Gunawardena et al., 1997).

According to Hunicke et. al. (2004), identifying target aesthetics and creating models for the dynamics by which those aesthetics are achieved allows the designer to visualize and more efficiently plan and prototype. A dynamics model of a game traces the path that a player takes when interacting with the mechanics of the game, and a dynamic

model of an activity designed in a gameful manner traces the path that a participant takes during an activity (Hunicke et al., 2004).

The phases of the model used for an AOD activity were the five phases of the IAM (Gunawardena et al., 1997) discussed in an earlier section concerning surface-level interaction in AODs. Participants must first consider the initial question/discussion topic and then choose to post a response following any research and draft writing. Original submissions are made, and other members of the class can decide to interact by posting their own replies or not.

Each interaction has an effect on the likelihood of subsequent engagement within the particular thread. No replies generally result in no new posts. Low quality replies often result in no new posts or new, low-quality posts that ultimately lead to the end of any conversation (Hew et al., 2010). Generally, low quality interactions yield a shorter life cycle for threads than high quality interactions (Hewitt, 2005). A high quality reply to a post often leads to another high quality post which can help the discussion to progress through the five phases of the IAM (Gunawardena et al., 1997).

Activity mechanics can be adjusted based on the information that this model provides. The model shows how pivotal proper instruction for posts and replies are and where modifications can happen (Fullerton et al., 2008). These modifications, called tuning, happen during each iteration of an activity and are made after the identification of problematic areas or in places where designs could be more efficient. Specific problematic areas should be identified that undermine autonomy, competence, and relatedness.

Iteration Process

“Play-testing” and iterating through prototypes of AOD activities is a process that should happen before implementation of the activities, during implementation of the activities, and between courses (Fullerton et al., 2008). Changes to activity mechanics can have dramatic impacts upon the dynamics of the activity, as well as on the participants’ experiences, so any changes during the implementation of these activities should be small and marked.

Some mechanics can be adjusted more than others (Fullerton et al., 2008). For instance, grading scales are less flexible than the wording of questions or instructor feedback. Every iteration should be noted regarding its effectiveness and where the shortcomings are based upon the dynamics model proposed. Tuning occurs when a shortcoming or problem is identified and a mechanic is adjusted to attempt to address the problem (Fullerton et al., 2008). For example, students who are only contributing low-level original posts may need to be prompted through instructor feedback or modeling of ways to contribute deeper level posts.

The most dramatic changes to activities can be made after the implementation process is over and the instructor receives final feedback from the participants about their experiences during the course. This feedback can be invaluable to discover problems in the model or unforeseen problems with the mechanics that can be adjusted for future versions of the activities and course.

Summary

This literature review explained the benefits for using AOD activities in online learning environments as well as the challenges of motivating students to participate with

quality interactions. A motivational design method called gameful design was proposed as a way to help designers approach AOD activity design in a holistic, from-the-ground-up way that addresses the psychological needs of participants and systematically targets students' experiences. This design method was explained and then a model for implementing gameful design in the development of AOD activities was described. The purpose of this model was to provide instructors and instructional designers with a high-level framework for design and further research for AOD and other educational activities designed according to gameful design methods.

Chapter III discusses the research design of the current study and how I planned to collect the necessary data to examine the effectiveness of AOD activities in an online graduate course. The chapter addresses areas such as the research setting and participants, the methodology of performing the qualitative study, the instruments used for collecting data, and methods of analyzing the qualitative data.

CHAPTER III - METHODOLOGY

The purpose of this study was to investigate how gameful design methods influence students' participation, motivation, and learning outcomes in AOD activities. The primary aim of this study was to explore the possible application of gameful design methods for AOD activity development. Student experiences were observed as they interacted with each other in AOD activities developed according to gameful design methods. Through qualitative interviews, observations, and documentation, I was able to witness the successes of this implementation, as well as any challenges that emerged.

Research Questions

To ensure the data was relevant to the implementation of gameful design methods for use in educational activities, specifically AOD activities, the following questions guided this study:

1. How do AOD activities, which have been developed according to gameful design methods, influence student participation and learning in an online environment?
2. What are students' experiences when participating in a course with AOD activities that have been developed according to gameful design methods?
3. What meaning do they give to their experiences?
4. Based on students' experiences, how well do gameful design methods apply to the development of AOD activities?

Research Design

A qualitative methodology has been used for this study. Qualitative studies are focused on the meaning that people make of their experiences (Merriam, 2009).

Qualitative researchers study phenomena by interpreting how people make sense of the world around them and how they give meaning to their experiences. A qualitative case study was chosen for the methodological framework for this study. A case study is “an in-depth exploration of a bounded system (e.g., activity, event, process, or individuals) based on extensive data collection” (Creswell, 2012, p. 73). The “case” or unit that is studied is a phenomenon tied to a certain context (Merriam, 2009). Case studies reflect knowledge of the social and political contexts, necessitating triangulation of data sources (Stake, 2008).

The primary interest of this study was to explore the possible application of gameful design methods to AOD activity development and potential application to other future educational activities and cases. The instrument of gameful design was a primary focus, in addition to the experiences of the participants, therefore, an instrumental case study was chosen (Denzin & Lincoln, 2008). The goal of an instrumental case study is to deepen an understanding of an issue or to make a generalization rather than to focus primarily on the specific case at hand. Though the cases are important and should be studied, the application of the design method is the primary interest.

This research studied a specific group of students as they interacted with one another and experienced the implementation of a model for AOD activities based on gameful design methods within a single course. Studying student experiences uncovered knowledge about AOD activities based on gameful design methods. A case study approach was appropriate for exploring and understanding the experiences in order to better understand gameful design methods and any potential uses in AOD and other educational activity development.

The study progressed linearly from the initial design, to pre-course interview, to activity implementation, to post-course interview, and data analysis. The design phase occurred prior to students having access to the course. The pre-course interview was conducted with participants who opted to participate in the study. The course lasted for 10 weeks (not including winter holiday breaks). I took detailed electronic field notes about participant behaviors and the way I had to tweak activity mechanics. Next, the post-course interviews were conducted with the participants. After this step, data analysis and interpretation of the data occurred. Figure 8 shows the phases of the study in different stages.

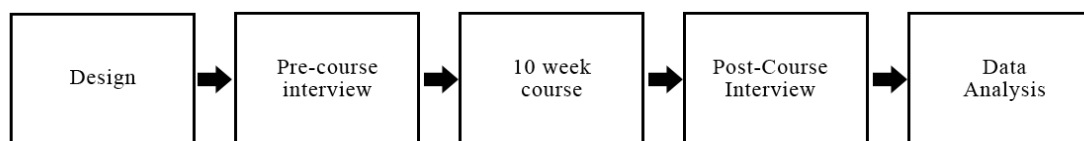


Figure 7. Phases of the study.

Participants

Participants were M.Ed. online students enrolled at a southeastern private university in the United States in an online introduction to technology course for K-12 educators. Students in this course ranged between the ages of 24 and 60 and differed in their experiences with online learning environments. Some students were very comfortable with AOD activities and other online educational components while others required constant support from the instructor and their classmates. Students were sent an email and given the option to participate in a study (See Appendix C) Those that participated were given a chance to win a gift card. Four students volunteered to

participate in the study and were chosen as “ordinary” participants through purposeful sampling (Creswell, 2007). There were 11 students enrolled in the course.

The research setting was a fully online graduate class at an urban university in a small southeastern city of approximately 50,000 residents. The main campus had approximately 4,000 undergraduate and graduate students. The School of Education had about 1,200 active students pursuing M.Ed., Ed.S., Ed.D., and Ph.D. degrees. The university has begun using the Canvas Learning Management System (LMS) for administering online courses.

The course was fully online and was 10 weeks long. It was developed using weekly modules that introduced students to technology tools and relevant information concerning those tools and their impact on K-12 education. Important to note was that while the study focused on AOD activities, the design of the entire course was impacted by the principles of social-constructivism and gameful design. The impact these have had on the rest of the course are discussed in further detail in Chapter IV. The course introduced students to technology tools, the pedagogical uses for those tools in the K-12 classroom, and trends/issues surrounding those tools in the educational environment. The tools included blogs, video, presentation tools, and social resource sharing.

There were two main activity types in the course. The first was a project-based activity that gave students guided, hands-on experience using technology that could be implemented into their teaching strategies. These projects required students to write reflections and create a link to their projects in a discussion board. Students were required to view and comment on each other’s work and to offer suggestions, as well as to provide constructive criticism for the purpose of helping and learning from each other. The other

activity was the weekly AODs and the primary object of this study, though the project reflection had an important AOD component as well.

Procedures

The study focused on the design of AOD activities according to gameful design methods and the experiences of the participants who interacted within them.

Activity Design

Each of the activity mechanics were carefully crafted and designed to support participant autonomy, competence, and relatedness. Figure 9 is an overview of some of the modifications that were made to the AOD activity mechanics. Chapter II went into detail about the specifics for gameful design methods and the model that will be used in this study in the *Model for Gameful Design in AOD Activity Development* section. Table 2 highlights the activity mechanics and the way they were manipulated to achieve participant experience goals. This was contrasted with standard AOD design according to previous research. Also the psychological needs met by mechanic manipulation are highlighted.

Table 2

AOD activity mechanics and proposed adjustments

Activity mechanic	Standard AOD Design	AOD Design based on Gameful Design	Psychological needs
Participant Interactions (<i>making original post, replying to posts</i>)	Little to no instructor demonstration, modeling or promoting the value of the activity	Detailed instructor demonstration, explanation, modeling, promoting the value of the activity	Competence, Relatedness
	General instructions	Detailed activity instructions	Competence
	Quick overview of what is expected to receive a passing grade	Detailed and necessary rules of engagement	Competence
Scoring (<i>instructor feedback, grades</i>)	Little to no instructor feedback	Detailed instructor feedback	Autonomy, competence, relatedness
	No opportunity for revisions	Opportunity for revisions	Competence
	Grade given with no explanation	Informational grades and grading rubric	Autonomy, competence
	Perfect score for meeting the minimum requirement	Perfect score for exceeding the minimum requirements	Autonomy
Challenges (<i>topics, questions</i>)	Product oriented and based on research articles	Process oriented and based on Interesting and relevant topics	Autonomy, competence
	Closed ended questions	Open ended questions	Autonomy, competence
	Little choice in discussion task	Many Choices	Autonomy
	Repetitive tasks.	Questions/topics that get increasingly difficult (thought provoking, controversial, engaging, etc.) as the course progresses	Competence

I specifically chose discussion topics that were relevant and interesting to the target audience, thereby increasing the inherent value of the assignments (Deci et al., 2001). In addition to focusing on creating interesting activities, I focused on the three primary AOD activity mechanics identified earlier (participant interactions, scoring, and challenges) in order to target specific participant experiences and to support the psychological needs required for self-determined and intrinsic motivation (Deterding, 2014). Finally, I took time after each discussion activity to determine if any of the activity mechanics (participant interactions, scoring, and challenges) should be adjusted in order to support the target experience goals according to playcentric design methods (Fullerton et al., 2008).

Role of the Researcher

I was the course designer and primary instructor on record. I designed and developed the course in the LMS prior to the start date of the course. The course used for the study was based on one that I have taught before, so all materials, videos, instructions, rubrics, and syllabi were modified according to the gameful design model and reused.

Interviews

Qualitative research interviews allowed participants to voice their stories and experiences openly (Creswell, 2012). Interviews brought to light information that was not directly observable in addition to providing insight regarding the participants' personal feelings and experiences. This study included in-depth interviews using Google Hangouts Voice over Internet Protocol (VoIP) video/chat program, observations as students interacted in AOD activities, and document analyses including syllabi, rubrics,

and student posts during the activities. The primary source of data collection in the case study was the interview (Merriam, 2009).

I conducted interviews with participants using Google Hangouts VoIP chat tool in order to simulate face-to-face interviews. The nature of a fully online course allowed for participants to be potentially spread across hundreds of miles and logistically inaccessible for face-to-face interviews. VoIP interviews in qualitative research have been found to be beneficial, but also have challenges (Hay-Gibson, 2010). Hay-Gibson (2010) offered some suggestions that I kept in mind when conducting VoIP interviews.

1. Preparing the interviewee was essential. The participant had to be comfortable using the software and to have essential equipment. The participant needed to understand what the interview consisted of, that they needed a reliable Internet connection (wired preferably), as well as a computer. Finally, the participant needed to understand that disconnections can often occur.
2. The interviewer needed to let the participant know exactly what to expect and plan for any technical difficulties. Reminder notifications before the event and a back-up telephone number were provided by both parties involved.

Google Hangouts was specifically chosen because I conducted an IRB approved pilot study as a class project that involved a small number of qualitative interviews in order to gain a better understanding of the benefits and issues that may arise using such a tool. I used the VOIP service, Google Hangouts, during that project and found it to be a useful and effective means of conducting interviews. I found that participant preparation was an important part of the interview process. Written instructions were provided to the

participants in an email that helped to prepare the volunteer for participating in the interviews (Appendix F). The instructions included:

1. Hardware requirements,
2. Steps for accessing Google Hangouts,
3. A specific link to Google step-by-step instructions,
4. A direct phone number to me in case of disconnection.

“Semi-structured” interviews were conducted at the beginning and end of the course. These lasted between a half hour to an hour and allowed participants to define their experiences and feelings in an open way (Merriam, 2009). This type of interview included open-ended questions that were flexible in how they were asked and worded. The way questions were asked was generally not “set in stone” before the interview in order to allow the respondents the opportunity to elaborate on their experiences. This also allowed me to probe deeper into any vague answers and responses that lacked detail. The questions in these semi-structured interviews asked for clarification, built upon experiences and details of responses, and were often spontaneous in their development (Englander, 2012). Pre-course interview questions were used to establish context, prior knowledge, and give background information. The questions in this interview were:

1. General information (age range, level in graduate school, years teaching, what school district, and role in the school district).
2. How would you describe your experience with technology?
3. What kinds of experience have you had with online social tools?
4. Please describe your relationships with people you’ve met with these social tools.

5. Describe any previous online educational experiences you have had.
6. Describe the pros and cons that you see with online learning.
7. How would you describe your relationship with your classmates' during previous online courses (if any)? The instructors?
8. What have been the most common assignments in your online courses?
9. What were your experiences with discussion activities in online classes?
10. Is there anything that you are looking forward to about this course?
11. Is there anything that you are nervous about this course?

The post-course questions were:

1. How was your overall experience in the course?
2. Please describe the high and low points of this course.
3. What are some things that you discovered in this course that could help you become a better teacher and why?
4. This course relied heavily upon the discussion board. Tell me about your overall experience using the discussion boards in this online class.
5. In the most descriptive way you can, please describe your thought process when it came to contributing to the discussion activities?
6. Why did you choose to contribute the amount you did?
7. How did your experiences with the discussion boards and your classmates change over the course of the term?
8. What were some things that you liked about the discussion boards and why?
9. What were some things that you did not like about the discussion boards and why?

10. How would you describe the connectedness of the students in the class with each other?
11. How would you describe the connectedness between the students and the instructor?
12. How does the connectivity in this course compare to the connectivity of other online courses? What about regular online social tools? Other forms of communication?
13. (Describe similarities and differences).
14. Is there anything else you'd like to add about the discussions, the course, or anything else?

The purpose of the interviews was to obtain personal information and insight into the experiences of those participating from their own perspective. Information was sought about (a) their experiences using the AODs, (b) how they felt before, during, and after the activities, and (c) procedures they used to overcome obstacles. This insight provided much needed information about the reality of students' experiences when interacting in AOD activities and did not rely solely on perceived experiences from the viewpoint of an instructor or researcher. Interviews were transcribed, analyzed, and coded after the interviews took place so that any further questions or follow-up information could be determined.

Observation

I also observed students working online as they interacted in the discussion boards. This was an online course, so I could not physically observe students as they composed their posts and interacted with each other, but I was able to observe trends and

the manner in which students participated. I observed the posting behaviors of students including, but not-limited to, who posted, how often posts were made, the length of posts, and the detail of posts. Observations allowed me to see if the information in the interviews matched up to their real-life actions (i.e., if they said they enjoyed the activities, but did not post often, then this would indicate that their actions did not match what they were saying). Observations looked at behavioral information given from the LMS (e.g. how often people posted, word counts, time of post, time spent on posts). Physically watching the participants was not an option so this information sufficed for an observation about participant involvement and interactions (Vonderwell et al., 2007).

Document Analysis

I obtained complete transcripts of the participants' discussions during the course. The transcripts were able to provide details about the subject of the posts, the tone of the posts, the perspective that students took during the activity, and provided insight into their engagement level with and "investment" in the activity. This information supplemented the interviews and observations. Triangulation among interviews, observation, and document analysis allowed me to base interpretations of participants' experiences on more complete information (Merriam, 2009). The interviews at the beginning of the study established contextual information about the participants. This allowed me to understand background information and the progression of each participant's experiences throughout the study. This contextual information was supported by the observational data that showed behavioral trends. This data was able to be aligned with the post-course interview data to shine light on the manner and frequency in which participants interacted in the AOD activities. Both of these were then supported

by transcripts of each AOD activity and all that was said during the activities to better understand the quality and depth of the participants' interactions.

Data Analysis

The goal of the data analysis in a qualitative case study is to interpret what the participants have stated as well as what the researcher has observed in order to construct some meaning about the case and the experiences of the participants (Merriam, 2009). A case study database was developed using MAXQDA ("MAXQDA," 2016), a Qualitative Data Analysis (QDA) software program to bring all transcript, observation, and interview data together and organized. I combined field-notes, interview transcripts, and observation data in the QDA program to manage and organize the data. The QDA did not automate data analysis; rather, it kept the data organized. The program allowed me to make notes in the margins of the transcripts, group categories, identify patterns, and discover themes that emerged. This organization helped me identify codes, themes, categories, and patterns which emerged based on the theoretical foundation which the study was founded.

I began to read the transcripts and analyze the sections using labels commonly referred to as codes (Miles, Huberman, & Saldana, 2014) to understand and begin to interpret the data. I labeled each section to try to summarize what the participants wrote and said and noticed that many of my codes were what Miles, Huberman, & Saldana (Miles et al., 2014) called Descriptive Codes. I then attempted to convey the meaning of the section with a word or a phrase. I noticed that the codes began to repeat, form patterns, and became a directory for the participants' experiences.

I also noticed that many of the patterns correlated directly with the concepts and theoretical foundation upon which this study was built. This was especially true for the participant experience goals, activity mechanics, and social knowledge construction that were explained in detail in Chapter II. Categories were built from the patterns, named, arranged, and finally put together in order to interpret the meaning of the data (Merriam, 2009). This data was then used to answer the research questions set forth at the beginning of the study.

Summary

This study was based in social constructivism as its theoretical framework and used an instrumental case study design as its methodology. A variety of data collection methods were used to qualitatively learn about students' experiences as they interacted with each other in AOD activities that were designed based on gameful design methods. Participants included students in an online course that were involved in AOD activities. Their experiences, perspectives, attitudes, motivation, interactions, acquired knowledge, etc. were collected through different methods, such as interviews, observations, and document analyses. The data was collected, organized, analyzed, and expressed as categories based on the theoretical foundations of this study as a way to interpret the findings. Chapter IV includes a report of findings gathered from the study to give an in-depth exploration into the categories discovered in the data.

CHAPTER IV – FINDINGS

Chapter IV examines findings from the data gathered in interviews, discussions, and activities during the winter of 2015-2016 in the fully online section of *Technology for Educators*. The first section of this chapter introduces the participants of the study. This section gives the reader insight into the participants' past online educational experiences and personal feelings about AODs. The perspective each participant brought to the study is highlighted here and provides understanding of the meaning they gave to their experiences.

The next section describes the course in detail from the perspective of the instructor. This summary of the course design and implementation is important for a number of reasons. First, this is an instrumental case study that is primarily interested in the application of gameful design for use in AOD activities. The cases (participants) are important to understand their experiences and the meaning they gave to those experiences, but they are most important for the purpose of better understanding the primary object of the study (Denzin & Lincoln, 2008). Secondly, gameful design is not something simply attached to AOD activities, but is an integrated part of the design and implementation process. Understanding the entire process from design, to development, and finally to implementation gives the reader a deeper understanding into the experiences of the students. This also highlights the ways that gameful design influenced the development of the course.

The final sections address the research questions set forth at the beginning of the study. These questions dealt with issues of the participants' experiences, the meaning they gave to those experiences, and the overall applicability of gameful design in AOD

activity development. The participants' reflections and post-course interview responses helped bring a deep understanding of the usefulness of gameful design in AOD activity development. Their experiences, personal feelings about online education, and their personal background brought a richness and diversity to this study and the learning community during the class.

The Participants

Each participant approached the course through the lens of their experiences as educators and as online students. They varied in age, years of teaching, experience with technology, experience with online education, and personal life situations. Pseudonyms have been used throughout this chapter to protect the participants' identities.

Students were selected for this study by responding to an inquiry for participation in exchange for a gift card as explained in Chapter III. Four people responded to the inquiry email, and all agreed to participate in the study after learning the basic premise, requirements, and incentive. They were each enrolled in the fall term of the fully online section of the graduate course entitled *Technology for Educators*. The respondents were all female, ranged in ages from twenty-three to forty-one, included both Caucasian and African American races, and were physically located across the state of Mississippi. Of the 11 total students, there were only four male members in the course, and none of them expressed interest in the study.

Participant Overview

The participants of this study, though a small group of graduate students, were diverse in their backgrounds and experiences. Angela was nervous about many things in her graduate degree, the course, and technology, yet she was determined to do well. Shea

was very confident in her abilities, but a little burned-out with online classes and had a firm idea of what she was expecting this course to be. Susan was young and comfortable with online environments even though this was her first class in the graduate program. Tara was an older student, but refused to fall behind with technology and had an open mind going into the course. They all came together to take a course about technology in their classrooms, but did not know how the course had been specifically designed to maximize individual and social learning experiences. The participants are introduced here in alphabetical order beginning with Angela (see Table 3).

Table 3

Participant Demographic Information

<i>Name</i>	<i>Age</i>	<i>Sex</i>	<i>Race</i>
Angela	36	Female	Caucasian
Shea	35	Female	African American
Susan	23	Female	Caucasian
Tara	41	Female	Caucasian

Angela

Angela was the type of person who refused to let obstacles keep her from achieving her goals. She initially appeared anxious about obstacles that could be difficult, but did not shy away or let those things stop her from accomplishing what she set out to do. She was visibly nervous during the initial interview and seemed a little reserved as if she was afraid she was going to say something wrong. She was the first person in her family to graduate from high school, and then she went on to get an undergraduate degree

in education and has been teaching at a Title I, kindergarten through fifth-grade school for nine years. The time was right, she decided, to pursue a graduate degree to improve herself and her teaching methods. No one would make the commitment with her when she attempted to persuade others at her school to join in the graduate program, yet she decided to take the plunge and pursue the degree anyway.

Her use of technology was mostly limited to a smart phone for daily use and a desktop computer for Web searches. She was proud of the fact that she “googles everything” when she comes across topics she does not know. Many current tools and technologies were foreign to her even though she seemed to enjoy learning about them. For instance, Dropbox cloud storage and the VOIP client Google Hangouts were two tools that she was introduced to even before the class began. We used Google Hangouts for our interview sessions and Dropbox for sharing the informed consent document (See Appendix E). This was the first time she had come in contact with these tools, and though she was hesitant at first, she told me that she was very excited to learn more about them. Her plan was to learn more about technology and to discover ways to use the tools at her school. She also planned to share them with her colleagues if she found them helpful. Most of her time using technology was work-related. She did, however, use Facebook to keep up with family members and friends. She also sought out and found a long-lost family member using a number of Web-related search tools and available social media avenues.

This course was the first online educational experience that she had ever been a part of and also the first course in her degree program. She wanted to take online courses because she said her life was too busy to travel to campus for face-to-face meetings. The

convenience of online classes was the only way that she could consider getting her degree during this season of her life. I asked her how she was feeling about taking online courses because all of her previous educational experiences had been face-to-face, and she seemed nervous yet hopeful. She felt uneasy about not being able to interact with people face-to-face during the course. Where Angela was unsure and a bit anxious, Shea was brimming with confidence and no stranger to technology or online education.

Shea

Shea was very forthcoming during our initial interview and did not appear to have any reservations about the topics we covered. A veteran teacher of thirteen years at a fifth through eighth grade, semi-urban school in a high poverty area, she had taught all subjects available at her school and was currently teaching ICT (technology courses). She was well into her graduate degree program, being in the third trimester of classes, and was hoping to graduate within two more terms.

We talked about her previous experiences with technology tools, and she said that her undergraduate degree was in microcomputer technology. She constantly researched new technologies both for personal and professional use. She enjoyed keeping up with new releases and current trends in technology, but admitted that staying up-to-date with technology was often difficult due to the speed at which things change. Web searches and discussion forums were two of the primary sources she often relied upon to find answers for questions. She said that people on these forums sometimes experienced similar problems, as well as answers, to the ones that she had. I asked her if she ever contributed to these forums, and she simply shook her head. She said this was never necessary because the questions and answers to her problems were readily available without her

needing to contribute anything. As far as technology hardware, she described her phone as being generally “glued” to her hand. She was rarely without access to a mobile or desktop computer, and she solely used Apple hardware (i.e., iPhone, MacBook, iPad, etc.) when she got the opportunity to choose. Facebook, Twitter, and Snapchat were some social networks that she had for personal use. She was actively involved in helping her school, as well as a professional organization of which she was a member, to develop a positive social media presence. She described how many schools and organizations used social media tools to inform people of important information and explained that the use of these social media was very important to reach people quickly.

Through her years in college, she had quite a few online courses, but preferred face-to-face classes. She chose an online degree due to the convenience that online education afforded her and because her life situation would not be conducive for face-to-face classes. Her partiality toward face-to-face classes was due, she explained, to her learning preferences and some negative online experiences that she has had over the years. Her first online education experience was in junior college and was a sort of “special problems” scenario set-up solely for her and another student. This was an “awful” class with no communication, was poorly executed, and took place during a hectic time of her life. She also had other online educational experiences, such as online professional development workshops including formal classes. The classes that had hands-on projects were particularly enjoyable to her, but she was quite adamantly opposed to courses with heavy reading requirements. She described courses like this as “a trip to the dentist” and explained that her worst experiences took place in courses that relied upon reading materials with “lots of jargon” as the primary means of content

delivery. With disdain, she explained the only way she could learn and remember content in those courses was to make complicated graphic organizers to keep track of the material she read. Many times those courses required her to search elsewhere for additional resources or people who could explain what she was supposed to have learned. She specifically mentioned that she did not care for activities that required article reviews in discussion boards and felt that those types of activities were not relevant to her life circumstances. Most of her previous online courses had the type of activity that required her to read a textbook and then post summaries of what she had read. She felt that these activities were repetitive, boring, and overall not beneficial. Although she did not care for these assignments, she always did whatever was needed to make a good grade. Shea commented,

A lot of the classes I've had, it's a lot of text books, go through this chapter and discuss, kind of summarize it, and that just gets a little tedious to me. I don't think I learn as much. Like, I would do enough 'cause I want to make a good grade.

[laughed] So I'm going to do it because I want a good grade, but I don't know how much it actually benefits me.

Her previous courses were apparently not conducive to making connections with other classmates. She described her peers in online courses as “strangers,” even though they shared multiple classes with each other. In one instance in particular, she reached out to her classmates through a messaging system hoping to get an answer to a question, only to receive one reply by someone who could not help her. In fact, this classmate was having trouble with the same issue, and neither student got the needed answer. She contrasted this with a face-to-face class that had group activities and relationships

developed with classmates that lasted after the class was over. She said that the group members still gravitated toward each other when they have had classes together again.

I asked how she felt whenever she came across discussion questions in a class, and she said, “Not happy. [Participant chuckled] Not happy.” Discussion boards, for her, were busy-work and something for a grade. She explained that people in her AOD experiences only contributed what was required to get a grade and nothing more. She seemed overall to be burnt out with many aspects of online education and ready to be finished with her degree. Susan, the next participant, was another student with some online education experience, but one who seemed a bit more enthusiastic about the course.

Susan

Susan was one of the youngest students enrolled in the course. She seemed comfortable during the pre-course interview but was quite short with her responses. She had been teaching for two years as a seventh and eighth grade teacher for a suburban school. She has been there since she graduated with her undergraduate degree. This was the first class in her graduate degree program, and she seemed to be very excited. We talked a little about her previous educational experiences, and she told me that this was not going to be her first experience in an online course. She had some online classes during her undergraduate degree, but those previous experiences were not good. She seemed simply to prefer face-to-face classes over online ones. Convenience and flexibility were the main attractions to online classes for her so that she could pursue a degree with minimal impact on her daily routine. She said that she generally liked the “vibe” of face-to-face classes. She especially liked interacting personally with the

instructor. She had a few online courses that were acceptable, but generally preferred to be in front of an instructor and explained that procrastination was a bad habit for her that made online courses more difficult. I asked her to explain some things that she did not care for. She could not remember many specifics about the course but recalled that online assignments were generally boring and repetitive. Many of the activities she could remember consisted of memorization and recall. The face-to-face interaction with her instructors and the opportunity to build relationships with her professors were two things she specifically valued in the live classroom setting. Apparently communication and interaction with her instructors was either non-existent or limited in her previous online courses.

Though comfortable with technology, she did not consider herself to be a “techy” person. Technology problems were generally figured out by “googling it,” reading directions, or calling someone like her brother who knew more about technology than she did. She said that technology generally made her life much easier and that she loved using her Apple desktop and smartphone. Her phone was probably her most used piece of technology and primarily utilized for social media applications, like Facebook, Snapchat, and Instagram. These tools helped her keep up with friends and share with people. This comfort level with technology, her prior experiences in online courses, and feeling that being young helped her keep an open-mind with technology seemed to contribute to her confidence that she was going to do well in the course. Susan was confident and excited about the course as was the next participant, but they both had very different stories.

Tara

Tara was the oldest participant in our group and, with ten years in the K-12 educational system, one of the most experienced teachers. She was particularly excited about the course because she felt that she was being left behind in the world of educational technology and decided to do something about it. Her journey began at first, from a challenge that she accepted by a co-worker to have a paperless classroom. She then began researching ways to improve her knowledge of classroom technology. I noticed her enthusiasm about certain tools and discovered that she sought out and received funding by her school administration to attend a Google summit for educators during a past summer. Her excitement about the course, willingness to try new things, and confidence when talking about current trends in educational technology let me know early on that she was not going to fit into the mold that many of the students I had taught in past courses generally did. Often middle-aged teachers were lacking confidence and were hesitant about technology and online courses, but Tara was not. She constantly read on her Amazon tablet, used an Apple mobile device, and worked on her laptop. She said that she mostly used her laptop for work-related tasks and had been recently researching applications she learned at the conference to make her classroom better. She used social media tools to look at pictures and keep up with family. She also used email to communicate with her students and parents.

I asked if she preferred online or face-to-face classes, but she did not have a preference. The subject of the course was important in determining whether she wanted to be online or not. For instance, *Technology for Educators* was probably going to be a good fit for the online format, but she gave the example that a statistics class would

probably be better for her face-to-face. Subjects that were more difficult to understand and needed timely answers to questions were ones she thought would be better face-to-face. She felt instructors in face-to-face sections were generally more responsive and answered questions more quickly.

Tara explained that she had two online courses in the past that consisted primarily of assignments that required her to do article reviews, create lesson plans, and watch videos about classroom scenarios. She said everything was turned in through a drop-box and that there was never any interaction between her classmates. The only way she knew there were other students in the course was by their names being alongside hers in an email list. She never used discussion boards in any of her previous classes. Her interactions with previous instructors were generally through email. Their communications, she explained, were always “short and sweet.”

Tara surprised me by her lack of preference for face-to-face classes given that she had no social interactions with anyone else in her previous online courses. She explained that this was never something that she thought about. The courses were not there to be enjoyed, but were more a duty or a job to complete. I asked her to explain more about this, and she hesitated before she answered. After thinking for a moment, she said that there was probably something missing in those courses. Some sort of communication would have been preferable and could have helped her understand what was going on and if she were doing her assignments correctly, but this idea had never occurred to her before.

Participant Summary

The participants of this study varied greatly from each other in everything except their general profession. None of the participants expressed any overly positive experiences, if any experiences at all, with AOD activities. The ones who had online experiences before were similar in that there was very little interaction between students and the instructors. There was also a common theme that there was the expectation of little to no connectedness in an online course. This seemed to echo findings of past research that found online education isolating and lacking in social interactions (Xie & Ke, 2011). I was excited for these students to experience this particular online course that had been carefully designed to encourage social interactions, self-determined behaviors, and social knowledge construction. The activities, the design method, and the course were as important a “character” in this study as the participants because this was an instrumental case study (Denzin & Lincoln, 2008). The next section introduces the course and gives some context for the experiences of the participants.

The Online Learning Experience

Technology in Education was a ten-week, fully-online, asynchronous course that took place between November 2015 and February 2016. The course was designed for K-12 educators pursuing a Master’s in Education and dealt with issues of technology in the classroom. Students were introduced to technology tools and given projects that required them to develop a working knowledge of those tools. This was structured so they could integrate the technologies into their lessons and/or communication plans for their classrooms. The course highlighted many topics of discussion relevant to technology and current issues in education.

Students that I have taught in previous classes were often anxious about technology and learning in an online class. One of the primary objectives has always been to help my students build confidence in their ability to learn and use tools which could help them at their schools. The class has been designed as a launch-pad for exploration and learning about technologies in education by helping students build a strong foundation and by giving them hands-on experience with a variety of some common tools. The social interactions of the course have been key to developing confidence by giving them experience in sharing knowledge with other people in hopes they will continue to share after the course is over. This section describes the progression of the course, the development of the AODs, and the implementation of gameful design methods from beginning to end as I watched the participants interact with each other and experience *Technology for Educators* together.

All development and design decisions were based on the gameful design model explained in Chapter II and guided by previous research that explained how supporting the psychological needs of participants in all design decisions would positively encourage self-determined behaviors (Deci & Ryan, 1985; Deterding, 2014). The specific experience goals and activity mechanics of the gameful design model are addressed in a later section of this chapter. This section, however, gives context and insight into the instrument being studied by exploring each component that was affected by the gameful design model, why it was implemented in the manner it was, and how I approached each implementation decision according to the gameful design model. The section begins with details concerning the importance of the students' first impressions in the course and how

the instrument was developed to encourage self-determined participation in the AOD activities.

First Impressions and the Beginning of the Course

I was once told by a music instructor that the first notes of a performance were among the most important. A beautiful opening often sets the stage for a wonderful experience, but a poorly executed prelude is often jolting and detracts from any good things that may happen thereafter. This principle has guided me in the design of every course and learning activity I have been involved in during my teaching career. The development of this course and these discussion activities were no exception. The first impressions that students would have in this course were what would help establish a confident, safe learning community or add to the anxiety that many students brought into the course with them.

Students were greeted with a welcome announcement which directed them step-by-step through their first moments in their new online experience. All modules were initially locked except for one that was called, “Welcome to EDU 625 – Let’s Get Started,” as well as a discussion board given the name, “Open Forum.” The introduction module was the obvious choice for progression. This module introduced students to the primary means through which I shared materials, instruction, and course information with them. They were directed to watch a video that introduced the course and all of the important information they needed to get started. I was able to answer the most common questions through the video in our first interaction with each other. I was also able to begin introducing the students to the major concepts of the course and how they were all going to be learning and venturing forth together. This course was quickly introduced as

a safe place where questions were always encouraged, discussions were valuable, and mistakes were experiences to be learned from.

The important course documents (syllabus, course schedule, and rubrics) and the first week's learning module appeared when the students finished the introduction. All learning modules after week one included a welcome page, a weekly materials section, an activities section, and a checklist for the students to be able to make sure that everything had been completed. Each weekly welcome page had a video that introduced the students to any new concepts, weekly materials, and the new technology tool they would be learning to about.

The first week was different because it did not introduce a technology tool. Instead, this module was designed to be a purposeful extension of the initial welcome module. This lesson focused mostly on expectations for the course. We covered what exactly was expected of them as online students, what they could expect from me, and what they could expect from each other. There was a section specifically devoted to the importance of AODs that explained how the knowledge gained from course materials could be expanded by communicating with each other through discussions. The only things they were required to *do* in this module were to review the video, and the weekly materials, to introduce themselves to their classmates in an introduction discussion, and to take a short quiz to let me know they understood the structure of the course. I designed this module to address any concerns and anxieties before the *real* coursework began in order to reduce panic and allow the students to focus on learning. This is similar to a swimmer who tests the water temperature by sticking a toe in before getting wet as

opposed to running and jumping headlong into the deep end with no idea of what to expect.

This first week modeled how the rest of the course would flow and gave students a low-risk introduction to the discussion boards. They experienced the unstructured, ungraded “Open Forum” and also their first required discussion activity. The initial influences of the gameful design model are seen in the next sections as the intentional design and implementation of the open forum and introduction discussions are unpacked. These components played a pivotal role in developing feelings of autonomy and relatedness by helping students feel connected in their own way in a safe and connected environment (Ryan et al., 2006).

The Open Forum. The freedom to ask questions and get answers relatively quickly was a critical component of the sense of safety, autonomy, and connectedness in this class. The open forum was an ungraded discussion that students could use if they had questions or comments. This discussion board was not graded nor were the students required to use it. It was designed to be a way for students to ask questions of me and others in the course. Though not required, all students were encouraged to subscribe to the open forum so that they would be notified when someone posted there. This proved useful to Angela during the second week of the course when another student asked a question that she was also struggling with. Shea used the open forum when she had a medical procedure done and asked for good thoughts and prayers. Angela was already comfortable with the open forum and answered Shea’s comment very quickly. I was able to add my voice to the encouragement of her classmates, which gave me an opportunity

to let her and the rest of the class see that I was actively engaged during the course and cared about their well-being.

The open forum also provided a place to extend discussions that would have otherwise tapered off as the week ended. I noticed during the first discussion that a number of people expressed interest in a Google tool, and it seemed to me that there was enough interest to keep the conversation going. I brought this topic up in the open forum with a couple of guiding questions just to see if anyone would talk about this, and they did. In fact, three of the four participants mentioned this conversation in our post-course interviews as being a meaningful moment of the course. This strategy did not work every time, however. I tried again later with a different topic that seemed to have some unanswered questions, but no one responded to my initial inquiry.

The open forum was used for sharing resources, for classmates to help each other with assignments, for asking questions of me, and for providing occasional clarification information when an email or an announcement would not be appropriate. For instance, a student asked me a question, and I felt that the answer could help the entire class, so I made a quick screencast video and posted it with some contextual information in the open forum. Tara and another student both thanked me for taking the time to do this and said that the information was helpful. Participation in the open forum was highest during the first few weeks of the course and tapered off as the trimester went on. The next AOD that students participated in was the introduction discussion where they simply were given the chance to say “hello” to their classmates. Like the Open Forum, the introduction discussion was a crucial component to help establish a connected learning community.

The Introduction Discussion. All four participants were among the first to participate in the introduction discussion of week one. They posted about who they were, a little about their families, and that they were looking forward to the course. A few people surprisingly, got into some of the actual topics of the course before we even began. For instance, Tara and Angela began asking each other questions and making comments about Google Classroom, Chromebooks, and other technology-related items in this non-graded activity. These were not extensive discussions, but some of the first connections made about the topic of this course that were made naturally by the students as would occur in a face-to-face conversation.

Another reason for the introductory unit was to give me insight into how the students were thinking about the course, my instructions, the discussions, what was expected of them, etc. The iterative nature of gameful design began immediately by allowing me to observe how students participated in a low-stakes activity. I was able to take immediate action and make any adjustments that were needed before the crucial discussions began. I immediately noticed that students did not respond to anyone who replied to their own introductory posts. Students asked some great questions of each other, but no one responded to them. I updated the next activities' instructions to remind them that all interactions counted towards their participation rating including replies to their own posts and reminded them that most normal conversations generally required at least two people interacting. Their first submissions to the discussion boards seemed that they were posting just to be heard and not actually to discuss anything. This was something I wanted to address immediately in order to establish a truly connected learning community with members who interacted *with* each other and not just posted

information *at* each other. I found that it was imperative to use every opportunity to encourage the growth of the learning community and discovered that habits started in this introductory discussion were likely to be carried into the regular activities and discussions.

The First “Real” Project. They began the technology projects and graded AOD activities the following week. Up until this point, the discussions, materials, and activities were all designed to reduce anxiety and increase student self-confidence. The first graded discussion was a step-up in difficulty from the low-stakes introduction the week before. The students were given a choice to discuss materials presented during the week or to discuss the new technology tool. They were given parameters in the assignment instructions as well as in my video. The activity rubric and general activity instructions were covered in the introduction module.

Early on, most of the participants felt comfortable with the discussion boards, though they were not quite as active as I wanted them to be. They had short conversations with each other about the initial topic as they began to find their voices in the AODs and what the reactions of their classmates would be like. For instance, Tara accidentally replied to someone else when she made her original post instead of making a new thread. No one seemed to mind or notice this mistake, and the discussion progressed normally. Shea said that she was not used to things being due before Sunday night, so she was the last person in the class to make her original post. All participants except for Shea eventually posted more than the minimum requirement for this discussion. Angela and Tara went above the minimum requirement and posted on other peoples’ conversations as well as their own.

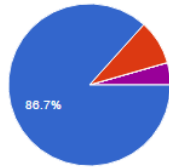
In regards to instructor feedback, the time immediately following the first AOD was critical to reinforce the value of engaged participation in discussions. I purposefully encouraged those students who went above and beyond the minimum requirement with praise and appreciation for contributing to the class. Also, I reminded those who did less than the minimum requirement about benefits of AODs to themselves and their classmates. Important to note, simply giving a lower grade without feedback is not as effective as detailed information for correction and improvement (Hew et al., 2010; Xie & Ke, 2011). For example, Shea needed to distinguish the difference between these AODs and the ones she previously had. Giving a grade without feedback would not have reinforced the value in posting early or helped her to separate her performance from the external motivator. I explained that original posts were due on Wednesday, so that people could read and have time to respond. She told me later that, though she still did not care for the due date, this explanation helped her understand the need for it. I utilized the announcement feature in addition to giving private feedback to reinforce the value of discussions, of a connected learning community, and of asking questions in the open forum. My feedback and willingness to communicate with the students helped develop that sense of safety and connectedness that I needed to give me insight into their needs throughout the course. I placed a large emphasis into developing a connection with the students for 2 reasons: (1) to help them in the course, and (2) to see if they were moving towards or away from the experience goals that I had in mind for them.

Developing a Connection between the Instructor and Students. The gameful design process depends on the developer identifying problematic areas that hinder participants from achieving intended experience goals (Fullerton et al., 2008). As the

instructor and developer, I had to not only observe, but also to establish a connection with the students to try to understand what they were experiencing and why. I had to understand, as best I could, the participants' experiences, so I could accurately adjust the AOD activity mechanics to help them achieve the experience goals that were set forth at the beginning of the study.

My first outreach was to give an introductory quiz designed to uncover what students did not understand about the course structure, expectations, and other necessary elements. This was helpful for obtaining immediate feedback and answering individual students' misconceptions directly. During week two, I assigned an anonymous survey in which I asked questions about how they were feeling in the course. I wanted to know if they understood everything clearly, if there was anything that they did not like, and if they needed to tell something to the instructor and were hesitant. The survey was created using Google Docs form builder and asked questions, such as "How are do you feel about the course?" and "How effective are the videos in communicating with you?" Figure 8 is an excerpt of some of the results I got from the survey. This survey was beneficial because it was anonymous and showed students, once again, that I was interested in their well-being. By using both of these survey methods I was able to see at-a-glance how the class was feeling, and to identify any problematic areas, so I could address them before the students got too far into the course.

How effective are the videos in communicating to you?



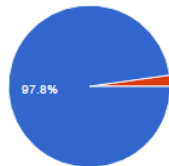
Great. They are exactly what I need	39	86.7%
They are ok, but not great	4	8.9%
I hate them. Please don't make me watch any more	0	0%
What videos?	0	0%
Other	2	4.4%

Have you found the open forum?



Yes	45	100%
The open what?	0	0%

Does the course structure make sense to you?



Yes	44	97.8%
No	1	2.2%

Figure 8. Anonymous survey results.

Screenshot taken from Google Drive. These were the results from the Likert scale questions.

Week Three: The Learning Community Began to Come Together. I learned much about this particular group of students through the introductory quiz and the anonymous survey. I discovered that they were, for the most part, progressing nearer towards the experience goals I had planned for them, that most questions of procedure were answered, and that they were enjoying the experience thus far. Week three was an especially important time whether the students realized it or not, because this was the first time that the students were put in a situation to interact with each other in the activity I felt would help them come together as a learning community. By this time, most questions about procedure and course structure should have been answered, and students should have been able to participate in the course unhindered. They were scheduled to

complete their first technology projects, had a taste of what discussion activities could be within this learning environment, and experienced some interaction with the instructor of the course. This discussion activity was designed to be a turning point within the learning community together by asking them to step outside of the normal discussion questions and share what they were feeling about their common experiences in this course. Up until now they had introduced themselves to each other, had explored the second week's materials, and had written about what they learned from those materials. The week three discussion asked students to describe to each other how they were feeling about the course and what they were hoping to get from the course or to discuss something along those lines. The purpose of such an activity was not for the students to showcase what they knew, but to share with each other their hopes and feelings about an experience in which they would be participating together. This activity, now shaped somewhat for this group of students, was purposefully given at this moment in the course to help build feelings of relatedness and encourage self-determined participation in the rest of the AOD activities in the course.

As I hoped, this activity garnered a great deal of participation and openness in the conversations. The participants' responses helped me see that the work I did in the organization, creation of videos, communication, etc. was not in vain. All of the participants seemed to be a bit surprised that they were enjoying the course as much as they were. Even Shea, who said that she did not like discussions at all, mentioned that she was enjoying the course so far in spite of the heavy reliance upon AODs. Three of the four participants specifically mentioned that they were learning from each other in the

discussions, and all of them were excited about the potential that this course had in store for them.

For instance, Angela began by stating how much she enjoyed using the new technology tool the class had been introduced to the week prior and having the opportunity to learn from other people in the course. She expounded on this later in her post by stating:

This class has also allowed me to have discussions with others in the same class that are completing the same assignments. We all may have the same problems and help each other come to conclusions. I hope I can take the things I learn in this class and share it with others I work with.

As if to illustrate her point, she mentioned using some other technology tools, and Tara asked her about them. These two had a brief conversation about the tool and its uses in the classroom. Angela, who was very anxious about technology at the beginning of the course, was given the opportunity to share her new-found knowledge with a classmate through this AOD activity.

Tara was the next person to make a post on this topic. She enjoyed the way the course was organized, the effort I made to reduce their stress, and the opportunities to work with her classmates. She mentioned that the course tried to “get everyone talking and working together, which is normally impossible with an online class. We can discuss, ask questions, and collaborate with each [other]. I love that if I have a question, I can just put it out there and get help.” She concluded her post by explaining that she enjoyed being able to obtain ideas from each other’s work to learn from her classmates.

Shea was sure that she was going to learn from the class materials and from her classmates. Susan did not mention anything about the discussions, but felt that the course was already better than expected. She was enjoying the course because I was approachable, the instructions were clear and easy to follow, and the video tutorials were a huge help. She was excited about the potential that the course had to challenge her to think outside the box. She spent some time in her replies encouraging her classmates and building personal connections. These responses helped me to see that the foundational phase had been successful, and I did not need to make many major adjustments as the students progressed to the rest of the course.

The Weekly Routines of the Course

The modules following week three were designed to be exactly the same in structure to reduce confusion and help students remain focused on the primary content of the course. The students did their best to settle into their weekly routines as they learned together through the next few modules. This term posed a problem for building momentum because the Thanksgiving and Christmas/New Year's holidays interrupted the course schedule. The weekly AOD following the long Christmas break was less active, but the community had developed a strong enough connection that the students were seemingly eager to get back into the routine of the course. This could possibly be seen in the participation rate of the members of the study. Angela had a sharp drop-off in the number of replies that she made during the week following the break, but increased again the next week. Tara and Susan both began a declining trend of the number of posts they made in the discussions starting this week. Shea always made the minimum number of posts required for an "A" grade, so her activity did not change. I cannot say for certain

that this was absolutely the reason for the decline in number of posts, but it seems plausible. Even though there were fewer posts during the few weeks following the break, the students actually wrote more in each post. I tried to strategically utilize the topical discussions to engage and encourage controversial discussions.

This section briefly describes the weekly routines of the course to give insight into the types of interactions and activities the students were given. These projects were designed to encourage self-determined participation and support the experience goals of the study. The students were basically given two major types of AOD activities in the course. These were topical discussions and activity reflections. First, the topical discussions posed questions to students that were related to the materials and/or the project of the week; these generally helped to garner rich discussion.

Topical Discussions. The discussion topics varied, but were always related to the project students were working on or related to an issue relevant to the course. I found intriguing the directions in which students took the discussions and how those who were actively participating utilized this venue to share resources, experiences, and information with each other. It was interesting to see issues about copyright being raised in video discussions, issues about the pros and cons of ADHD medicine being raised in a discussion about creativity in the classroom, issues of socio-economic status and connectivity being raised in a discussion about presentation software, and the many resources that were shared in almost every discussion we had.

The students naturally began to form groups based upon when they participated in each of the discussions. Angela, Tara, and Susan were generally among the first students to participate. They posted more often and generally had longer posts than others who

waited until the deadlines. For instance, Shea generally waited until Wednesday to make her original posts and then waited until Sunday to make any other submissions that were due that week. She usually made the minimum required number of posts and often had fewer replies to her posts because she waited until later in the week to join in. Several other students in the course followed a similar pattern of posting close to midnight on Wednesday and then replying later Sunday evenings. I found that the students who posted earlier connected more closely to each other than the ones who posted later and did not connect as closely to anybody in particular. The discussions were usually not as active later in the week, so the conversation was not as “hot,” and the later posts generally had fewer replies to them. The lower interaction levels between students who posted early and those who waited until later in the week was not optimum, so I tried to encourage those who were waiting to join the active discussions. I gently explained that the active discussions were beneficial to their experience in the course through direct assignment feedback and general announcements. This seemed to be effective at times and ineffective at other times.

The participation pattern was not a hard and fast rule, though because sometimes a topic was brought up that would bring comments from those who generally did not post any. There were a number of times when Shea made a comment the same night that she made her original posts that showed me that she was reading the conversation and, at least passively, was involved in what was happening in the discussion. I was encouraged by this because it suggested that she was adopting the role that prior research has termed a “lurker,” meaning that she was passively involved in the conversation by reading, but not commenting (Hrastinski, 2008). The topical discussions helped students learn

together through the sharing of ideas, resources, and viewpoints, but the activity reflections AODs described next, brought a completely different dynamic to the course.

Activity Reflections. Students were required to post a learning reflection upon completion of each project to give some insight into their experience learning about and using the highlighted technology tool. They were asked to describe what they liked and did not like about the project, as well as any troubles and breakthrough moments they had. The students posted links to their projects in addition to their learning reflections in the proper discussion boards. Students were also required to give at least two of their classmates' meaningful feedback after reading their learning reflections and viewing their project submissions.

I noticed that there was a difference in the way students used the different discussions assignments. The topical discussions generally centered on personal experiences, anecdotes, and resources related to the weekly topics. In the activity discussions, however, there was much more focus on encouragement and commiseration. Students often offered praise and encouragement on the completion of each other's projects. Many times students pointed out details and aspects that they wanted to emulate for their own future projects. The reflection instructions also asked students to give some insight into the things they had trouble with during the assignment. Often other students would reply with empathy and explain that they, too, struggled with similar things and many times gave advice on how they tackled their own issues. I was pleased to see how the different discussion types were helping to meet different needs of the learning community. This community developed and grew closer as the course progressed until it came time to begin wrapping things up and reflecting upon what had been learned.

Wrapping Up and Looking Back on the Course

The final weeks of the course had a different schedule concerning the remaining projects and activities. Students were given time to finish up their final project and complete any revisions for activities that they had trouble with earlier. They were able to review instructor feedback and resubmit their assignments as many times as they needed to, so they could learn from their mistakes to encourage competence and self-determined participation (Ryan & Deci, 2000a). The final week had one last discussion that I had used in past courses to gain insight into how students felt about the course. This discussion was similar to week three's activity in that it was not related to any particular technology topic, but purposefully placed at the optimal time for reflection. This discussion asked students to describe the most valuable aspects of the course, what they wished we had talked about, or anything along these lines. This discussion, coupled with the post-course interviews, provided great insight into the experiences of the study participants and the meaning which they gave to their experiences. Many students were enthusiastic about the course overall and the AOD component in particular. I was able to delve more deeply into their answers and explore why they felt this way during our follow-up interviews after the course. These two sources of data greatly helped answer the research questions for this study.

The questions that guided this research project were born from a curiosity to find ways to make my online classes more engaging by establish meaningful learning communities. The idea of successful AOD implementation in an online course has appealed to me as an online instructor and researcher, but also as a recent online student who often wished for greater social connectivity with my classmates. I learned, through

my own research and experimentation with different social mediums in previous online courses, that AOD activities could be the avenue for students to make meaningful connections.

The questions that guided the research also determined how I approached analysis of the data as explained in Chapter III. I learned through the final discussion and post-course interviews how gameful design influenced students' participation and learning during the activities. I transcribed their interviews and discussions, so I could compare what they said to what I observed, and I noticed that their experiences aligned closely with the experience goals of the study. I explored further and began to uncover the meaning behind their experiences. Their responses pointed to the activity mechanic adjustments as the reason behind their experiences.

The final sections of this chapter explore the answers given in the final discussion and the post-course interviews to better understand the participants' experiences in this course. The sections are divided by research question first and then categorized through descriptive coding and thematic organization into sub-sections based on 1) activity mechanics, and 2) participant experience goals.

Research Question 1: The Impact of Gameful Design

AOD activities are based on the principles of social knowledge construction and rely on active student participation in order to be successful in their implementation (Dennen, 2008; Hew et al., 2010). A gameful design approach to the creation and execution of these activities addressed the need for a model to use in the design of student-centered AODs and a development approach that helped encourage self-determined participation in these activities. The concepts of activity design and

participation guides the analysis for the first research question. How do AOD activities, which have been developed according to gameful design methods, influence student participation and learning in an online environment?

Gameful design, as explained extensively in Chapter II, is the idea that the principles which guide game developers to make engaging games can be applied to the development of non-game activities (Deterding, 2014). Game developers approach the creation of games with the conceptual understanding of the experiences they want players to have. They then utilize game mechanics to try encourage players to have those experiences. Next, through playtesting, they make iterative adjustments to the mechanics based upon observations and player feedback until the players' experiences are similar to the original vision of the game.

I approached the development of the AOD activities (and to an extent the entire course) in the same way. I knew certain activity mechanics were at my disposal to help students attain the experience goals I had in mind for them. The goals for these activities, as discussed in Chapter II, were (a) connectedness with classmates through shared interests, (b) social knowledge construction, (c) the enjoyment of meaningful discussions, and (d) critical thinking opportunities (Hew et al., 2010). These experience goals were considered during every stage of development and influenced each decision in the implementation of the activity mechanics. The mechanics of AOD activities, which were also discussed in Chapter II, were a) participant interaction requirements, b) scoring and instructor feedback, and (c) challenging and interesting discussion topics (Hew et al., 2010; Ke & Xie, 2009; Niemiec & Ryan, 2009). The following sub-sections look at each

of the activity mechanics listed above in order to answer the first research question based on the participants' experiences

Activity Mechanic: Participant Interactions

Perhaps one of the most pivotal mechanics of AOD activities is the act of students interacting with each other. High quality participation and interactions in AOD activities do not happen by accident and cannot be forced by an instructor. They can be encouraged by purposeful design decisions that give ample opportunity for social interactions to thrive (Gunawardena et al., 1997; Ke & Xie, 2009). Keep in mind the research about intrinsic motivation and Self-Determination Theory that was covered in Chapter II in order to understand the design decisions that guided the gameful design process.

Remember that intrinsic motivation, according to Deci and Ryan (2000a), is “catalyzed (rather than *caused*) when individuals are in conditions that are conducive toward its expression” (p. 58). Efforts made to manipulate participant interactions must be focused on facilitating participant autonomy, competence, and relatedness instead of trying to somehow change the activity to be more intrinsically motivating. Students have to understand how, why, and where to have discussions in order for them to participate. This was the reason for the extensive effort at the beginning of the course to help students function confidently in the activities.

I purposefully made an effort to help students feel competent in the activities and feel connected to the instructor through videos, redundant (but not annoying) reminders about important activity details, announcements, instructor feedback, and always encouraging questions. Competence and relatedness were both pieces of the self-determination puzzle and helped encourage students to self-determined participation.

These efforts seemed to be effective when looking at the way students responded to the final discussion.

Angela enthusiastically remarked about how much she enjoyed the AODs and said this was the most valuable aspect of the course for her. The reasons why she said this is covered later in Chapter V, but she went on to say that none of the activities were “ever a surprise or hard to do.” This was not to say that she was bored or lacked a challenge, but rather, that she felt well-prepared to accept the challenges of the course and felt safe enough in the learning community to seek help when needed. I asked her about this when we spoke in the post-course interview, and she was almost apologetic that she did not have anything negative to say about the course, “Ok well, I’m sorry if you want to hear anything negative ‘cause I don’t have anything negative. You’ve kept us well informed. All the instructions, directions were just straight forward and easy to follow . . .” She said that she took another online course at the same time, and she was very upfront about her dislike for that class. I asked her why she did not have a good experience, and the first thing she said was that she never knew what was expected of her and only heard from her instructor if she emailed her questions. This seemed to really distress her when she talked about it. “with the technology class, everything. . . I mean the grades were there, the feedback was there, you know everything we had to do or was expected of me; I knew exactly what to do, but the other class I didn’t.”

Over and over again, participants of the study mentioned that the well-organized course was beneficial. They especially appreciated the instructional videos that were provided. Susan expounded on this in a reply to one of her classmates,

Kayla, I believe you are correct when you said that Mr. Trest's weekly videos helped! I do not know how I would have made it throughout the course without the videos. I prefer face-to-face instruction instead of online classes. The videos helped me understand the content of the course and gave me the feeling that I was sitting in the classroom.

Shea agreed with this and said that she “loved” the way information was presented because it made the class “a lot less stressful and the tasks doable.” Tara echoed this sentiment almost exactly in her final discussion post,

One of the most valuable resources to me was the instructional videos by Mr. Trest. I felt they demonstrated exactly how and what was expected. I was able to follow through with very little trouble or confusion. I was so afraid that I would be lost and wonder if I was doing what was expected. This was not the case in this class. I have been in classes where I turned in work and hoped it was what was expected. My frustrations levels were almost to the point of quitting, but this was never the case in this class. I knew exactly what to do, how to do, and what was expected.

We talked about this later, and Tara said that she initially dreaded this course more than any of the others that she was required to take. Instead, the course turned out well. She said,

it was one of the . . . [pauses to consider] I don't want to say easy, but it was one of the ones I have not . . . I never had a question about what was expected of me. And being able to discuss it and go back and forth with my classmates and the way you had the videos and the videos showed you exactly what to do, how to do,

what to click on . . . it was just . . .there wasn't a lot of question in the end and I knew what was expected. So I think that made a *huge* [participant emphasis] difference in how I approached the class and how I felt about it throughout the whole trimester.”

Even this activity mechanic itself turned out to be a learning opportunity during the final discussion. Angela’s reply to Tara is captured in this screenshot (see Figure 9):

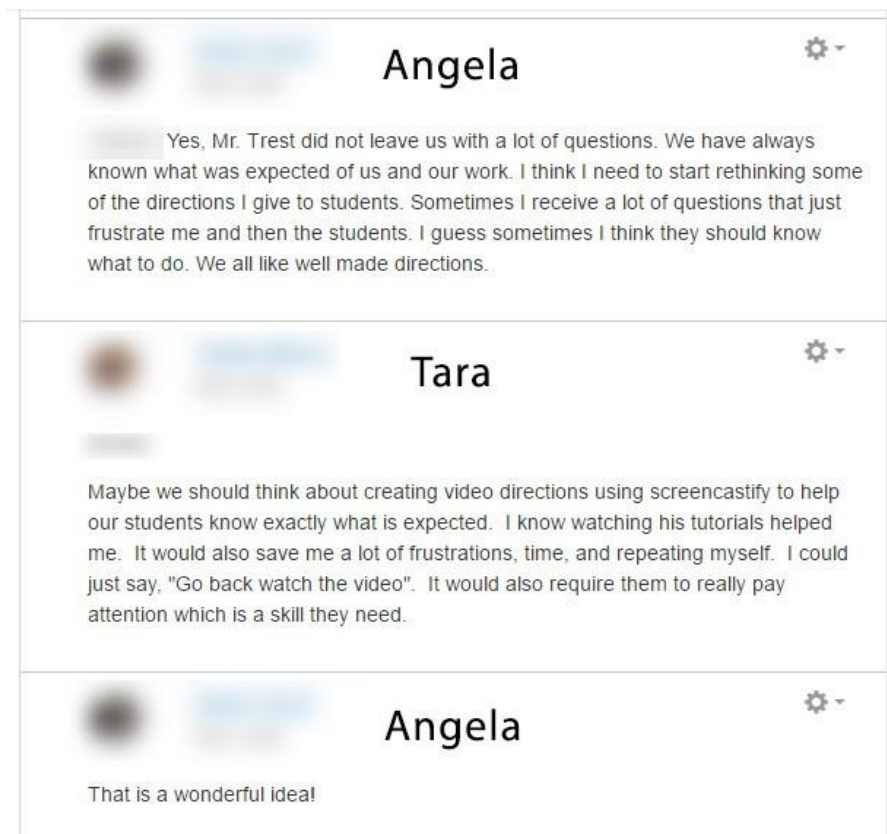


Figure 9. Discussion excerpt between Angela and Tara.

Screenshot taken of an exchange between Angela and Tara. Names and images blurred to protect the participants’ privacy. Source: Canvas Learning Management System.

This exchange of ideas highlighted the participants’ willingness to share resources with each other and was an important contributing factor to the growth of the learning community throughout the time together. This sharing is discussed in a later section, but

the reader should keep in mind the value that the students placed on each other's input and the knowledge they have gained from each other in this brief exchange of ideas. The discussion questions, activities, and the learning community as a whole would not have been successful without the willing participation of these students to share with each other. Students were able to participate unhindered by anxieties about procedure and expectations due to the design of the course and activities. Participant interaction was crucial, but would not have been effective without well thought-out and designed challenges (Niemic & Ryan, 2009).

Activity Mechanic: Challenges

The second dynamic of AOD activities was focused on the topics and questions that were given for discussion. The importance of this activity mechanic can easily be overlooked. Previous research, as well as the participants' own accounts, showed that many instructors solely use AOD activities as a way to have students summarize reading assignments and regurgitate information instead of giving relevant and engaging topics for discussion (Dennen, 2008). The topics and questions in this course followed the guidelines reported in self-determination theory research that stated activities should be optimally challenging in order to encourage competence in participants (Niemic & Ryan, 2009). Also, the idea of increasing the "challenge" of the questions as the learning community grew stronger allowed for student growth and more engaging discussions. The questions were also asked in a way that gave students a great deal of freedom in how they wanted to approach the discussion, which also helped encourage autonomy. There were two or three guiding questions, but the instructions always explicitly stated that

students could answer their own question as long as it was relevant to the overarching topic of the week.

Susan was quick to mention the discussion topics in the course and how they were valuable to her. She said in her final discussion post,

I have enjoyed discussing topics, projects, and educational theories with my classmates. I feel like it is easy, as educators, to discuss these topics with the teachers at our own schools and rarely branch out to teachers in other districts. Through this course I was able to discuss a multitude of topics with a diverse group of teachers from all over the state.

Angela also mentioned that during discussion she was appreciative of the relevancy of the topics and tools that they learned in this class. She contrasted this with other classes where she did not use anything from the class. She said that often she felt like instructors were just giving busy work assignments that did not amount to much worth. She expounded on this during our one-on-one time together,

You provided videos and articles that we could research and even start on researching. If we wanted to look something else at least we had something to go by or start with so I really, really liked all the things that we could read on and they were interesting. That makes a difference too. It's not something that's called busy work. You know, I've had to do busy work in some of my courses and this whole course was nothing like busy work. And we could use it for our classes I've really enjoyed it.

She and Tara both mentioned one particular discussion that brought up the topic of creativity in K-12 education and had some strong arguments against the practice of

over medicating ADHD students. This particular discussion was designed to be one of the highest “difficulty” discussions because it had the potential to bring about opposing views and test the strength of the learning community. They both expressed that the discussion helped change their viewpoints and perspectives toward treating ADHD children in their classrooms and in their own families.

Participant interactions and activity challenges were two mechanics that seemed to be the most well-received. These two mechanics had very little interaction with any external motivators, but only served to encourage self-determined participation. The final activity mechanic, scoring, was probably the most divisive in this course and tested my knowledge about the research on intrinsic motivation.

Activity Mechanic: Scoring

The scoring mechanic was not just the grade that students received for their participation, or lack thereof, but encompassed the entire grading paradigm for the course. I had to approach this mechanic carefully because it had to be similar to students’ previous experiences and also had to be compliant with the school’s grading requirements. However, reliance on external sources of motivation for participation, such as grades, is poor practice according to Self-Determination Theory (Ryan & Deci, 2000b). The idea of the “carrot on the stick” used for motivation is completely contrary to self-determined participation and often leads to reluctant and minimal responses. One way that I tried to help alleviate this problem was by using a rubric that gave ratings that were related to grades instead of just giving a grade (see Appendices A & B). The ratings detailed and described different levels of participation and not just gave a statement for what was required to get a certain grade. This rubric was designed to encourage

participation in all activities to be above the minimum requirements in order to get an “A,” or what we referred to as an excellent rating. I explained in the introduction video that the words “Excellent,” “Adequate,” and “Less-than-Adequate” were more appropriate in this class than letter grades. This was done to help establish some “distance” between the grade and students’ participation levels as suggested in self-determination theory research (Niemiec & Ryan, 2009). Unfortunately, due to a limitation with the learning management system, I had to correlate these ratings to numerical points, but this limitation is discussed in a later section.

A guiding theme of the course was borrowed from the children’s show, “The Magic School Bus™,” that says “Take Chances. Make Mistakes. Get Messy.” (Cole & Degen, 1994). Students had the opportunity to go back and revise assignments when they received ratings that were less than they had hoped for. They were given feedback, based upon the rubric mentioned earlier, which helped them see their mistakes and fix them. I adopted this philosophy years ago as I was developing the class to help reduce anxiety among teachers because many were nervous about using new technology tools. I noticed that revision opportunities also seemed to help encourage higher participation rates in the discussions. I found during my research into self-determination theory that this was due to students feeling competent and safe, thereby encouraging self-determined behaviors (Ryan & Deci, 2000a). The combination of this rubric, the chance to learn from mistakes, and detailed instructor feedback helped students focus less on the controlling nature of grades and more on value of the activity to encourage participation.

Angela stated that she felt very connected to me, as the instructor, because of the feedback given in the rubric, but also mentioned that the grades and feedback were given

“pretty quick.” She never had to revise anything, but felt good knowing that she was able to if needed. She gave an example in her other class that submissions were final, and she actually submitted early by mistake but could not change anything. She received all of her points, but did not know why or how as she had not completed the assignment. This also speaks to the importance of clear communication for why and how grades are given.

The other participants did not talk much about the feedback and grading other than mentioning that they felt that the communication between the instructor and the students was good. Shea said that, even though she did not ask many questions, the feedback given in the rubric was clear. She was always able to go back and revise if needed. Susan echoed this sentiment and said that the feedback was always very helpful. She liked the fact that they had the ability to work on assignments again if they messed up and commented that the feedback I gave was great

The promptness of the instructor feedback and grading seemed to make a big impact on the participants. This aspect was not actually something I previously considered, but I did include a guideline in my syllabus that communication would be responded to within 24 hours at the latest. I have always tried to respond more quickly than that if I was able so that students would not be worried about their query. Shea mentioned that I always replied electronically to her quickly, which was a positive thing. Susan appreciated the quality of the feedback and the quick turnaround. She said, “And you gave great feedback and it, you know, I didn't feel like I was waiting months or weeks for feedback. It was pretty like, weekly feedback, which I appreciate as well.” Similarly, Tara compared this course to her past experiences and said,

I mean like most of the time if I had a question you answered that day. It wasn't days later where, you know, oh the assignment's due that night and I still haven't heard from my instructor. Usually within that day, sometimes within the same hour you were answering, giving feedback. You addressed everything. So I really. . . I mean if there was a question it was answered and it was. . . It wasn't a wait and panic, 'Oh my God are they even gonna see this before its due?'

There was some evidence that, despite my efforts to put distance between participation and an external motivator, the effects of the grade requirement still had an impact. However, the grades did not seem to be the sole motivator for participation or even, at times, more than just a necessary part of the activity. The minimum requirement was that students had to respond to two people's posts with quality input (Not simply "I agree"). In order to get an excellent rating, students had to exceed the minimum requirements. Susan said that she was initially confused about this requirement until after the first discussion when she was able to change her responses from two to more than two. This shows me that the requirement was, at least, present in her mind when deciding how much to contribute to the discussions.

Shea said that the course was better than she expected, but was very upfront and said that she was "not a fan of discussions." I think, from listening to her talk, that her past experiences in online courses influenced her contributions. This is addressed in a later section, but the grading and early due date requirements influenced her overall experience in this course. (e.g., original posts were due on Wednesday so that people would have time to respond by Sunday). I asked her what she did not like or would have changed about the course and she thought for a minute then responded,

I'm not a fan of discussion. I'm just not a fan but it was ok. But sometimes I would be really like, 'ok I'm trying to get my words trying to get my 250 + words and try to make substantial responses,' and sometimes I just feel like I didn't have something substantial to say as far as responding to someone. So that's like the only negative to me. But I know that's a requirement for pretty much all online classes so I mean you just expect it, but that's just my personal. It's just not my favorite thing.

I tried find out what it was exactly that she did not like or what she would change and she used words like “forced to have them in by Wednesday.” She elaborated on this and said that this class was different from others in that these were open discussions. Apparently, in her past online courses, everything was due at the end of the week. This included assignments and discussions. She said that she was in the habit of logging in Sunday evening to do her weekly activities that included discussions and all other activities. She said that having two due dates was difficult for her. She would have rather been able to sit down at one time on Sunday evening and complete the entire week's content.

I asked Shea if she felt the requirements were necessary for the discussions. She did not feel that people would make substantial posts if there was not any requirement. She did not feel that the length requirement was too much, and she gave an example of how she generally had to prod her own students for them to give her good feedback when asked. Finally, I asked Shea if there was anything that could have been done to make the discussion activities better, and she said,

hmm I don't know how you can help a discussion activity [laughs]. No, nothing that I can think of. It just is what it is. I mean, like I said, I can honestly say that I enjoyed it better than most of my classes, but like I do feel like I got more out of it even though I'm not going to say I enjoyed them, but I did get something out of them.

Shea was not the only person that seemed to feel at least somewhat constrained by the grades and requirements. For instance, when asked if there was anything she did not like about the discussions, Susan said,

No. I mean there were times where there were discussions that I would get to and I really didn't feel like I had a lot more to respond to or have, you know, any other feedback to someone else's discussion, but I wanted to make sure I went above and beyond to get the expectation for that. So a lot of times I would read them and be like, 'Oh my gosh what am I going to say?' 'Cause, you know, it was easy to find two a lot of times but, sometimes I was sitting there, you know, I had to get that extra. So I mean that really wasn't a dislike, it was just, you know, there were some discussions I could have gone on and on and on about with different classmates and then sometimes it was just like, 'I've gotten two. I really don't have a lot to say about this.' You know? So I felt like I had to kind of, just say, respond to more than two.

However, in her case, it did not seem that this was necessarily a negative aspect. Instead, Susan viewed this as a good way to help get people together. She contrasted this course to her face-to-face classes.

Well I think one thing it was a part of your grade to talk to each other. Because, you know, if you're if in like a, you know, you go to a college class. Ok, unless the teacher says, 'Hey have a discussion.' They're lecturing, you're listening, you're dismissed, and then you leave. You may talk to some people, like I had discussions with my education classmates when I was student teaching, you know, getting ready to student teach, but as far as a regular average class, because I was a history major as well, you walk in, you sit down, you leave. You don't always have class discussions or you don't spend time with people after class. So I think having that discussion aspect as a part of the grade, that's why those developed.

I pressed for more insight into Susan's thought process by asking her if she felt more or less connected in this class than most face-to-face, and she said she felt more connected. I was surprised by this and remarked that her response was very interesting. She said that was what she thought too, and initially thought it strange. Susan said it felt like some of her previous education classes which relied on active learning methods.

There were aspects of the rubric, the requirements, and the grading feedback that were effective, and other times, the requirements seemed that they were not working as well as I had hoped. For instance, the revision opportunities helped people who struggled with the projects tremendously, but did not seem to work so well for discussions. Sometimes Shea and others, who often just made the minimum number of posts, would wait till after the activity was graded and then "revise" their posts to exceed the number and get an "excellent" rating. They obviously received a lower numerical score than someone who was actively engaged in the discussion, but this almost seemed like a way

to exploit the system. The rubrics for this course were also not able to have the words “Excellent,” “Adequate,” and “Less than Adequate” on them because it did not correspond to the grading system in Canvas. I had to make it clear what the point scale meant in accordance to these ratings. This could have had an impact on the distance between participation and the external regulator.

I think, of the three activity mechanics, the scoring mechanic had the least impact on engaged student participation because it was closely tied to the external motivator of grades. I did not feel that those who were actively participating in the AODs were negatively affected by the grading requirements, but treated this aspect of the course as something that was simply part of being in school. The following sections show through the participants’ experiences and the meaning they gave to their experiences that the AODs had a positive influence on their learning and were crucial to reaching the goals of the course.

The manipulation of activity mechanics seemed have a positive influence on the students’ participation as intended and seemed to help encourage higher connectivity, but I also wanted to examine the participants’ actual experiences during the activities. I originally had certain experiential goals for my students during these activities, and I wanted to learn if they, in fact, were being met and what the participants felt about them. The second and third research questions focused specifically on the participants’ experiences and the meaning they gave to those experiences.

Research Questions 2 and 3: The Experiences of the Participants

What are students’ experiences when participating in a course with AOD activities that have been developed according to gameful design methods? What meaning

do they give to their experiences? These were questions that tied directly to the essential component of establishing experience goals in gameful design. The experiences of the participants were what guided the design of the activity mechanics and helped me know if the activities were successful or not. The experiences of the participants were analyzed and grouped into categories that corresponded with the experience goals in the gameful design model discussed in Chapter III.

The theme of a connected learning community who shared resources and knowledge with each other, even though they were diverse and physically separated from each other, echoed throughout the participants' final discussion and interviews. It was this connectedness that seemed to define their experiences and helped me see the value that they attributed to the AOD activities in this course. The participants each said that they were thinking the course would be much different than it actually was, but that it was better than they expected. I tried to dig into why they felt this way, and the idea that they felt connected to their classmates to share and to learn together was something they all said. Susan said that she really enjoyed the course and the discussions, and when I asked her more about that, she said, "you felt that you had your own little community." I wanted to learn more about what they felt this community provided to them and about the personal connections they made during these activities

Experience Goal: Personal Connections

Even though participants were separated by distance, by disciplines, by age, and by experiences, they were able to make meaningful connections with each other. Angela commented in regards to this,

I learned about new resources from others and ideas that others have on different issues. Most students of this class have had the same problems as I have. I am glad to know we are face the same problems as educators, and we are still staying strong and continue to learn how to keep up with the times and our student's attention.

These connections not only helped Angela feel confident in the class, but she found herself thinking about the discussions even when there was nothing due. She told me during her interview that,

I was always excited and couldn't wait for the next week of what was going to be next... [she paused] with the technology course there was so much interaction I just really enjoyed it. I was always happy and excited. On the computer every night just to see what someone has written new on their post or to see if someone has written on my post. I [she laughed] was checking the computer every night, even though it may not have been due or, you know, on a certain date, but I was always checking it every night. Just to read what someone else had put.

She was hesitant at the beginning of the course until the discussions “really started flowing. By the end,” she said, “I could say anything or they could say anything to me.”

Tara and some other students developed connections in the course that led to them meeting in other mediums so they could continue the conversation and collaborate. She said that she was contacted by some of the other students to brainstorm outside the course. She said that these conversations and connections led them to become Facebook friends and share resources and information beyond what was in the course. Their initial interest was built around a particular discussion, but Tara said that they communicated

many times, and some nights those chats would have filled up the discussion board. She talked about how the connectedness in this class compared to others that she has had in the past,

Well, I haven't had that before. [connectedness to classmates] Other online classes it was even if we had like a. . . [hesitated] Like, I had another class where we had a time at 7:30 we were supposed to meet and have a discussion. It was very cut and dry. There was not. . . there was no digging into conversations. Digging in to the content. Really expressing. This class it was totally opposite. Everybody talked. Everybody discussed. Everybody gave feedback. I felt like there was collaboration between everybody. And I've not experienced a class at all that's done that.

Susan continued this thought by talking about how everyone was connected and had a positive relationship with each other. She said,

like somebody's link wouldn't work, 'Hey your link doesn't work. You may want to check that out.' And so I felt like it was a nice supportive community. I never felt like somebody was rude or anything like that, not that they would be, but I felt like it was uplifting and was nice having that group together who was going through the same thing.

Shea did not always post as often or as early as some of the other participants, thus she was not always involved in some of the most active discussions. However, she generally had a larger word count and wrote in more of an essay format than some of the other students. It seemed to me that she approached this class in a similar way as some of

her previous online classes. Once again, I think her participation level in this course had much to do with her previous experiences.

Some of Shea's past online courses have blocked students from seeing others' posts before an original post was made. Perhaps this was done so that students could not plagiarize, but I think this practice had a negative impact on Shea's experience in this course. She said that she "tried not to make it a habit of reading other peoples' posts or looking at what they did prior to doing mine because I didn't want that to kinda influence what I said or what I did." Though she admitted that the ability to get help from others could have been beneficial to people who did not understand anything about a project, she said that she was in the habit of posting without looking at other peoples' posts. She also made remarks about the requirements, as discussed in a previous section, like being "forced" to have her original posts in by Wednesday, constantly thinking about the number of words required, writing more per post just to be sure to get the minimum requirements, etc. This helped me understand her mindset behind why she contributed the way she did and showed me that the scoring mechanic, at least for her, did not achieve the participant experience goal I had intended.

I was encouraged, however, when I asked Shea if she felt connected to the other classmates in this course. She told me that she felt more connected in this class than previous online courses. Shea said that, even though she did not enjoy this requirement, the connectedness was probably because they were required to have their original posts done by Wednesday. This requirement allowed her classmates to have time to make meaningful replies to her posts. She seemed almost surprised that people took the time to

respond to her posts and her questions. When I asked her how this class compared to the other courses she was referring to, she said,

People actually did make an effort to respond and I think. It was because of you kind of saying, okay we're in this together let's use the open forum, let's give each other feedback and I think it was more the environment that you kind of setup that was the reason why. It could have been the individuals, but it felt like it was more the environment of how things were set up.

Shea touched on both of the important factors in the gameful design of AOD activities even if she did not realize it. The purposeful design and implementation decisions that made way for the AOD activities and participants who were willing to make personal connections and share with each other helped create a connected learning community. I wanted to understand if these personal connections, formed in this course, could compare to the social interactions that the participants have on other online social tools such as Facebook and Instagram. The participants told me that they were very different types of relationships with the different kinds of tools. Two participants told me that, in a certain sense, they felt more connected to their classmates in the AOD activities than they do on social media. Angela said,

Well, I felt like. . . I don't know. I was talking in a discussion to these people and I know that everybody else can see it but it's not. . . I don't know. I feel like it was more personal even though everybody else in the classroom could see it, but I felt like maybe because we are all relating to the same thing. But if I put it out on Facebook, you know I'm working on my master's degree and I've had to do this or do that I felt like, well I don't feel like I can connect with everybody on Facebook.

Cause they have no idea what I'm going through. You know my own family have no idea what I'm going through unless you've been a teacher unless you've been there. And I feel like the people in the discussion, they have been there and they know exactly what we're all going through. So I felt more of a personal relationship with them than I would on Facebook.

Asking others about this interaction revealed similar answers. Susan said that the discussions were more “in-depth” than interactions on social media. She described her interactions on social media as moving quickly through content, occasionally giving something a “like,” maybe sharing something that someone has said, etc. She contrasted that to the interactions in the course by saying, “. . . social media, it’s almost like you're hiding behind your screen but your discussions, they were in-depth. You actually got to talk things out.” Another aspect that all the participants mentioned was how the diversity of the community brought value to the discussions. In fact, Susan was the first to mention the diversity of the learning community in her final post. She said,

I can honestly say I am not ready for this class to end! I have enjoyed discussing topics, projects, and educational theories with my classmates. I feel like it is easy, as educators, to discuss these topics with the teachers at our own schools and rarely branch out to teachers in other districts. Through this course I was able to discuss a multitude of topics with a diverse group of teachers from all over the state.

Shea mentioned that it was the diversity of the community that took the class “to another level.” She said, “We all bring so many ideas and previous experiences to the group. I was [not] afraid to ask questions, and I loved how others took the time to

actually respond.” Susan agreed with this and said it was the diversity that made the class unique. I was able to dig into the subject of a connected learning community during our one-on-one interviews at the end of the course, and she enthusiastically summed up the idea of a diverse, yet connected learning community when she said,

Well I think one thing was that you felt that you had your own little community even though you haven't even "met" face-to-face with any of these people. And it was such a diverse group of teachers. It wasn't like you know when you go to PLC meetings, you're with the same people all the time and you don't get to experience new teachers from other schools and what they're experiencing. And usually it's just your small little learning community so I did appreciate it was so many different teachers from so many different grade levels and backgrounds.

That was neat to me.

The connection that the students shared with each other could not be contrived by an instructor or forced by a grade. These were connections that a diverse group of people made with each other as they were faced with similar circumstances and challenges. They came together as a learning community to share resources and ideas. Even those who would not have preferred AODs were connected with their classmates in a meaningful way. These meaningful discussions were one aspect of the students' experiences that gave value to the course.

Experience Goal: Meaningful Discussion

Meaningful discussions were another goal for participants in AOD activities for this course. The idea of a discussion being meaningful is in contrast to the repetitive, regurgitation assignments that AODs are often used for. The purpose in this course was

for students to connect with, learn from, and rely on each other to create a supportive and challenging learning community. Often these discussions were about sharing resources with each other. Other times these discussions dove into personal situations and scenarios. Still other discussions were encouraging and commiserating with fellow classmates about a project in the class. These meaningful moments were what made the difference for the participants. Tara summed this up when I asked her to expound on her review of the course and whether the course could have been as successful without the AODs. She said,

No not at all. Being able to discuss and talk back and forth and actually write down what you learned or what you were doing or what you were going to do. I think that made the biggest difference in the course. I mean I've never been in a class where we had discussions like that. I mean the classes that would have discussion boards, they were strictly on the content and there wasn't . . . (hesitated) you didn't have that freedom to say "Hey I didn't like this." "Hey this didn't work". It was just here's my lesson and here's this. It was not this! The discussion board that you have I think gave everybody the freedom to kind of really express what was going on, or what they felt, what they did.

This kind of interaction was the product of the participants' willingness to invest in the discussions. They were able to see the value of the AOD activities instead of simply seeing them as a means to get a grade in the course. They were able to participate, for the most part, in the discussions for the sake of the discussions and not just for the grade. They were able to share knowledge with each other, and the social knowledge construction process became a primary information source in the class.

Experience Goal: Social Knowledge Construction

Social knowledge construction reflects the idea that students can reach higher levels of learning by working together while guided by an expert and is the foundational principle by which our AODs were developed (Rovai, 2007). Students shared information and resources with each other, helped each other solve problems, helped each other see new points-of-view, and expanded what was learned in the course beyond the materials provided to a level that I could not have hoped. Tara explained that her classmates sometimes said or mentioned something that completely changed the way she thought about a subject. She said,

It may just be like one sentence would be in their reflection or their discussion that it was like a lightbulb, like, ‘Oh, my gosh, why have I not tried that?’ ‘I didn’t think of that.’ or ‘I’m going to use that.’ And it was just those little pieces of their discussion or reflection that, you know, sometimes would completely change what I was going to do or how I was going to do, you know, next year. I’m doing it that way ‘cause it never crossed my mind until they mentioned it.

Often these instances of social knowledge construction took my original intent for the materials and instructional videos to a much higher level. Tara’s “lightbulb” moment, in this instance, was given at just the right time by someone who was personally connected to her and going through a similar life circumstance. The content and the discussions became more than resources given by an instructor to a student in a class. The content was real and relevant and applicable to Tara’s daily life as a teacher. She said that, in the beginning, she was afraid that the discussions were going to take a long time and be boring, but as the class progressed, she did not feel that she was doing things

because they were required. Tara was contributing to the discussions because she was learning from her colleagues.

Shea described how the project discussions were a way to document her learning processes as well as learn from others. She explained that sometimes the technology projects were easier than she thought they would be and people commented on these reflections that they learned something from her. Other times, as she described, the problems were more difficult than she had expected and she learned from others in the class. Shea looked at how they overcame obstacles and what they tried that she did not consider. She was able to try again with this new knowledge to overcome the problems that she was having.

I asked Angela how her overall experience was in the course, and the first thing she mentioned was, “I really enjoyed the course. It was not what I expected. I was nervous at first. I really learned a lot. Not just from the course, but from the others that were in the class also.” I asked her to explain what this meant to her and she echoed the same thing Shea said about extending her understanding of the projects. Angela commented,

I really liked the discussions on the activities we did and sharing the activities.

Being able to look at other peoples' work. I would say that that was the favorite of mine. To look and see what everybody else's maybe, like their frustrations were, what problems they had, or if I could help, or to see. Now maybe I had the same problem and someone else had the solution to help.

She also said that it helped give her a broader understanding of what other teachers in other districts were facing. Angela expanded by saying,

The sharing was just a big thing with me. Being able to share our thoughts and what we thought what would work, what didn't work. I knew one discussion, I don't remember which one it was, but we talked about the actual technology that everyone had in their classrooms or what they were able to do as far as computers or cell phones. That was very interesting to find out what everybody had in their schools or didn't have. And some have cell phones. Our students can't bring any electronics to schools and we don't have the little laptop carts and we just don't have all that in ours so it was interesting in our discussions to find out what everybody else was facing as far as technology.

Angela said that the discussions with her classmates,

added information and resources that, you know, we could use or that, if it wasn't a resource that we couldn't use for our subject, we could share it with others. Like co-workers that we work with. Cause I've shared some stuff with the language arts teachers I work with.

One of the first items that each of the participants labeled as a valuable aspect of the course, if not the most valuable, was opportunities they had been given to share resources. Angela said in her last discussion,

Sharing has helped me a lot to be able to see what everyone else was doing and to be able to share what we thought about our assignments and each other's. I have never been good at technology and have learned so much from this class and from everyone in the class from sharing what they know and all the resources. I am very thankful for all the helpful information that was shared from all the students of this class.

She went on to say, “I learned about new resources from others and ideas that others have on different issues,” and “I know with all the resources we have shared with the class with be the most valuable and beneficial things to our own learning.” Shea was the first person to respond,

[Shea responded to Angela] I agree Angela. In most classes you create something and submit it to the teacher. I loved the fact that we got to see each other’s finished products. When I would look at others work, I would think about how I could do mine different when I use it in my classroom. I appreciate all the feedback and information shared with me over this course.

The value that Shea attributed to this aspect of the assignments, even though she did not generally care for AOD activities, was quite surprising to me. Tara’s original post in the final discussion said,

One of the most valuable things we have done is share resources. I have learned so much just from reading and using the resources my classmates have shared. The discussions were extremely valuable. Not only did they allow me to see others resources, but many times the information each shared about a [sic] resources was helpful.

It seemed that the opportunity to learn from each other and share resources had become an integral part of the course to many of the participants. Susan felt the same way in her post:

I think the most valuable aspect of this class has been sharing with my classmates. It is easy to walk into my classroom every day close the door and never hear feedback from anyone but a classroom full of 12-year olds. This course allowed

me to receive positive feedback from other educators who were willing to help me grow in my profession.

In fact, this idea of sharing resources had enabled the students not only to think about their own situations, but even began to think about how they could change their teaching methods (and even possibly improve upon my own). Tara enthusiastically replied,

You are so right about being able to share with teachers outside your school. We rarely get to do this and honestly I didn't realize what I was missing. The ability to share outside your school with a community of teacher [sic] who have "been there" and "done that" was more valuable than any PLC I have sat through. I wish there was a site that expanded these types of discussions for small teacher communities. I know Diigo allows us to capture resources but it does not allow for discussions, advice, questioning, and sharing. Maybe our teacher should consider something like this.

This theme continued throughout the discussion. Shea made her original post later in the week and wrote that discussions were beneficial. She said,

I feel that the discussion assignments in this course were also beneficial. I learned a lot from my classmates, and I appreciate all the information and resources they shared. We all come from different backgrounds and came to the class with varying prior knowledge. So it was great that we had the opportunity to use our individual previous experiences to create new things and share our knowledge with each other.

I was surprised that the activities in the course and the knowledge shared did not just affect people involved in the discussions, but others outside the course as well. These

types of interactions with each other and the ability to share with people happened through the personal connections mentioned earlier and through meaningful discussions. These discussions and sharing of resources gave students the opportunity to re-evaluate and examine their own methods of teaching, the way they approached technology in their classrooms, and how they thought about many of the issues discussed.

Experience Goal: Critical Thinking

Critical thinking and higher order learning processes follow in the same vein as social constructivism. Discussed at length in Chapter II, social knowledge construction helped people achieve higher levels of learning than if they were to try to learn materials on their own (Vygotsky, 1978). The previous section concerning social knowledge construction showed how the participants extended their knowledge of the course topics and other resources when they were involved in the discussions. Critical thinking was demonstrated when the participants took what was shared in the discussions and then applied new understanding or negotiated the meaning of that information with someone in the discussion board to build new knowledge within the learning community (Gunawardena et al., 1997).

Many of the participants' experiences that dealt with personal connections, meaningful discussions, and social knowledge construction also touched on this idea of thinking critically. For instance, Susan said that the discussions made her think more about herself and about what she was doing in her classroom. She mentioned specifically the discussion about creativity and ADHD. She said this discussion caused her to start to "think outside the box" when dealing with her students with this condition so much that

she said, “I went into class the next day and I was like, ‘Ohh yeah! It is different.’ And I tried to change some things.”

Many of the ideas and resources shared in that discussion gave the opportunity for knowledge to be constructed socially. Susan began to think about her own classroom and even her beliefs as a teacher. This showed how she was engaged in metacognition and a much deeper level learning. In fact, Susan mentioned multiple times in the post-course interview that the discussions in this course were much more than memorization and regurgitation. She said,

Previous online courses . . . [Thought for a second] We had no discussion it was more, oh gosh what was it? Spanish 2 so it was basically read this out of the online textbook. Ok take this quiz. There was no discussion. There was nothing that I could . . . it was basically you know like memorization. That’s what all I was doing, but this course I felt like, being online I was able to implement what I learned. And use what I’ve learned as opposed to, you know, forgetting what you learned in Spanish in college. [Participant laughed].

In another place she mentioned the ADHD and creativity discussion and being able to think about how she was treating students in her course. Susan expanded by saying,

I enjoyed, like you know, discussions like that because it wasn't necessarily about Technology, but it makes you think because I do teach several students ADD/ADHD. Makes you think outside the box for them as well and how I was treating them. Like, oh you know, you try to treat them the same but what about the creativity? So that gave me a different aspect to think about especially and I

went into class the next day and I was like, ‘ohh yeah it is different.’ And I tried to change some things so that was definitely helpful.

The other participants mentioned similar things throughout their experiences that we have already discussed. Angela’s researching and sharing of new technologies with her co-workers, Tara’s collaboration group outside of the course where they bounced ideas off of each other to use in their classrooms, and Shea adding new ideas and new technologies to her tech toolbox are examples of higher order thinking. Critical thinking and the application of knowledge in addition to the learning of new things and concepts filled the discussions week-to-week in ways that I could not have planned or caused alone.

The manipulation of activity mechanics in order to achieve targeted experience goals in a way that encouraged self-determined participation by the students was part of the gameful design process (Deterding, 2014). Students were engaged, connected, and involved in the social knowledge construction process seemingly due to the methods of design and implementation of the AOD activities. The question of whether or not the gameful design methods work, though beginning to come together, is addressed in the next section concerning the final research question.

Research Question 4: Are Gameful Design Methods Effective for AODs?

The final section concludes with a general, yet important question. Based on students’ experiences, how well do gameful design methods apply to the development of AOD activities? The previous sections went into detail about each of the AOD participant goals, the experiences of the students, and the meaning they gave to those experiences. Based on the participants’ experiences, I could surmise that the experience goals were

successful for the four participants in this study. The primary functions and benefits reported for AOD activities should be considered in order to answer how well gameful design was applicable to these AOD activities.

According to the research presented in Chapter II, one of the primary functions was to encourage social knowledge construction among those involved (Rovai, 2007). I believe, when considering the experiences of the participants, the AODs were successful in encouraging social knowledge construction through the sharing of resources and information that supplemented and extended the course materials. Also, the AODs addressed one of the largest concerns of online education. Social isolation and “being alone” in online classes has always been something that has driven students away (Xie & Ke, 2011). Through the personal connections explained above, even Shea, who was not as active as Angela, Tara and Susan, said she felt somewhat connected to her classmates.

Were the discussions meaningful enough that the participants wanted to contribute on their own accord? These AOD activities were successful to an extent in that there were some who continued the discussions outside of the course and into the ungraded open forum. Other participants, such as Shea, had a harder time separating their contribution from the course requirements possibly due to past online experiences. She too expressed that there were times she connected with her classmates and had meaningful conversations with them.

Were the participants given opportunities to think critically about the materials in the course and the topics brought up in the AODs? According to the students’ accounts throughout their experiences in the sharing of resources and information, social knowledge construction, and application of the topic of discussion I surmise that they

were successful. Considering the experiences of these participants lead me to believe that a combination of my personal teaching style, interesting course content, and the application of the student-centered gameful design approach helped make the course enjoyable, exceeded student expectations, and ultimately led to a rich, socially-connected learning experience.

Summary

The primary goal of this instrumental case study was to develop a greater understanding of the applicability of gameful design methods on the development of AOD activities based upon the experiences of students. This study offered insight into the development and implementation processes of gameful design methods that were used and reinforced the research on AODs, social knowledge construction, and self-determination theory. Also, this study highlighted the need for well-designed, student-centered online courses that value social interactions and have clear lines of communication between the instructor and the students.

Examining AOD design and development highlighted a number of pedagogical best practices sometimes overlooked in the development of online learning experiences. AODs fulfilled the need for social connection, as well as provided a way for students to share information in social knowledge construction scenarios. Students' learning was extended through the use of these AOD activities by helping them reflect on their writings and also share real-world problems and solutions with like-minded peers. Almost inadvertently, this study reinforced the value of clear instructor communication in online courses. The students all expressed how well the course was organized, how clear the instructions were, and how I was always responsive to questions. Videos, private

messages announcements, posts in an ungraded forum, and assignment feedback were all used to keep clear lines of communication open.

Finally, this study reiterated the importance of encouraging self-determined behavior among students. The students enjoyed the activities and discussions and participated willingly, which is not often the case with AOD activities. Design and implementation decisions for these activities, which were based on gameful design practices, helped encourage the desired type of behavior by reinforcing feelings of competence, relatedness, and autonomy among the students.

A possible limitation to this study was that the current course was a relatively small class, and I was able to spend more time devoted to observation and iteration in this one class than instructors who have larger class sizes and/or many other courses to teach at the same time. Nevertheless, many of the principles discussed can easily be implemented into the design of other activities and courses. These include video communication, responding promptly to correspondences, and designing the course to reduce initial anxiety. Student-centered design of online courses helps increase levels of competence and autonomy that leads to self-determined behaviors. Data triangulation showed how the students' experiences in these discussions led to deeper learning, social knowledge construction, and an engaged learning community. This was true for those most active in the course and, to an extent, for those who were content to do only what was needed to fulfill a grade requirement.

Discussion about the study is explored in the following chapter. Results are summarized according to the research questions, as well as providing a brief overview of the study's procedures and data collection. Recommendations for those practicing in the

field are offered to help provide strategies for proper implementation of AODs.

Suggestions for future research are given to offer ideas to expand this study into other areas.

CHAPTER V – DISCUSSION AND RECOMMENDATIONS

The final chapter of this study is a summarization of the current study and the implications that can be gathered from the findings. I will give a brief overview of the current study first. Next, I will expound upon the implications of using gameful design to develop AOD activities and the general use of gameful design as an instructional design method. This section expands some potential benefits and problems for using this design method. Following are recommendations for the use of gameful design methods and AODs in online education for those practicing in the field. Suggestions for possible research opportunities are provided, and a summary of personal implications from this study brings this chapter to a close.

Overview of Gameful Design and AODs

This study looked at Asynchronous Online Discussions (AOD) as communication tools that were used to provide a social element to an online learning environments (Vonderwell et al., 2007). The AOD activities were used to promote higher order thinking and personal reflection as well as social interaction opportunities (Vonderwell & Boboc, 2013). The AODs in this study were designed to be venues where multiple perspectives could be shared, ideas could be exchanged, presumptions challenged, and knowledge socially constructed among the students (Küçük et al., 2010).

AOD activities have become an important part of online learning environments because of their ability to promote higher-order thinking, deep learning, and meaningful social connections (Xie & Ke, 2011). Online learning is often criticized for not providing these benefits for students, but well-designed AOD activities can help meet these needs. These benefits are not automatically achieved by simply putting these activities in a

course, but AODs must be designed in a manner consistent with social constructivism and students must participate in a high-quality manner for the activities to be effective (Hew et al., 2009). The lack of quality participation, however, is a widespread problem in AOD research. Often, the lack of participation can be attributed to a lack of participant motivation (Xie & Ke, 2011).

Previous research showed that AODs must be well-designed (Ke & Xie, 2009) and developed from the principles of social constructivism (Dennen, 2008) to be effective. Also, learners were required to participate and be actively engaged in order to achieve the maximum benefit from this tool (Hew et al., 2010). Furthermore, the “quantity” of participation had not been shown to guarantee the effectiveness of the tool, but participants had to invest effort in the activity through high-quality participation (Xie & Ke, 2011). Participation (or the lack thereof) in AODs had been shown to be directly related to participant motivation (Hew et al., 2010).

This need for participant motivation was the crux of this study and led me to research motivational design methods. One method in particular, Gameful design (Deterding, 2014), was suggested as a possible way to support motivation and target specific participant experiences with the hopes of increasing participation. Gameful design methods were based on Deci and Ryan’s (1985) Self-Determination Theory (SDT) and relied on development strategies commonly used by video game designers (Deterding, 2014) such as playcentric design (Fullerton et al., 2008) and the Mechanics, Dynamics, Aesthetics (MDA) model for game design (Hunicke et al., 2004). All of these strategies were discussed extensively in Chapter II of this study. The goal for using gameful design in this study was to systematically target participant experiences during

the design phase of activity development and to support the psychological needs required for self-determined motivation during the implementation phase in order to increase participation, engagement, and enjoyment of the activity (Deterding, 2014). This was done by making a model for the development of AOD activities according to gameful design that targeted specific AOD activity mechanics that could be manipulated to encourage specific participant experiences.

Review of the Current Study

The purpose of this study was to investigate how gameful design methods influenced student participation, motivation, and learning outcomes in AOD activities. The primary aim was to explore the possible application of gameful design methods for AOD activity development. Student experiences were observed as they interacted with each other in AOD activities developed according to gameful design methods. Through qualitative interviews, observations, and documentation, I was able to witness the successes of this implementation as well as the challenges that emerged.

This study applied gameful design methods to the development and execution of educational AOD activities in a fully-online graduate level course. The AOD activities were carefully designed to support self-determined participation in hopes that students would reap the benefits that AODs have to offer. This study was needed for a number of reasons. First, the widespread problem of low-quality participation in AOD activities pointed to the need for more effective design methods (Hew et al., 2010). Next, the inferences gathered from this study could make an important contribution to the growing body of research surrounding the use of gameful design methods in education. Also, this project could help researchers consider some of the benefits and problems that gameful

design has for use as an instructional design method. Finally, this study could be beneficial for online instructors who want to create social constructivist learning environments for online instructors who wish to increase participation in activities by supporting intrinsic motivation. The experiences of the students and the instructor could be valuable to others by giving insight into the challenges and strengths of implementing such a design.

The study relied upon an instrumental case study design to guide the implementation of the study, analysis of the data, and interpretation of the findings. This research followed a group of four graduate students as they interacted with each other and experienced the AOD activities that were based on gameful design methods within a single course. Studying participants' experiences uncovered knowledge about AOD activities that were based on gameful design methods. An instrumental case study approach was appropriate for exploring and understanding their experiences to gain insight into the applicability of this design method for use in AOD activity development.

The following section explores the implications of the study and findings based on the following research questions.

1. How do AOD activities, which have been developed according to gameful design methods, influence student participation and learning in an online environment?
2. What are students' experiences when participating in a course with AOD activities that have been developed according to gameful design methods?
3. What meaning do they give to their experiences?

4. Based on students' experiences, how well do gameful design methods apply to the development of AOD activities?

Overview of Findings

AODs are tools that, when designed and implemented successfully, can have a positive impact on students. The participants' experiences and their answers during the interviews seemed to indicate that the execution of these activities was successful. The data in this study revealed two major implications about AOD activities that were developed according to gameful design methods. These were activities that facilitated a connected learning community and activities that facilitated social knowledge construction. The findings of the study are summarized in the next few sections and then followed by a discussion of the implications.

AODs that Facilitate a Connected Learning Community

Past research has suggested that AODs could help users connect in online courses by giving them opportunities to interact with each other through real and meaningful discourse (Xie & Ke, 2011). Research has also suggested that AODs can reduce feelings of isolation by providing avenues for increased communication between students. This connection can increase the likelihood of engaged participation and completed coursework, as well as the creation of supportive learning communities (Palmer et al., 2008).

This study showed that AODs, developed according to gameful methods, brought participants together and helped them form meaningful connections with each other. The participants in this study were a diverse group from different backgrounds, but they were able to connect and learn in an environment not generally associated with rich social

connections (Xie & Ke, 2011). These connections were instrumental in the overall morale and enthusiasm for the course. Almost every participant told me how much she loved the course and that the excitement was due, at least in part, to the discussion community. The community also helped bring confidence to the students by providing a safe and supportive place to work. The participants reported that they were able to collaborate with each other to work through problems. Some participants established deeper relationships that went outside the course and may very well be ongoing even though the course has been completed.

Even the one participant who was not as active, engaged, or enthusiastic as others stated she felt more connected to her classmates in this course than in her previous online classes. The participants reported, as if to further highlight their connectedness, that the AOD activities elicited deeper and more meaningful interactions than social media. Participants reported that they were able to have more genuine conversations with their like-minded classmates who helped and supported them in the class discussions, whereas in social media they could not relate professionally to many people.

AODs that Facilitate Social Knowledge Construction

Social connections were not the only positive experience that the participants had during the study. Socializing in an online environment would not have been as beneficial without some academic benefit. Collaborative engagement among learners is a key component for the success of distance education and is rooted in social constructivism (Rovai, 2007). This theory is based on the belief that people learn best when they work together and hinges on the principle known as the zone of proximal development (ZPD) (Vygotsky, 1978). AODs have been found to be natural venues for learners to participate

in social knowledge construction because the opportunity naturally exists for students to interact with others. Arguments, opinions, and ideas can all be experienced by engaging in meaningful discussion without the constraints of physical location or time of day (Hewitt, 2005; Putman et al., 2012).

The participants in this study used the AOD activities often to share knowledge and resources that supported and extended the topics and projects in the discussions. Participants shared experiences, resources, technology tools, implementation ideas, and advice with each other in nearly every discussion. The participants benefited from the knowledge gained in the discussions as much, if not more in some cases, as they did from the regular course material. One participant went as far to say that, even though her overall experience was exceptional, the course would not have been as successful without the AOD component.

In addition to sharing resources and information, the impact that the AODs had on the participants' own learning processes was an important implication of this study. A key part of the social knowledge construction process is meaning negotiation and critical thinking (Gunawardena et al., 1997). Social constructivism research has stated that through this process, with the aid of a content expert (i.e., an instructor), learners help each other surpass their actual level of development to achieve greater knowledge construction, deeper understanding of course material, and more meaningful engagement during learning experiences that would not otherwise be possible (Cheung & Hew, 2004). Such learning experiences have been found to help promote naturally occurring knowledge construction processes and encourage higher-order learning as well as critical-

thinking skills (Ertmer et al., 2007; Hew et al., 2010; Lee, 2013; Putman et al., 2012; Xie et al., 2006).

Participants in this study told of experiences they had in the AOD activities that caused them to think critically about their own teaching and learning methods. They took the knowledge gained from these discussions as well as the experiences of others and applied them to their previous understanding to create new knowledge and meaning. They described to me many new ways they learned to approach technology because of statements their classmates made during the discussions. They also told me multiple times that they planned to take those new ideas and disseminate the information to their schools and districts.

Discussion and Implications

Findings from this study suggested that there could be potential for the application of gameful design methods and model used in this course in a broader sense as an instructional design strategy. Before this study, little to no research on the application of gameful design methods to educational instructional design had been performed. This study revealed that an intentional student-centered approach, such as gameful design, had great potential in achieving student participation goals. Activities developed according to gameful design methods fundamentally support autonomy, competence, and relatedness so that intrinsic motivation was not undermined, and self-determined participation was encouraged (Deci & Ryan, 1985; Deterding, 2014).

As explained in Chapter II, participant experience goals needed to be identified first to guide the development process. This was followed by the identification of activity mechanics. Then, as the course instructor, I manipulated the activity mechanics to

encourage participants to have specific experiences. In the instance of this study, the experience goals were (a) connectedness with classmates through shared interests, (b) social knowledge construction, (c) enjoyment of meaningful discussions, and d) critical thinking. Based on prior research, I wanted the participants to have these experiences (Hew et al., 2010). According to gameful design methods, I then had to identify the mechanics of the activity that I could manipulate in order to help encourage those experiences. The activity mechanics for AOD activities were (a) participant interactions requirements, (b) scoring and instructor feedback, and (c) challenging and interesting discussion topics (Hew et al., 2010; Ke & Xie, 2009; Niemiec & Ryan, 2009). I was then able to develop the AOD activities and the course based on research and past experiences to create an environment that I felt encouraged self-determined participation.

Finally, the activity was “play-tested” with actual participants to see if the experience goals were met (Fullerton et al., 2008). Through observation and “tweaks” to the activity mechanics, the activity was refined until the actual experiences of the participants were close to the goals mentioned earlier. The participants were placed in an activity to observe how they reacted and what real experiences they had. I observed real participants interacting with the activity during this phase to see if experience goals matched up to real participant experiences. Playtesting can occur during pilot tests or in a live classroom as long as the activity designer is carefully observing the students’ experiences.

My past experiences and designs helped influence the direction the development took building up to this study. The design of these activities was influenced significantly by SDT and gameful design methods research. This helped refine the AOD activities to a

place where I felt comfortable that only minor tweaks would need to be made during this study as discussed in Chapter IV. I was correct in the assumption that tweaks to the mechanics were necessary during the course. I learned details specifically about this group and their needs and was able to make adjustments to the activity mechanics to give them a better experience.

An activity based on gameful design methods is centrally focused on the experiences of students and places participant motivation at the very core of every development decision (Deterding, 2014). Systematic and purposeful prototype iterations are made throughout the entirety of the course to ensure these target experiences are reached, and participants are given the opportunity to use the activity to its fullest potential. The following sections explore implications of the study by considering potential benefits and possible problems of gameful design for the development of AOD activities.

Potential Benefits

This study revealed, through experiences of the participants, that the student-centered approach to the design and development of this activity was highly effective. The use of such an approach to the development of course materials, instructor videos, activity instructions, and implementation decisions ensured that the students were faced with very few obstacles before they could take part in the activities. They all reported that the course organization, instructor communication, and the clarity of expectations were very well done and much appreciated. This finding supported previous research that emphasized the importance of well-designed AOD activities in increasing student

participation (Chan et al., 2009; Xie et al., 2006). Each of these potential benefits are covered in the following sub-sections.

Selecting Desired Experience Goals. The successes in this course could be due to my own teaching style and course content, but students seemed to identify the environment, the course organization, and other aspects of the class that were purposefully targeted by the gameful design methods. The activity mechanics, which will be discussed in a later section, were identified as being directly related to the experiences I wanted my students to have based on past AOD research. Determining causality was not in the scope of this study; rather, I was interested in the experiences the students had during these activities and the meaning they gave to those experiences. The experience goals were listed earlier, but the identification of these experiences helped keep the design of every activity and course mechanic focused on achieving their purpose. This helped create an intentional design that could be backed by research to explain why the mechanics were implemented in the way they were and remain focused on the experience as well as the needs of the students.

This study helped me understand the importance of placing student experiences first and foremost in all of my decisions as an instructor and course developer. Knowing what I wanted my students to experience helped me learn what direction I needed to take during the selection of tools and overall development of the course. I saw first-hand how developing activities with the needs of students as the primary goal positively impacted their experiences and realized how powerful this aspect of gameful design truly was. The focus on encouraging students toward experience goals benefited the design of the course and the students who were in it just as the research suggested (Deterding, 2013; Fullerton

et al., 2008). The next beneficial implication was the value in identifying and manipulating activity mechanics.

Identification of Activity Mechanics. Successfully identifying activity mechanics and then implementing them for the purpose of achieving the student experience goals proved to be an effective practice during this study. The manner in which activity mechanics were implemented was as important as choosing them and showed that this must be based on sound research.

The AOD mechanics, listed above, were identified by previous research as being developed poorly or needing improvement. The positive course organization and communication was due to the manipulation of the participant interaction mechanic, and the students were not confused or anxious about course procedures. The focus on the challenges mechanic ensured that discussion topics were relevant, open to interpretation, broad, and increasingly difficult (open to conflict) as the course progressed. The students shared knowledge and resources, thought critically, had meaningful connections, and felt the class was relevant to their personal situations. Finally, adjusting the activities based on the scoring mechanic ensured that the grading rubric was focused on encouraging self-determined behaviors. The students felt the value of the AODs was in the activity and not the grade they received. As mentioned earlier, students expressed great satisfaction with the way the course was implemented and the activities were carried out.

Findings of this study showed that the knowledge gained by identifying experience goals and then manipulating activity mechanics based on those experience goals streamlined activity development and gave a reason for every design decision. There was very little ambiguity about the direction the course design would take during

development because everything was based on meeting those experience goals and giving participants the best experience possible. By focusing on the activity mechanics for the purpose of achieving the experience goals, my designs were clear, focused, and based on prior AOD research. The MDA model (Hunicke et al., 2004), which was discussed in Chapter II and was the guide for focusing on activity mechanics, helped me understand clearly how this method is effective in game development and how this can be used in other areas with gameful design methods (Deterding, 2014). Next, the study showed that iterative playtesting was important to customize the activity to meet the needs of the particular class.

Iterative Playtesting. Iterative playtesting is not a new concept, but one that was pivotal in the successful achievement of reaching participant experience goals. This is the idea of testing an activity design and then, based on observations, judging whether the activity is successful and how it needs to be tweaked for the next iteration (Fullerton et al., 2008). This concept can be seen as the “Evaluate” phase of the ADDIE instructional design model (Q. Wang, 2009). Other instructional design methods have similar phases, but the difference is that gameful design is based on self-determination and is inherently a student (participant) centered design method.

This study showed that changes to activity mechanics can be made as major or minor adjustments. Major changes are often more feasible between iterations of courses when preparing for the next term. Minor tweaks are made during the course to meet the needs of the student population at hand. The minor tweaks and constant observation required me to be actively engaged and to keep a pulse on the class. The iterations of the activity design can and should become updated during and after the course. This phase in

other instructional design models, such as ADDIE (Q. Wang, 2009), requires the designer to look back and reflect upon the observations made. Gameful design is no different in that observations are made about the real experiences participants had during the activities and tweaks are made to the mechanics in hopes that future iterations will be closer to desired experiences (Deterding, 2014).

Self-Determined Participation. While not a phase of gameful design, the focus on self-determined, intrinsically motivated behaviors is a benefit for activity design. Research has shown that behaviors that are the result of intrinsic motivation, especially in education, result in higher quality learning, greater levels of participation, longer task persistence, and enhanced creativity (Cerasoli & Ford, 2014; Cerasoli et al., 2014; Cordova & Lepper, 1996; Xie & Ke, 2011).

Findings of this study reinforced research showing that the method of development encouraged self-determined behaviors, especially in those participants who were the most active. Even though all participants were apparently not intrinsically motivated to participate, all students were able to benefit from the discussions and methods by which the course was laid out. The study also revealed potential problems with the application of gameful design for the development of AOD activities. The next section explores these problems and the implications they have.

Potential Problems

There were a number of items that may be problematic for designers and instructors concerning the type of AOD activities presented in this study and gameful design methods. First concerning AOD activities, the methods chosen for these activities worked very well for a small class (< 20) but may not be practical for larger sections.

Allowing revisions on all assignments, the amount of feedback given per assignment, and the extensive communication that I had with my students may not be practical for instructors with a large course load and/or large classes.

Also, the rubrics used in this study were not entirely effective at completely separating the grade from participation. There is currently a debate that explores the feasibility of self-determined participation with the existence of an external motivator such as grades (Cerasoli & Ford, 2014). There is however, a level of extrinsic motivation that greatly resembles intrinsic motivation in participation level and desire (Deci & Ryan, 2000). I was striving for this level of extrinsic motivation, but may not have been entirely successful at achieving this goal. Two of the participants mentioned that the desire for a good grade was at least a minimal factor in how much and why they participated in the AODs. As I mentioned earlier, the rubrics for this course were also not able to have the words “Excellent,” “Adequate,” and “Less than Adequate” on them because the terms did not correspond to the grading system in Canvas. I had to include a point scale and clarify what that scale meant in accordance to these ratings. This could have had an impact on the distance between participation and the external regulator. The rubric is sound, but the ratings and scoring combined may be confusing to students.

Another potential problem that was uncovered in this study was that the term “gameful design” was confusing because there was nothing about this method overtly related to video games or gaming. Explaining to others what gameful design meant and what the design method included became an issue. People often confused gameful design with gamification practices, adding some sort of game-play element to the activity, or thought I was planning to create a video game for the course. “Gameful” often distracted

from the actual intent of applying design methods commonly utilized by game designers, not for game development, but for development of an instructional activity. Only by explaining that gameful design was basically a purposeful, student-centered approach to activity design, was I able to help people understand the intent of the design method.

Recommendations

This study showed that the participants, for the most part, were actively engaged in a connected and supportive learning community that was motivated by an enjoyment of the activity as much, if not more than, the desire for a passing grade. This study provided further evidence that the design, development, and implementation decisions were effective in helping participants reach their experience goals in the AOD activities just as previous research suggested (Hew et al., 2010; Xie et al., 2006). The recommendations from this study can be applied toward AOD activity development, toward the development of online learning experiences, and to the broader field of instructional design. These recommendations for the use of gameful design methods can be scaled for use by instructors and instructional designers alike. This section discusses each of the recommendations and describes potential ways that instructors and instructional designers could apply these methods. The section begins with the recommendation to address practical AOD design and development using gameful methods.

Gameful Design Methods for AOD activities

The use of AOD activities in this course may not be practical for other courses that are not project-based. Many instructors have participants review empirical articles, which is not a bad thing, but this study revealed that freedom, variety, and

relevant/interesting topics made an impact on the participants' overall experiences. During the course, some of the included materials were empirical articles and other readings that the students were exposed to, but the participants were never asked to write formal reviews in their discussions.

A practical example for instructors could be to use empirical readings as springboards for conversations and research in AODs instead of having students simply write reviews. One of the items that participants enjoyed was the variety of responses and diversity of their classmates. There were only few times when two people wrote nearly the same post during these discussions, whereas in article review discussions, students all write basically the same thing.

Also, there are other tools available that instructors could use if article reviews are an important aspect of their class. Tools such as online journals and blogs are two that immediately come to mind. The use of these can be designed according to gameful methods, if desired, so that students could write more objectively their reviews of the articles and then use AODs to discuss the concepts they have learned and some experiences they have had in relation to the articles. This study reinforced the research that specifically identified most of the negative experiences participants had with AODs and past online courses. This was generally due to an over-reliance on product-oriented AODs (Dennen, 2008). A creative approach to using a different type of tool could be beneficial.

The study revealed an important detail for online instructors and instructional designers. Simply adding AOD activities to courses does not automatically result in social knowledge construction and a highly engaged community of learners. I

recommend that instructional designers know and understand the challenges of encouraging high-quality participation in AODs as has been discussed in Chapter II. Instructional designers can learn about the challenges and help instructors develop learning experiences that encourage self-determined participation through gameful methods or other student-centered approaches. The needs of students are paramount when instructors try to design activities that encourage this kind of participation. The next section recommends that instructors and designers begin every learning experience by addressing the concerns (and potential concerns) of students very early.

Address Student Needs Early

This study revealed that the first segment of the course was spent getting students acclimated to the course. A program-template that addressed the needs of online students consistently across classes could help tremendously to lessen the time needed for this introduction period. This is not to say that every course should require gameful AOD activities and force instructors to teach in exactly the same way, but a course structure based on research and pedagogical best practices along with common due-dates for discussions (when necessary) could help students reduce initial anxiety and prepare them for every course. This can also lessen the amount of time each instructor needs to spend on introducing students to the organizational aspects of the course.

Instructors who design their own courses, especially fully-online sections, can develop an introductory module similar to the one described in this study. The time and effort spent to preemptively answer questions and reduce anxiety was effective to support safety, confidence, and competence among the students. Also, fewer anxious students

resulted in fewer emails asking questions about course structure, due dates, and assignment responsibilities.

Instructional designers who design single online courses or may be responsible for many online courses at an institution can effectively implement this recommendation by applying a template with pre-made modules that instructors can modify to meet their own needs. The template would need to be flexible, but clear in addressing student concerns, communicating expectations, and connecting students to their instructors.

Instructional designers could also demonstrate to course instructors the importance of this initial contact during training sessions and give examples of how to meet the needs of students for the purpose of higher performance and increased participation. Designers should also relay the importance of approaching each group of students as different than previous ones. The next section gives recommendations for the iterative nature of gameful design and how to be successful in playtesting.

Playtest Activities and Online Learning Experiences

The study showed, as mentioned above in the potential problems section, that there was some difficulty in trying to iterate major mechanics of a course or activities while a class is in session. For the gameful design method to be most effective, a well-thought-out playtesting phase should be a priority before the real implementation happens if possible. A pilot study or miniature trials of an activity could be utilized within a course or research project to playtest before the real class. This could allow time to make major adjustments to aspects like rubrics, instructions, syllabi, and general activity mechanics before the course begins. However, in the case of this study, my previous experiences in teaching this course over the past six years and much research into AOD

best practice guided this study and my decisions. Instructors must keep in mind that activity mechanics can and must be given minor tweaks during the course to achieve maximum effectiveness just as gameful design methods have suggested (Deterding, 2014; Fullerton et al., 2008).

Instructors and instructional designers can run pilot tests in small groups or segments of learning experiences and observe students' behavior. If applying gameful design methods, the feedback loop, MDA model, and concept documents, as discussed in Chapter II, should be updated with each iteration of the activities. Instructors should expect to make minor adjustments to activity mechanics and course communications based on the needs of every class. Instructional designers can aid instructors by observing the implementation of activities and the experiences of students in them. Instructors and instructional designers could benefit from comparing observation notes and ideas for tweaking activity mechanics.

Suggestions for Future Research

This study was designed to test the applicability of gameful design methods specifically for use in AOD development and the growth of an online learning community. Further research is needed to determine if gameful design is an effective, student-centered approach to instructional design method. Research should include online as well as face-to-face activities. This research could add much to the growing body of literature on gameful design methods in academia.

The study was focused on graduate students and their willingness to participate in AOD activities. One participant mentioned that the discussions seemed different perhaps because all of the students were working professionals. Research into the application of

these types of AOD activities in undergraduate classes could shed light onto the importance of real-world experience within discussions. One of the key points that students told me was that the discussions and course activities were relevant to their own situations which helped encourage self-determined participation. Undergraduate students without real-world experiences may have a harder time relating to such discussion topics as presented in this class, and that could impact participation rates.

Also, gameful design hinges upon self-determined behaviors and intrinsic motivational principles (Deterding, 2014). The existence of grades, which is an extrinsic motivator, has constantly been a problem for academic intrinsic motivation research (Ryan & Deci, 2000c). More research is needed for ways to encourage intrinsic motivation or highly internal focused extrinsic motivation levels within academic courses. The use of a rubric was used in this course and had somewhat successful results, but questions remained for me if there were more effective ways to deal with this problem. Another possibility would be to further research into rubric design and implementation to help increase the distance between behaviors and participation and thereby encourage participation for the sake of the activity and not simply for a grade or rating.

There were several limitations for this study that could be addressed in future research. For instance, this study was limited to the experiences of four female graduate students in a single online course. More participants in a study, or a mix of both male and female students could be beneficial to allow understanding of a broader array of experiences. Though the lack of male participants was due to their choice not to participate, the study was limited by the homogeneity of gender. These limitations could

be addressed by expanding the scope of a study to more classes and more types of students. Also, in relation to the participants' demographics, future research could examine if age has any impact on the effectiveness of gameful design for AOD activities. Next, the suggestion for studying undergraduate students was made earlier, but a study that included both graduate and undergraduate students at the same time could be beneficial. This type of study would require the application of gameful design methods to other courses. The prospect of gathering an even more diverse group of students could be very useful. In addition to the student perspectives, research into instructor perspectives could be beneficial as well. This study focused on a single instructor with a background in AOD research. A flipped study that explores the experiences of instructors applying gameful design methods without much previous knowledge about the rich dynamics of AODs could result in interesting findings.

Summary and Personal Implications

This study was born from my personal desire to make online classes interesting, enjoyable, and relevant to my students. I have always loved video games and wondered how people could make such enjoyable (and often addicting) experiences. I was excited to find a method of design for this graduate course that had the potential to create some of the same experiences I have had when playing games. Experiences I have had when playing games were similar to those the participants expressed they had during the AOD activities of the course. For instance, I have experienced video games before that made me excited to continue playing when I had to do something else. Likewise, a participant of this study told me she could not wait to log back in to see what someone had said. Other participants said they felt connected to a community of like-minded people. I have

found many passionate, like-minded people in video game communities. Also, the participants said they were challenged and thought differently because of the AOD activities. The most memorable games for me were the ones that had well-designed challenges and were thought provoking. These common experiences were similar to those I felt when playing well-designed games, and I am excited to see other ways this design method can be implemented into other aspects of my instruction.

The challenge, as I began this study, was to make an activity often looked at with disgust and turn this into something that students enjoyed while enhancing their online learning experiences. Through gameful design methods, I was able to encourage students to take part in a vibrant, diverse, and connected learning community that shared knowledge and resources in addition to expanding the impact of the course. A model was created for these AOD activities based on the principles of gameful design methods. This study showed that gameful design was successful in its implementation for the AOD activities in this course and the possibility exists that the broader field of instructional design could benefit from such an approach.

APPENDIX A - Topical Discussion Rubric

Criteria	Ratings			
Contribution TO the community of Learning	The student's original GREATLY demonstrated comprehension of the readings, materials, and topic in question. The arguments made in this post bring meaningful insight to the class discussion through well-founded arguments. This post also includes real-life experiences and/or applications to real-scenarios. This post is not just rehashing what was read or written like an article review, but presented as a series of meaningful thoughts and reflections on the topic of the week. A GOOD amount of time, effort, and thought has been put into crafting this post and it is evident. 30 pts	The student's original post SOMEWHAT demonstrated comprehension of the readings, materials, and topic in question. Arguments in this post were not well formed or not complete. This post only includes personal experiences, applications to personal scenarios, OR is just a summation of what was read or written like an article review. SOME time, effort, and thought has been put into crafting this post. 20 pts	The student's original post DID NOT demonstrate comprehension of the readings, materials, and topic in question - OR - Arguments in this post were not well formed or not complete. - OR - This post only includes vague personal experiences, vague applications to personal scenarios, OR is a poorly written summation of what was read. VERY LITTLE time, effort, and thought has been put into crafting this post and is evident. 10 pts	Did not participate 0 pts
Quality of Writing	Discussion is free of major grammatical and/or spelling errors. Sentences are complete, coherent and written in a professional manner. Minimum length requirement (250 words) has been exceeded and/or has been written an extremely high quality manner. A GOOD amount of time, effort, and thought has been put into crafting this post and it is evident. 20 pts	Discussion is free of major grammatical and/or spelling errors. Sentences are complete, coherent and written in a professional manner. Minimum length requirement (250 words) has been MET BUT NOT EXCEEDED. SOME time, effort, and thought has been put into crafting this post. 13 pts	Discussion has major grammatical and/or spelling errors OR Sentences are not complete, coherent and written in a professional manner OR Minimum length requirement (250 words) has not been met (or even gotten close). VERY LITTLE time, effort, and thought has been put into crafting this post and it is evident. 7 pts	Did not participate 0 pts
Contribution WITH the community of Learning	Student responded to more than the minimum required number of classmates' posts (2) and participated with others in a high quality manner. Time, thought, and effort was spent in the replies and comments made to the rest of the classmates. These posts added a great deal to the discussion by adding new perspectives to the existing dialogue. 30 pts	Student responded to the minimum required number of classmates' posts (2) and/or participated with others in less than a high quality manner. Some time, thought, and effort was spent in the replies and comments made to the rest of the classmates. These posts generally affirm the information that has already been stated in the discussion but only add new perspectives on occasion. 20 pts	Student did not respond to the minimum required number of classmates' posts (2) or participated with others in a very low quality manner. Very little time, thought, and effort was spent in the replies and comments made to the rest of the classmates. These posts generally add very little (if anything) to the information that has already been stated in the discussion. 10 pts	Did not participate 0 pts
Was submitted by assignment deadline	Submitted on time 20 pts	Submitted late, but close to the deadline 10 pts	Submitted very late or not at all (Absence) 0 pts	

APPENDIX B - Project Discussion Rubric

Criteria	Ratings			
"Adheres to Project Instructions "	Student greatly demonstrated an understanding of the use of all the basic features of the assigned tech tool by exceeding the requirements listed in the assignment instructions. 40 pts	Student demonstrated a basic understanding of the use of some of the features of the tech tool. Some of the requirements listed in the assignment instructions were met. 30 pts	Student did not demonstrate an adequate understanding of the basic features of the assigned technology. The student did not complete the assignment according to the minimum requirements listed in the instructions. 20 pts	Did not participate 0 pts
"Learning Reflection is a complete record of the learner's experience using the tool."	The student described his/her learning experience in this well-written learning reflection. The reflection gave details about the whole learning experience as well as personal thoughts/feelings about potential uses (or lack thereof) for this tool in the classroom environment. The minimum length of two full paragraphs was met. The writing was reflective of a graduate student in grammar, spelling, and content. Effort and thought were put into this reflection and it is evident. 15 pts	The student somewhat described his/her learning experience in this learning reflection. The reflection touched on, but did not go into detail about the learning experience. Some personal thoughts/feelings about potential uses (or lack thereof) for this tool in the classroom environment were briefly discussed. The minimum length of two full paragraphs may not have been met or the quality of writing was not reflective of a graduate student in grammar, spelling, and content. 10 pts	This is a poorly written learning reflection. The reflection did not go into detail about the learning experience. Some personal thoughts/feelings about this were very briefly discussed. The minimum length of two full paragraphs was not met. The writing was not reflective of a graduate student in grammar, spelling, and content. Minimum effort was spent on this learning reflection. 5 pts	Did not participate 0 pts
"Contribution WITH the community of Learning"	Student responded to more than the minimum required number of classmates' posts (2) and participated with others in a high quality manner. Time, thought, and effort was spent in the replies and comments made to the rest of the classmates. These posts added a great deal to the discussion by adding new perspectives to the existing dialogue. 30 pts	Student responded to the minimum required number of classmates' posts (2) and/or participated with others in less than a high quality manner. Some time, thought, and effort was spent in the replies and comments made to the rest of the classmates. These posts generally affirm the information that has already been stated in the discussion but only add new perspectives on occasion. 20 pts	Student did not respond to the minimum required number of classmates' posts (2) or participated with others in a very low quality manner. Very little time, thought, and effort was spent in the replies and comments made to the rest of the classmates. These posts generally add very little (if anything) to the information that has already been stated in the discussion. 10 pts	Did not participate 0 pts
"Was submitted by assignment deadline"	Submitted on time 20 pts	Submitted late, but close to the deadline 10 pts	Submitted very late or not at all (Absence) 0 pts	

APPENDIX C – Participant Recruitment Email

Dear <student>,

I hope you are looking forward to EDU 625: Technology in Education. We are going to have a great class learning about wonderful technology tools and new ideas that you will be able to use in your classroom as well as share with your fellow teachers.

This trimester you will have a special opportunity. I will be conducting a study focused on the design of some of the activities in this course. I am asking for members of this class to volunteer to be a part of the study. You will be asked to participate in 2 interviews lasting between 20-45 minutes. Other information (responses to discussion questions, frequency of participation in the course, etc.) will also be used, but I will gather all that in the background. All you have to do outside of your normal activities in the course is meet me online for 2 interviews. We will use Google Hangouts so you can meet with me whenever it works with your schedule.

Your participation in the study will enter you in a drawing for a \$100 USD Amazon gift card. If this gift card does not interest, you then please do not feel like you have to participate. You are under no obligation to volunteer for this study and your choice for participation will in no way impact your grade.

Please contact me at your earliest convenience if you are interested. The best way to reach me is via email: xxxx@wmcarey.edu. I will give you additional information and everything that you will need to know about the study before you decide if you wish to participate. Also please do not hesitate to ask if you have ANY questions about the study or about EDU 625.

Thank you and I am looking forward to our time together this trimester,

Michael Trest.

APPENDIX D – Interview Question Guide

The interview will be a formal pre-course interview.

This will include warm-up types of questions in order to establish context for the study and establish rapport. This is also a semi-formal interview so each question could lead into other, non-scripted questions. The following questions/script will serve as a guide to direct the interview:

- General introductions and welcome including full name.
- Researcher explain details of the study and reiterate the details laid out in the formal consent form.
- Ask if s(he) has any questions.
- Ask if s(he) had any difficulty setting up the software or connecting to the call.
- Ask if s(he) has had any prior experience using software like this before (Facetime, Skype, etc.).
- Finally, ask for general information (age range, level in graduate school, years teaching, what school district, and role in the school district).
- Indicate that we will begin. Explain that these will be open ended questions and to please explain the answers with as much detail as possible.
- How would you describe your experience with technology?
- What kinds of experience have you had with online social tools?
- Please describe your relationships with people you've met with these social tools.
- Describe any previous online educational experiences you have had.
- Describe the pros and cons that you see with online learning.

- How would you describe your relationship with your classmates' during previous online courses (if any)? The instructors?
- What have been the most common assignments in your online courses?
- What were your experiences with discussion activities in online classes?
- Is there anything that you are looking forward to about this course?
- Is there anything that you are nervous about this course?
- Do you know anyone else who is taking the course this term?
- Is there anything else you'd like to share?
- Thank the participant for her/his time and wish them the very best during the course and to ask if they ever have any questions throughout the course.
- End the session.

The final interview session will be a formal post-course study interview.

This interview will serve as a follow-up to the initial interview and seek to gain deeper insight into the information gather during the observations and discussion transcripts.

Once again, the semi-formal nature of these questions means that deviation from this script may occur. The following questions/script will be a general guide for the session.:

- Welcome the participant back
- How was your overall experience in the course?
- Please describe the high and low points of this course.
- What are some things that you discovered in this course that could help you become a better teacher and why?
- This course relied heavily upon the discussion board. Tell me about your overall experience using the discussion boards in this online class.

- In the most descriptive way you can, please describe your thought process when it came to contributing to the discussion activities?
- Why did you choose to contribute the amount you did?
- How did your experiences with the discussion boards and your classmates change over the course of the term?
- What were some things that you liked about the discussion boards and why?
- What were some things that you did not like about the discussion boards and why?
- How would you describe the connectedness of the students in the class with each other?
- How would you describe the connectedness between the students and the instructor?
- How does the connectivity in this course compare to the connectivity of other online courses? What about regular online social tools? Other forms of communication? (Describe similarities and differences).
- Is there anything else you'd like to add about the discussions, the course, or anything else?
- Ask the participant to re-consent to the use of their data.
- Thank the participant
- End the session.

APPENDIX E – Informed Consent

THE UNIVERSITY OF SOUTHERN MISSISSIPPI AUTHORIZATION TO PARTICIPATE IN RESEARCH PROJECT

Consent is hereby given to participate in the study titled:

Gameful Design in the Development of Asynchronous Online Discussion Activities: A Case Study

1. **Purpose:** The purpose of this study is to explore the learning processes and motivation behind student participation in an online learning environment using online discussion activities which have been designed to focus on the experiences of the participants.

2. **Description of Study:** In this study, you will be asked to participate in 2 interview sessions with the researcher in a Google Hangout meeting. These meetings will be recorded using the screen capture software. The two interviews will be pre and post course interviews to better understand your experiences with online educational tools. These could last between 45 minutes to an hour. In addition to the interviews, transcripts of your discussions and statistical data about your participation will be collected. All information that you give and the recording will remain confidential between the participant and the researcher. Your participation in the study will in no way be tied to or have any impact on your grade in EDU 625. You will not impact your grade positively or negatively by your participation. A grading rubric will be used for the grading of all assignments to ensure that all students regardless of their choice to participate will be graded equally and fairly. Also, you will be asked again at the end of the study to re-consent to the use of your data for use in this study. You will be able to opt out of this study at any point in the course so that you do not feel coerced by your instructor to participate. Please ask contact the instructor/researcher if you have any questions about the study.

3. **Benefits:** Your participation will make you eligible to win a raffle for a \$100 USD Amazon Gift card at the close of this study.

The instructor will be conducting the interviews and this will give him the opportunity to gain some insight before the course begins in order to make any adjustments to the assignments or delivery methods and thereby give the students of EDU 625 a more customized learning experience.

Also, the questions in the post-course survey will focus on your experiences during the course. Research has shown that reflection on learning experiences has great impacts on the effectiveness of teaching and learning. The post-course interview will be a great opportunity to reflect on what you learned and your experiences during the course.

4. **Risks:** This study will have minimal risks to you. The interviews will require you to spend time outside that would not normally be required in this course. There is no obligation or risk for negative consequences if you should feel uncomfortable at any time or wish to withdraw from the study.

Please be aware that your information, your experiences, your identity, and your answers during the duration of the study will be kept in the strictest confidentiality possible. Nothing that you say or do during the study will have any impact (positive or negative) on any part of the EDU 625 course of which you are enrolled. Your name will be changed in the records after the interview session is over to ensure your anonymity. Since you will receive your grade before the final interview and can opt out even after grades have been submitted, you are encouraged to speak freely about the good and bad experiences in the course. This will help the researcher better design the course for future students and also provide very valuable data for the current study.

5. Confidentiality: Your name will be changed to a pseudonym immediately following the interview session. The recordings of your interviews will be kept private for only the researcher to view. The digital files will be kept in password protected storage that is only accessible by the researcher. The recordings will be deleted permanently no later than 2 years from the time of the interview. Written transcripts will also be kept for up to two years, but will not contain any identifiable information to your identity.

6. Alternative Procedures: N/A

7. Participant's Assurance: Whereas no assurance can be made concerning results that may be obtained (since results from investigational studies cannot be predicted) the researcher will take every precaution consistent with the best scientific practice. Participation in this project is completely voluntary, and participants may withdraw from this study at any time without penalty, prejudice, or loss of benefits. Questions concerning the research should be directed to Michael Trest at (601) xxx-xxxx.

This project and this consent form have been reviewed by the Institutional Review Board, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research participant should be directed to the Chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5147, Hattiesburg, MS 39406-0001, (601) xxx-xxxx

A copy of this form will be emailed to the participant.

8. Signatures: In conformance with the federal guidelines, the signature of the participant or parent or guardian must appear on all written consent documents. The University also requires that the date and the signature of the person explaining the study to the subject appear on the consent form.

Signature of the Research Participant _____ Date _____
Signature of the Person Explaining the Study _____ Date _____

APPENDIX F – Steps for Scheduling and Connecting to the VOIP Interview

Thanks again for expressing interest in participating in this study. I've made a Calendly link to schedule everyone who is interested. Please take a look at your schedule over the next week and schedule a time that we can meet together on Google Hangouts.

Please go here to schedule a time for us to meet: <https://calendly.com/trest/interview> (notice that you can schedule a time anytime before 11/16/15)

If you are going to be using a computer then you will need a microphone and a camera (most laptops have this built in). Go to <https://hangouts.google.com> if you want to use your computer.

Also you can use an iPhone or an Android phone and download the Google Hangouts app. Please just make sure you are able to connect to WiFi or you will use a tremendous amount of data.

You can learn more about setting up Google hangouts here: https://support.google.com/hangouts/answer/2944865?hl=en&ref_topic=2944848&vid=1-635757639882412644-3123092704&authuser=0

Unfortunately you cannot use your wmcarey student gmail account, but if you have a personal account it will work perfectly.

You can also call me at 601-xxx-xxxx if you have any questions or concerns.

Thank you so much for offering your time. I know the beginning of the year is crazy and I promise I will not be wasting your time.

Have a great day

mt

APPENDIX G – WCU IRB Approval Letter



October 26, 2015

TO: Michael Trest

RE: **Gameful Design in the Development of AsynchronOus Online Discussion Activities: A Case Study (IRB #2015-49)**

Michael Trest,

This letter serves as official notification of the approval of your project by the Institutional Review Board (IRB) of William Carey University. It is the IRB's opinion that you have provided adequate safeguards for the rights and welfare of the participants in this study, and that the proposal appears to be in compliance with the Code of Federal Regulations on the Protection of Human Subjects (45 CFR Part 46). **It has been classified as EXPEDITED research under the IRB guidelines.**

You are authorized to implement this study as of the date of final approval, which is October 26, 2015. This approval is valid until is October 25, 2016. If the project continues beyond this date, the IRB will request continuing review and update of the project.

You are required to notify the IRB immediately if any of the following occur:

- 1. any proposed changes that may affect the expedited status of your project;**
- 2. any unanticipated or serious adverse events involving risk to the participants.**

When the above-referenced research project is completed OR if it is discontinued, the WCU IRB must be notified in writing. The IRB Final Report Form will be used for this purpose.

On behalf of the Institutional Review Board,

A handwritten signature in cursive script that reads "Jalynn G. Roberts".

Jalynn G. Roberts, Ph.D.
Chair, WCU Institutional Review Board

APPENDIX H – USM IRB Approval Letter



INSTITUTIONAL REVIEW BOARD

118 College Drive #5147 | Hattiesburg, MS 39406-0001

Phone: 601.266.5997 | Fax: 601.266.4377 | www.usm.edu/research/institutional.review.board

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: CH15072302

PROJECT TITLE: Gameful Design in the Development of Asynchronous Online Discussion Activities:
A Case Study

PROJECT TYPE: Change to a Previously Approved Project

RESEARCHER(S): William Michael Trest

COLLEGE/DIVISION: College of Education and Psychology

DEPARTMENT: Curriculum, Instruction and Special Education

FUNDING AGENCY/SPONSOR: N/A

IRB COMMITTEE ACTION: Exempt Review Approval

PERIOD OF APPROVAL: 11/03/2015 to 11/02/2016

Lawrence A. Hosman, Ph.D.

Institutional Review Board

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