GAME ON! An interpretative phenomenological analysis of games-based learning in an undergraduate liberal arts environment.

A thesis presented
by

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Abstract

Current higher education focuses on a teacher centered pedagogy where students benefit but are not the primary consideration for learning. Conversely, experiential learning focuses on students in the learning process. This is done through a socialized and personalized environment that can be implemented through the application of games-based learning. This study seeks to answer how undergraduate students at a small liberal arts college explain and make sense of game play in an academic setting. 12 currently enrolled students at a small liberal arts college form the basis of this games-based learning study implemented through the application of experiential learning theory (ELT). Interpretative phenomenological analysis (IPA) was applied as a qualitative inquiry approach in understanding the meaning making process of participants. Data analysis prioritized the extraction of meaning making through use of the double hermeneutic model. Findings indicate that students’ meaning making through game play was highly contingent on the structure of the game, opportunities for self-determination, social interaction with other players, and strategic reasoning in the game environment. Conclusions demonstrate that games-based learning to be relevant and applicable form of experiential learning. The study’s findings serve to inform faculty, student affairs, and higher education professionals to the application of this pedagogy with recommendations for practice and future research discussed.

Keywords: games, games-based learning, gamification, experiential learning, student affairs
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Finally, thank you to all of the gamers out there. Keep achieving, keep socializing, keep exploring. Keep making interesting choices. That’s what makes it fun. Keep challenging yourself to beat your high score.
Chapter 1: Introduction to the Study

Current higher education largely focuses on teacher centered pedagogy (Ahn & Class, 2011). Students are benefactors but are not the central consideration for learning outcomes. Conversely, experiential learning focuses primarily on students in the learning process (Kolb, 1984; Kolb & Kolb, 2005). A personalized and socialized environment for knowledge creation is the heart of experiential learning. However, higher education trends indicate a migration towards a predominance of online learning (Chau, 2010). This move towards online digital learning has decentralized the educational process, yet there remains a need for face-to-face learning in traditional physical environments (Holley & Oliver, 2010).

Furthermore, students who are invested in the educational process benefit more from their learning (Astin, 1984). This means that both curricular and co-curricular opportunities are equally important for community development and student engagement. Face-to-face interaction implemented through an experiential co-curricular environment can engage students.

Kiili (2005) indicated that games-based learning (GBL) can increase students' learning and engagement. However, no practical application of GBL has been pursued in a co-curricular environment. Such implementation benefits learners holistically while simultaneously honoring a student centered approach. The purpose of this doctoral thesis will be to investigate how undergraduate students explain and make sense of game play. Knowledge generated from this study is expected to inform student affairs professionals in higher education to apply games, game play, games-based learning, and gamification into their practice.

This chapter will begin with brief overview of the current state of experiential learning applications in higher education as well as how games-based learning can be applied in an academic university setting. A background in experiential education applications provides the
basis and forms a framework for understanding games-based learning. The rationale and significance of this study is discussed next, drawing connections to beneficiaries of the work including higher education faculty, administrators, and student affairs professionals. The problem statement, purpose statement, and research questions are presented to focus and ground the study. Finally, the study is introduced and explained utilizing Kolb and Kolb’s (2005) theories of experiential learning which serve as both the theoretical framework and lens for the thesis.

**Context and Background**

Constructivism as defined by Dewey, Lewin, and Piaget (Kolb, 1984), is a student centered approach from which knowledge is personally created through a socialized process. This process includes an interaction between the student, content, environment, and teacher. Constructivism informs and shapes the application of experiential education in the development of a learning pedagogy that focuses on the primacy of experience in the instructional process. This process integrates and focuses students' learning through experiences (Kolb, 1984; Kolb & Kolb, 2005). These experiences have defined the modern application of experiential learning which include: learning as a process whose ideas are transitory, learning as a continuous process, learning as part of navigating and resolving conflicts, learning as a process of adapting to the world, learning involving interactions between an individual and the environment, and learning as a process of creating knowledge.

Experiential learning is further refined and applied to games-based learning by Kiili (2005) who emphasized the primacy of student's experience in a game environment. Such experience includes factors like flow state, intrinsic motivation, and self-determination. In addition, evolving relationships between students, teachers, content, and environment represents
an ever changing learning process in which students continually navigate conflict resolution. These relationships guide applications of games-based learning.

Lastly, Astin’s (1984) involvement theory indicates that greater student educational outcomes accompany greater student involvement. This theory is primarily applied to co-curricular learning, student involvement, and engagement via institutionally sponsored activities. While co-curricular learning complements academic learning, greater student involvement in either benefits one another. Game environments possess intrinsically stimulating characteristics that when paired with curricular pedagogies fuel student engagement. One can posit, therefore, that a co-curricular learning environment utilizing the same games-based experiential learning pedagogy would achieve the same degree of student efficacy. Therefore, this study seeks to investigate how undergraduate students at a small liberal arts college understand their meaning making process through game play in an academic setting.

**Rationale and Significance**

Student retention is affected by a multitude of issues (Bergen-Cico & Viscomi, 2013; Berger & Milem, 1999; Chapman & Pascarella, 1983). Some of this includes community building and student engagement. The benefits of games-based learning are increased engagement (Vogel, Vogel, Cannon-Bowers, Muse & Wright, 2006), flow state (Kiili, 2005), self-determination, and intrinsic motivation (Smith et al., 2012) which are significant for student development. Games can bridge the gap between the student experience and community development. While the stereotypical gaming audience has been that of the lone male, the demographics of the population are much larger and more diverse than previously imagined (Poling, 2013). The wide appeal of games addresses the added benefit for community building.
and student engagement through its implementation in co-curricular learning and involvement. Past studies have focused games-based learning exclusively on academic applications.

This study will add to existing literature by applying those learned practices to student engagement and community building. The results of which provide an environment that engages students in an educationally purposeful activity through active student involvement. Knowledge gained from this study would therefore most closely benefit higher education professionals including faculty, administrators, and staff. Specifically, games, games-based learning, and gamification can be more appropriately utilized by student affairs professionals in their co-curricular work with students outside of the academic environment.

**Research Problem and Research Question**

Current higher education's focus on a teacher centered pedagogy fails to address individual learners preferences via constructivism (Kolb, 1984). As such, an experiential learning system more adequately addresses this need (Kolb, 1984; Kolb & Kolb, 2005). Games-based learning exists as an emergent pedagogy that both centralizes the student in the learning process as well as relies on highly engaging forms of interaction such as flow state, intrinsic motivation, and self-determination that furthers student development (Kiili, 2005). While past studies have focused on academic implementation of games-based learning, this study will focus exclusively on co-curricular applications. Such a focus honors Astin's (1984) involvement theory emphasizing greater student outcomes relating to greater student involvement. Therefore the research question for this study is:

How do undergraduate students at a small liberal arts college explain and make sense of game play in an academic setting?

**Definition of Key Terminology**
**Games-Based Learning**

Games-based learning is the application of games in a learning environment to achieve educational goals. Such application of games have been achieved experientially (Kiili, 2005; Garrido, Miraz, Ruiz, & Gomez-Nieto, 2011) with clear implementations of game like characteristics such as immediate feedback, clear goals, and challenges of appropriate difficulty. Games-based learning has been more widely applied in experiential education through simulations (Feinstein, Mann, Mann, & Corsun, 2002) which allows students to more fully involve themselves in a structured learning environment. Games-based learning has been used extensively in academic settings (Rondon, Sassi, & Furquim, 2013). Yet, conclusions determined that the pedagogy supported short term gains while traditional delivery formats (i.e. lecture) were more effective for long term knowledge retention.

**Flow State**

Is the mental state of a participant where one becomes completely absorbed and engrossed in an activity (Kiili, 2005). Such a state often occurs in players when they become completely absorbed in game-play and is indicative of heightened mental awareness and performance. This state is desirable by both game designers and games based educators for its ability to continually engage the individual (Salter, Pittaway, Swabey, Capstick, & Douglas, 2012). The effect of this is the continuous involvement in and commitment to a course of learning or play.

**Intrinsic Motivation**

Intrinsic motivation is the individual drive for someone to engage or pursue an activity for one’s own enjoyment. This drive is entirely internal and does not rely on external pressures like extrinsic motivation to affect behavior. Such motivation allows players to continually
engage and play in games based learning environments (Lindgren & Johnson, 2013). The effect of which is more educationally purposeful activities for students who engage in intrinsically motivating environments (Psotka, 2013). This results in students who are more focused on meeting games based outcomes rather than seek an external reward (Padilla-Melendez, del Aguila-Obra, & Garrido-Moreno, 2013).

**Self-Determination**

Self-determination is the degree of which an individual’s behaviors and actions are influenced and decided upon themselves. Like, intrinsic motivation, self-determination originates internally where one’s behavior is motivated and determined by one's self. Smith et al. (2012) connect the inherent relationship of intrinsic motivation and self-determination through game play. The symbiotic loop formed by both creates a cycle of engagement that makes games highly engaging and motivating. This is further emphasized by Ryan, Rigby, and Przybylski (2006) who determined the close relationship between player self-determination and an individual’s needs and attainment of autonomy and competence. The following section of this chapter will include a description and discussion of (theoretical framework) which will serve as the theoretical lens for this study.

**Semiotics**

Semiotics is the understanding of a meaning making players make through game play (Leaning, 2015). This meaning making, and the interpretation of one’s own meaning making, constitutes the basis of semiotic interaction. This is more specifically defined as an individual’s own meaning making process of signs, symbols, and processes conveyed through analogy, symbolism and other communicative mediums (Leaning, 2015). For the purposes of this study the communicative medium is composed of games through game play.
Theoretical Framework

Experiential Learning Theory (ELT) is the study and application of experience and the process of learning from it (Kolb, 2014). The use and application of experience is delineated by ELT as a specific form of individual learning. The most popularly embodied form of experiential learning is generated through life experience. This is contrasted against more traditional forms of education such as lecture and classroom instruction. While experience forms the backbone of ELT, its main priority and focus is on the learner’s direct interaction with realities (Keeton & Tate, 1978). This dedication towards learners’ experiences is highly individualized compared to traditional forms of education such as lecture, reading, and writing which greatly rely on abstract conceptualizations of knowledge. However, these traditional forms lack the concrete basis of having processed such experiences in order to create said knowledge. Comparatively, experiential learning places a direct emphasis on the experience of the learner. Such experience forms the focal point of ELT and of direct interaction with the environment and source material. This is vastly different from the role that thinking and analysis play when applied in traditional academic knowledge creation (Kolb, 2014).

Experiential education is implemented in higher education through several distinct applications. Those have popularly included internships, cooperatives, service learning, study abroad, and outdoor education (Katula & Threnhauser, 1999; Kolb, 2014). Because of its affiliation to these experiential applications, ELT has also been closely affiliated with theories related to service learning, problem based learning, action learning, and team learning (Kolb, 2014).

ELT integrates and organizes the process of learning around six characteristics and presuppositions. Those are: learning as a process and not an outcome, learning as re-learning,
learning through the resolution of conflicts, learning as a process of adaptation, learning through transactions between the person and the environment, and learning as a process of creating knowledge (Kolb & Kolb, 2009). ELT examines learning as a process and not an outcome through the sequential stages of student development in their interactions with the environment. Such interactions form the process’s conflicts and subsequent resolutions in order to build personal understanding. Therefore, experiential learning is a procedure of re-learning. Specifically this addresses the student’s cyclical involvement with the learning process as inherently critical for new knowledge development. This development arises from the resolution of conflicts between pre-conceptions and experiential interaction. These conflicts form the basis of adaptation to the environment. Thus, learning is holistic process of adaptation to the environment as well as forming new knowledge based on perceptions. New perceptions are based on the transactions between the person and environment. Finally, learning is a process of creating knowledge. This directly challenges the traditional higher education model of educational transmission whereby existing static ideas are transmitted directly to the learner.

Experiential Learning Theory structures the learning process of students through four distinct stages (Kolb & Kolb, 2009). These stages begin with learners’ Concrete Experiences (CE) in which the student engages with the environment and content and forms the basis for that individual’s experience. The next stage involves Abstract Conceptualization (AC) though which the learner is tasked to make sense of the experience’s reality in relation to preconceived notions. The third stage is Reflective Observation (RO) in which the learner internally reflects on the experience, its meaning, and how information derived from said experience can be applied towards knowledge creation and understanding. Finally, the last stage involves Active
Experimentation (AE) in which the learner actively applies learned knowledge towards the environment thus creating a new concrete experience from which to begin the cycle anew.

While experience remains the primary focus of any ELT based application, it remains a theoretical perspective from which to understand how knowledge is created from the student’s standpoint. Such experiences apply to more than just educational pursuits and encompasses greater applications in students’ professional and personal lives. Kolb (2014) posits ELT as a methodologically holistic process that individuals may use to overcome learning difficulties encountered by more traditional higher education methods. Therefore, ELT intends to synthesize the work of scholars such as John Dewey, Kurt Lewin, Jean Piaget, William James, Carl Jung, Paulo Freire, and Carl Rogers (Kolb, 2014) and their understanding of how reliable knowledge is created from experience. ELT seeks to understand and explain learning as a process of challenging preconceptions, critically reflecting, and extracting meaningful lessons based on experiential actions.

**Criticism of Experiential Learning Theory**

Critics of ELT address several different shortcomings ranging from the subjective nature of the learning process, the structured and progressive form of knowledge creation, reflection, the self-situated learning process, and the lens from which experiential learning is understood. Forrest (2004) indicates that ELT stages determined and developed by Kolb (2014) are not indicative of the reality of most learners’ processes. While the stages are adequate for describing experiential learning from an observer’s point of view, it does little to accurately represent the processes experienced form the individual’s perspective. Specifically, Forrest (2004) criticizes the linear nature of such learning progression. While Concrete Experience (CE) is identified as the beginning and end of the learning cycle, individuals may enter or exit the process at any time.
Current ELT does not address the non-linearity of the process. Furthermore, students may also drop in or out of the process at different stages, jump from one stage to another, skip, or completely miss stages entirely. The learning cycle does not address individuals’ whose experiential process does not progress in a linear nature.

Additionally Tosey and Gregory (2002) criticize the inherent nature embodied in the tension experienced by the learner between learning stages. Such tension is often achieved between critical stages such as Concrete Experience (CE) and Abstract Conceptualization (AC). Current ELT addresses the tension’s necessity for progression of learning and development but acknowledges it as a standard stage and not a personalized act. The specific way in which students resolve, handle, or address such tension dictates the types of learning that arise. ELT does not address this specific process and its importance for its contribution to the experiential learning cycle.

Furthermore, ELT’s assessment of learner development is wholly situated in students’ identified self-efficacy (Kelly, 1997). Results are based on learners rating their own knowledge and development. The application of this rating does little to address how a more thorough assessment instrument would evaluate a learner’s progress. While ELT does appreciate each learner’s unique learning style, it wholly focuses on the individual in the process. Individual development is an important component for understanding the application of experiential learning, however many implementations of ELT do not involve the individual exclusively. Thus, Kelly (1997) criticizes ELT’s weakness in focusing exclusively on individual development without including learners’ relation to other students’ understanding.

Michelson (1996) adds that ELT’s application assumes the development of learner’s knowledge without relation to power, status, or relationship of individuals to other learners.
Specifically the Reflective Observation (RO) phase does not address the possibility that knowledge created may have been done through a social process that subsumes minority populations, promotes a majority opinion, or does not take into account societal influences for shaping that knowledge. Said meaning cannot be derived from knowledge creation that is completely divorced of these outside influences. The development of knowledge is a wholly individualistic process, but one that is indelibly affected by exterior forces that ELT does not address (Michelson, 1996).

Lastly, Forrest (2004) builds on Michelson’s (1996) criticism of ELT’s development without a societal or power-based lens. Forrest (2004), posits that ELT’s application, development, and use has been mainly related to Westernized cultures and therefore the conclusions from past studies utilizing ELT may not be reliably applied to anywhere but the west. Such applications undermine the universality that is experiential education and do little to support ELT’s use in cultures other than western based ones.

Critics have addressed the shortcomings and inherent weaknesses embodied in ELT’s application as a learning process. These range from its inherently subjective nature, the linear progression of its learning stages, and the lens from which knowledge is created. Furthermore, these critics have also addressed the reliance on reflection to create knowledge without addressing societal or other external influencing factors that affect such knowledge creation. Despite its shortcomings, ELT remains a powerful and useful theoretical lens for understanding student knowledge development in an experiential process.

**Rationale for Implementing Experiential Learning Theory**

ELT’s is a useful tool for implementing meaningful learning applications as well as creating a better understanding of human adaptation through the process of experience (Kolb &
Kolb, 2009). Furthermore, ELT’s characteristics such as learning as a process, learning as re-learning, learning as adaptation, and learning as transactions between the person and the environment all involve aspects of experiences through which the learner is subjected to multiple opportunities to grow and develop through cycles of experience and interaction. Those experiences encompass both tangible (Concrete Experiences) as well as abstract (Abstract Conceptualization) characteristics.

Games-based learning possesses both tangible and abstract experiences, yet it has not yet been considered a potential application of experiential learning. Games-based learning promotes enjoyable experiences and greatly excels at providing quality intrinsic activities in order to promote player retention and interaction. Such characteristics firmly places games-based learning as an experiential activity. Games, as an experiential activity, can serve as a major determinant for how individuals learn and make sense of their own personal development.

Games-based learning can excel at creating cognitive tensions among the four learning stages. Concrete Experiences (CE) represent players’ interaction with the game environment and other students inhabiting the space. Abstract Conceptualization (AC) characteristically represents students’ development of understanding of the game as well as how actions affect themselves as well as the environment. Reflective Observation (RO) characterizes how game activities will affect the development of the environment as well as further learning cycles. Finally, Active Experimentation (AE) best relates to game-play where students are able to apply knowledge created during the (AC) and (RO) phase to shape and change their environment.

Knowledge created in this manner deeply affects the learning process by supporting and resolving the tension created during the Abstract Conceptualization (AC) and Reflective Observation (RO) phases. Such tension creates opportunities for students to better make sense of
the game environment through responsive actions in the Active Experimentation (AE) phase of
the learning cycle (Kolb & Kolb, 2009). However, the Reflective Observation (RO) phase is one
that has been wholly identified as the stage pivotal for the relationship development between
individuals and the group involved in the learning environment. Such learning has greater
implications for not only experiential learning but group cohesion and development as well.

This group formation is characteristically important in a game environment.
Additionally, the Reflective Observation (RO) phase presents opportunities to process the
experiential learning process as a whole. Conversations developed from this stage serve to aid in
the individual meaning making of the student and to promote the effectiveness of experiential
learning to a maximal degree (Kolb & Kolb, 2009).

Lastly, ELT’s development of personalized learning environments created and
engendered by each student shifts the focus and onus for learning into an individual process. The
results of which is the promotion and responsibility for the student to take control of the learning
process (Kolb & Kolb, 2009; Hains & Smith, 2012). This control takes the form of intrinsic
motivation to further pursue actions and activities which deepen and broaden understanding of
the learner’s environments as well as their educational pursuits.

Application of Experiential Learning Theory

Student centered design is a hallmark of experiential education and is rooted in the
philosophy of learners taking responsibility for their own individual processes (Kolb & Kolb,
2009; Hains & Smith, 2012). The connection to student centered learning suggest a pedagogical
shift in how learning takes place by moving the onus from the instructor to the students. Hains
and Smith (2012) indicated that the inclusion of different learning methods appealed to the
diverse modalities of participating students.
However, experiential education and student centered learning processes alone do not promote active student engagement. Practices that include active student engagement are important for involving students in the learning process. Smith et al. (2012) discussed engagement in the learning process should stimulate students both inside and outside of the traditional classroom environment. Specifically, self-determination theory (SDT) appeals to student engagement by fulfilling expectations of intrinsic motivation (i.e. doing something inherently enjoyable) as opposed to extrinsic motivation (i.e. doing things for compensation). Smith et al. (2012) indicate that students who are engaged in intrinsically motivating processes are more likely to interact with material in both the curricular and co-curricular environment. These authors indicated that an experiential process centered on student learning should include aspects of self-determination theory in order to positively engage students. These characteristics can be implemented in a games-based learning system that includes quality experiences, student centered design, and intrinsic motivational characteristics.

Games are an activity wherein individuals participate for amusement (Game). Games-based learning is a pedagogical process that incorporates games to fulfill an educational purpose that includes active participation, experiential focus, problem-solving and instant feedback (Connolly, Boyle, MacArthur, Hainey & Boyle, 2012). While previously aforementioned literature introduced experiential education and a student centered learning environment; little has been discussed regarding games-based learning as an experiential educational process. Nicholson (2012) and Bowman, Newman, Bowman and Bishop (1998) indicate that past implementations of experiential education games have used simulations. These simulations promote the creation of student knowledge through an experiential learning cycle. This recognizes games-based learning as an application of Experiential Learning Theory (ELT).
Summary

The current state of higher education largely focuses on a teacher centered pedagogy (Ahn & Class, 2011). Experiential learning exists as an outlet for applying student centered learning for greater student outcomes (Kolb, 1984, Kolb & Kolb, 2005). Such applications include internships, cooperatives, service learning, study abroad, and outdoor education (Katula & Threnhauser, 1999; Kolb, 2014). Games-based learning (GBL) (Kiili, 2005) exists as an application of experiential learning yet to be wholly capitalized. GBL applies games and gamification in order to meet students' learning outcomes. Existing literature of GBL prioritize its use in a curricular environment. However, no application has yet been applied to co-curricular student learning. Astin (1999) posits that students invested in educational processes both inside and outside the classroom benefit from greater personal development. The purpose of this doctoral thesis is to investigate how undergraduate students explain and make sense of game play. Knowledge generated from this study is expected to inform higher education professionals, administrators, and faculty on how to apply games, game play, games-based learning, and gamification into their practice.

This dissertation utilizes constructivism as defined by Dewey, Lewin, and Piaget (Kolb, 1984) to understand how students' create knowledge through a socialized process. Constructivism informs experiential leaning application through the prioritization of experiences as the primary factor in knowledge creation. Such experience based learning is further applied to games-based learning. In this venue, students encounter phenomenon like flow state, intrinsic motivation, and self-determination in game environments. These experiences emphasize experiential learning's tenets of a continuous process, resolution of conflicts, adaptation, and creation of new knowledge. Astin's (1984) involvement theory further posits that student
engagement outside of the classroom positively affects their holistic development. Yet, while GBL has been applied in a curricular environment, there has been no literature addressing its use in a co-curricular setting. Therefore, this study seeks to investigate how undergraduate students at a small liberal arts college understand their meaning making process though game play in an academic setting.

Games-Based Learning (GBL) is the application of games in a learning environment to achieve educational goals. Its application is experiential (Kiili, 2005; Garrido et al., 2011) utilizing design elements like immediate feedback, clear goals, and challenges of appropriate difficulty. Flow State is a mental state in which participants (players or students) become completely absorbed and engrossed in an activity (Kiili, 2005). This state benefits players by engendering heightened mental awareness and performance. This is desirable by both game designers and games based educators for its ability to continually engage the individual. Intrinsic motivation represents the individual drive for someone to engage in an activity for its own enjoyment. This is characterized by its entirely internal nature which does not rely on external pressures like seeking rewards or compensation. This motivation is highly prized as it allows players to continually engage and play games in games-based learning environments (Lindgren & Johnson, 2013). Lastly, Self-Determination represents a degree in which individuals' actions and behaviors are entirely influenced and dependent among themselves (Smith et al., 2012). Similar to intrinsic motivation, self-determination concentrates decision making behavior on one's own desires. Such engagement drives further play cycles which in turn increases students' engagement in games-based learning environments.

This study will utilize Experiential Learning Theory (ELT) as its theoretical framework as it encompasses the application of experience and the process of learning from it (Kolb, 2014).
Experiences form the central tenet of ELT application, as its main priority is on the learner's direct interaction with reality (Keeton & Tate, 1978). ELT utilizes and integrates the process of learning around six presuppositions which include: learning as a process, learning as re-learning, learning as a resolution of conflicts, learning through adaptation, learning through transactions between the person and environment, and learning as a process of creating knowledge (Kolb & Kolb, 2009). These six presuppositions are applied to four distinct stages in an experiential learning cycle. Those stages begin with Concrete Experience (CE), Abstract Conceptualization (AC), Reflective Observation (RO), and Active Experimentation (AE). However, critics of ELT have addressed several shortcomings including its subjective nature, progressive knowledge creation, reflection, self-situated learning, and the lens from which leaning is understood. Despite these misgivings, ELT remains a powerful lens from which to understand students' knowledge development as an experiential process. Its ability to create a personalized and self-determined learning environment for students is a powerful one (Kolb & Kolb, 2009; Hains & Smith, 2012). Previously aforementioned literature discussed experiential learning. However, no current literature or application of games-based learning as an experiential educational process in a co-curricular environment exists. Therefore, this study intendeds to determine how undergraduate students at a small liberal arts college understand their meaning making process through game play in a co-curricular academic setting.
Chapter 2: Literature Review

Games are a multi-billion dollar industry and one that engages many individuals from diverse walks of life on a regular basis. Games are as pervasive as *Angry Birds* on mobile phones, as integrated as achievements on a fitness tracker, and as old as chess. However, games do not always need to be played for entertainment. Games-based learning utilizes elements like challenges, positive reinforcement, and fun in order to support student learning outcomes. In addition, experiential education promotes an experienced based learning format that promotes student engagement. By utilizing games-based education, practitioners can encourage greater student engagement and learning outcomes.

This literature review will examine games and games-based learning as an application of experiential learning in a liberal arts environment. Games have not previously been considered an application of experiential learning in higher education before. Therefore this review will examine scholarly literature with a focus on games-based learning as an experiential learning activity. This literature review is organized into three streams. The first stream of literature addresses liberal arts education & experiential education while discussing the role that student engagement plays in both. This stream ends with an introduction of games-based learning and how it satisfies characteristics of experiential learning and student engagement. The second stream of literature examines games-based learning applications, the integration of flow to engage students, and the most common use of games in education: simulations. Finally, the third stream of literature examines the shortcomings of games-based learning, the elements necessary for effective games-based learning, and this study's focus on the application of table top games for games-based learning.

**Liberal Arts Education and the State of Experiential Learning**
Extensive literature exists examining the role of experiential learning in undergraduate education. Specifically, experiential learning has been examined in the vein of liberal arts education as it is an educational philosophy that combines applied aspects of vocational training with the broad undergirding of philosophies that support those vocations. This first stream of literature will provide an overview of liberal arts education and its current application and inclusion of experiential learning as part of institutional wide strategy and pedagogy. Furthermore, student centered learning and engagement are examined through the application of experiential learning. Lastly, games-based learning is introduced as well as how aspects of games, game play and gamification can be applied to experiential learning applications in liberal arts learning environments. These applications connect games-based learning to student centered learning. Student engagement and learning outcomes are discussed.

Liberal Arts Education & Experiential Education

Most importantly one should first define what a liberal arts education is. The American Association of American Colleges and Universities (AACU) describes liberal arts education as an approach to teaching and learning that gives students agency to address complex issues, diverse environments, and changes at all levels. More practically and specifically this type of educational format is one that deals with broadly focused topics such as philosophy, communication, biology, chemistry, ethics, and religion. Such a broad scope of topics generally identifies liberal arts at most institutions as "general education" which forms a basis of understanding for other more complex subjects. Specifically, Scott (2014) defines liberal arts study as encompassing four characteristics: inquisitiveness, interdisciplinary, internationalism, and involvement.
These values represent four very distinct and separate areas of liberal arts study. All have the potential to become transformative and liberating for the student. Yet, these experiences cannot assumed to be capitalized by students, faculty, and administrators. Rather, an intentional focus on liberal arts education should remain paramount and centered around the educational relationship between a faculty member and a student (Scott, 2014). This focus engenders a commitment and cyclical agreement between each party to educate through a bond. That bond is evident than though a liberal arts education.

**A connection to vocation.** The field of liberal arts is one that is already defined to be relatively broad (AACU) and does not focus entirely on a specific vocation, profession, or application (Diconti, 2004). Yet lawmakers, administration, and even students have petitioned for a greater focus on educational preparation for fields such as accounting, teaching, nursing, and engineering (Scott, 2014). Such focus is relevant but not at the heart and mission of a liberal arts education. Rather a liberal arts institution focused on implementing the liberal arts as a core part of its curriculum must acknowledge the vast bodies of knowledge that undergird some of the most elementary applications of these vocational fields. Therefore the argument is not to focus on either vocational preparation or liberal arts education. Rather, a regular examination and application of both fields represents an optimal educational approach (Scott, 2014).

Technical and vocational programs at technical colleges and trade schools emphasize the "how-to-do" of their educational process. This represents more of the training aspect of education. Conversely, a liberal arts perspective emphasizes analysis, comprehension, and articulate communication about ideas as its focus (Scott, 2014). Such divergent viewpoints do not need to be antithetical. Rather both can be combined and merged into an application of
educational philosophy which prepares students for how-to applications of their learning while simultaneously providing a comprehensive base of analysis, understanding, and communication.

Diconti (2004) indicates a trend for declining enrollment in liberal arts programs which parallels the creation of graduates who are ill prepared for rapidly changing workplaces. This is due to the current state of liberal arts education for its impassive instructional nature and lack of experiential learning opportunities that can stifle and isolate students. Opportunities for active decision making, problem solving, investigation, and experimentation must be included in order to address future challenges of undergraduate liberal arts education.

**Obstructions to liberal arts curriculum reform.** While the advantages of liberal arts education are many, its detractors must be convinced of its benefits compared to the costs involved with reform. One of the most popular applications of blending a liberal arts curriculum with vocational "how-to-do" methodology is through the use of experiential learning. This position is supported by Katula & Threnhauser (1999) who emphasize a commitment to a learner centered process that connects meaningful experiences in order to enhance personal development. While simple in theory, EL's main obstruction to wide curricular reform is the cost of its implementation (Cowart, 2010). Compounding this challenge are faculty who have never taught experiential learning focused courses and may not be convinced of the student learning benefit to offset the time lost to re-working courses and reforming their own curriculum. Lack of support is exacerbated further when faculty development grants (Cowart, 2010) to address the change in pedagogy are non-existent

Furthermore, students may also contribute to the obstructionism in liberal arts reform. A benefit of a traditional pedagogy is the uniformity of communally created syllabi taught by faculty who contributed to its creation. However, experiential applications of said syllabi can
often have markedly different impacts for students involved in each class (Cowart, 2010). Such is the case for any experiential learning focused application. In this regard, some courses may require different workloads, commitments, and rigor compared to others.

**An alternate model through experiential learning.** The benefits of combining liberal arts education with vocational application is great (Scott, 2014). Therefore, effort should be made at various institutional levels to focus on experiential applications of liberal arts curriculum. This success can be obtained via many routes. Cost is often the largest mitigating factor to reforming a liberal arts curriculum (Cowart, 2010). However, such changes do not always need to be dependent on available funding for grassroots change and support.

The best application of experiential learning in the liberal arts is to provide students with organic opportunities on campus through internships, cooperatives, and co-curricular engagement. These are often already available through intuitional resources and current structure. However, these opportunities need to be better connected to faculty and students. In addition flexibility of options (Fleming & Schantz, 2010) allow students to become involved in various manners that positively influences their role in the institution and their own personal educational attainment.

Ideally students should be provided with written commitment and achievement of their experiential learning accomplishments. Some institutions have implemented academic requirements in experiential learning necessary for graduation (Fleming & Schantz, 2010). Such a focus recognizes the school's commitment to experiential application of learning. However, a more easily obtained form of recognition could be in the form of special co-curricular transcripts that include descriptions of completed projects, involvement, research, and capstones. These
details could be used to complement academic transcripts as well as professional portfolios for job applications (Fleming & Schantz, 2010).

**Experiential learning paradigms.** Cowart (2010) references three types of applied experiential learning reforms in institutions. These include novice, integrated, and formalized programs. Novice programs do not have any formalized mechanism to promote experiential learning. Rather, opportunities are presented and delivered decentrally from career development offices, faculty & alumni connections, and institutional co-curricular resources like clubs and organizations. No institutional funding is provided for centralized experiential learning and faculty development. Conversely, integrated programs provide visible student and faculty support for experiential learning courses, have a formalized program for faculty development and student opportunities, and possess funding sources to continue to drive such initiatives. Lastly, formalized programs possess the former characteristics of experiential learning applications as well as institutional support from the board of trustees, administration, faculty, and students that are evidenced through strategic plans and funding. Centralized offices administer and provide direction and application of experiential learning initiatives and the philosophy is embedded in members of the institution at all levels.

**Student Centered Learning & Engagement**

Student centered design is a hallmark of experiential education and is rooted in the philosophy of learners taking responsibility for their own individual process (Hains & Smith, 2012). The connection to student centered learning suggest a pedagogical shift in how learning takes place by moving the onus from the instructor to the students. Hains and Smith (2012) indicated that the inclusion of different learning methods appealed to the diverse modalities of participating students.
**Students at the center of experiential learning.** Today student engagement and learning is best accomplished through student centered designs and pedagogies. These applications are best recognized through experiential learning where students generate knowledge and learn to apply theory as they interact with situations requiring higher order thinking (DiCecco et al., 2004; Krane, 2005; Banks & Houser, 2014). These opportunities for experiential learning allow students to meet educational gains that are difficult if not impossible to reach through traditional pedagogies. Learning outcomes are concretely identified in professional competence, persistence, volunteer engagement, appreciation for diversity, and social network development (Kuh & O’Donnell, 2013; Hesser, 2013; Coker & Porter, 2015). Most importantly experiential learning opportunities like internships provide graduates with solid experience to determine if career or vocational paths are the correct choice for them (Banks & Houser, 2014).

Experiential education and student centered learning processes alone do not promote active student engagement. However, practices that include active student engagement are important for involving students in the learning process. Smith et al. (2012) indicated that engagement in the learning process should stimulate students both inside and outside of the traditional classroom environment. Specifically self-determination theory (SDT) appeals to student engagement by fulfilling expectations of intrinsic motivation (i.e. completing activities that are inherently enjoyable) as opposed to extrinsic motivation (i.e. participating in activities for compensation).

**Learning improvements.** Specifically, students engaged in experiential learning benefit from high impact experiences though a socialized environment with peers and faculty (Banks & Houser, 2014). These experiences develop their ability and self-direction to pursue appropriate post career developmental paths in graduate school, professional service, or volunteer activities.
Internships are one of the most well studied fields of experiential learning with Banks and Houser (2014) revealing student-interns increased application of classroom knowledge and proficiency of practice. Furthermore, internships can develop students' individual research skills including critical thinking, analytical problem solving, and independent thought that are critical for professional development (Coker & Davies, 2002; Lopatto, 2010; Coker & Porter, 2015).

**Experiential learning design.** However, excellent experiential learning outcomes arise from excellent experiential design. Both faculty and administrators must realize that self-determination theory plays a large role in determining the correct experience for students. As such, one must avoid a one-size-fits-all mentality and allow students to work with advisors and faculty to choose their applicable experiential opportunity (Coker & Porter, 2015). For it is the choice that students make that will greatly drive their intrinsic motivation to succeed at experiential endeavors which best match their interests and aspirations.

Faculty and advisers can best set students on a course for success in experiential learning opportunities by developing student plans with established institutional liberal learning outcomes (Coker & Porter, 2015). Furthermore, an approach to experiential learning design will also include scaffolding that allows students to first explore options in a low risk environment before making bolder decisions regarding their direction. This scaffolding (Verenikina, 2008; Stupans, Scutter, & Pearce, 2010) applies to students both before and during an experiential learning opportunity. A combination of established learning outcomes working in tandem with students' self-determination, scaffolding, and empowered access provides all with a greater opportunity for success in an experiential learning environment.

Lastly, faculty working in concert with administration and other stakeholders should recognize and capitalize on existing experiential learning opportunities at their home campuses.
Such opportunities may be present in various forms ranging from campus ministry and volunteer services, to student organizations, and student government. With many of these applications housed in student affairs, student development, and student services, a joint task-force of individuals comprising all applications of experiential learning at an institution should be assembled to direct and determine a common set of outcomes (Coker & Porter, 2015). The determination of which is necessary for institutional wide success in experiential education.

**Barriers to experiential learning reform.** Perhaps one of the greatest barriers to experiential education reform is the cost associated with its implementation. This ranges from faculty development and retraining to student borne costs in activities like study abroad, volunteer services, and internships. The specifics of these costs are embedded in student commitment to the task and competition with other outlets of responsibility like student involvement, familial responsibilities and transportation issues (Coker & Porter, 2015). As mentioned before, capitalizing on extant institutional experiential learning opportunities is one way of mitigating the costs of experiential development. However, a long term solution for future growth is financial assistance to faculty for continuous development and teaching release as well as financial assistance to students in need (Coker & Porter, 2015).

**Games-based learning as a cost effective alternative.** Extant experiential learning opportunities need not be expensive nor difficult to develop and maintain. Rather, principles of games, games-based learning, and gamification can be developed to further student learning in curricular as well as co-curricular endeavors. The application of individualization, feedback, motivation, and scaffolding are all characteristics of games-based learning that can be applied to experiential learning outcomes (Oblinger 2004; Stupans et al., 2010).
Smith et al., (2012) indicate that students who are engaged in an intrinsically motivating process are more likely to interact with material in both the curricular and co-curricular environment. These authors indicated that an experiential learning process centered on students should include aspects of self-determination theory in order to attain positive engagement. These characteristics can be implemented in a games-based learning system that includes quality experiences, student centered design, and intrinsic motivational characteristics. The application of games-based learning allows for a more student centered approach embodied in experiential learning while simultaneously focusing on motivation as a critical component of learning (Stupans et al., 2010).

**Games, Games-Based Education, and Experiential Education**

Games are an activity wherein individuals participate for amusement (Game). Games-based learning is a pedagogical process that incorporates creating educational games with a specific instructional purpose that includes active participation, experiential focus, problem-solving and instant feedback (Connolly et al., 2012). While there have been many studies regarding efficacy of games for learning in curricular environments (Mayer et al., 2014), little has been discussed regarding games-based learning as an experiential educational process. This represents a gap in the literature regarding games-based learning application. Games-based learning's characteristics such as feedback, social interaction, and player immersion (Prenski, 2001; Fu, Su, & Yu, 2009) represent an opportunity to apply experiential learning to games-based learning opportunities. Furthermore, games-based learning's semiotic (Leaning, 2015) state lends itself to a phenomenon best studied by examining the meaning making of players. Such examination of each individual's personal narratives hold the possibility of exposing the
effect that games-based learning has on co-curricular student engagement and experiential learning.

Furthermore, games and games-based learning exist to provide students with environments in order to best develop new skills and pursue self-directed educational activities (Oliver & Herrington, 2001; Fu et al., 2009). This shift of self-direction indicates students as a central aspect of the learning process and recognizes them as primary stakeholders in an educational process where individual onus trumps teacher-centered pedagogies. These student-centered games-based learning applications possess at least three main parts for successful implementation: motivation, intrinsic drive, and behavioral outcome (Leaning, 2015).

**Detailed components of successful games-based learning.** While there is thin line delineating the differences between games-based learning and gamification, the latter can be described as the application of game elements in non-game contexts (Deterding, Dixon, Khaled, & Nacke, 2011; Kapp, 2012; Leaning, 2015). Such application of gamification can represent components of games-based learning. Yet, both fields share similar characteristics such as motivation, drive, and outcomes (Leaning, 2015). Therefore, gamification can be considered as a component of games-based learning with aspects applied in different degrees in the creation of a holistic educational application.

The application of games-based learning possess many benefits. Most of which reside in player motivation and accomplishment to meet the objectives of the game which are also in line with student learning outcomes. Leaning (2015) indicate that games-based learning applications encouraged students to engage more deeply and with a greater degree of efficacy. This was especially the case when a correlation was established between game performance and
educational attainment. This is applicable for both games-based learning as well as gamification, as both implementations characteristically include intrinsic player motivation (Leaning, 2015).

Moving forward with games-based learning. Games-based learning has not yet thoroughly explored the effects of its applications compared to real life performance of learned knowledge (Mayer et al., 2014). Such applications relate to its use as experiential learning to meet educational outcomes. The lack of implementations for co-curricular learning are many. However, one of the main barriers to application is the necessity for collaboration amongst stakeholders (Mayer et al., 2014) who usually represent administration, faculty, and students. This lack of unilateral effort represents the absence of a common framework for evaluating games-based learning applications. Despite this lack of synchronization, a combination of standardized tests, evaluative investigations, in-game performance evaluations, and self-reporting present adequate tools to evaluate games-based learning's student efficacy.

Conclusion

Liberal arts and experiential education are two fields that were once considered separate and exclusive. However literature discussed in this stream indicates differently. The current state of higher education addresses the need for liberal arts focused programs to discuss complex challenges in diverse environments (AACU). Scott (2014) adds that liberal arts study should emphasize interdisciplinary approaches to questioning, internationalism, and student involvement. These goals represent the direction of liberal arts education. However, Diconti (2004) indicates that the lack of a focus on vocational applications limits the scope of liberal arts learning. This has contributed to a downturn in liberal arts enrollment due to its inability to produce graduates who are adequately prepared for the workplace (Diconti, 2004).
An applicable solution to addressing liberal arts education's need for a vocational focus is experiential learning identified by Katula & Threnhauser (1999) as an option for students to learn in an experience focused environment. Such focus benefits student learning outcomes, but is limited by the high cost of implementation. Finances, faculty development, and heterogeneous student learning outcomes stand as the largest barriers to wide scale reform (Cowart, 2010). However, institution wide change can be enacted that negates the issues of cost. Many colleges and universities already do so by providing organic opportunities for students to learn experientially through internships, cooperatives, and co-curricular student engagement (Fleming & Schantz, 2010).

While these approaches provide different opportunities for involvement, student centered learning and engagement should remain at the heart of a liberal arts educational process. Student centered learning assigns the onus of development on the student (Hains & Smith, 2012) and possesses the ability to address different modalities required for individual success. With students at the center of the educational process they are able to apply learned theory to situations which require higher order thinking (DiCecco et al., 2004; Krane, 2005; Banks & Houser, 2014). In addition, traditional opportunities like internships provide students with experiences of different vocational and career paths (Banks & Houser, 2014). Smith et al., (2012) added that engagement in the learning process should stimulate students both inside and outside of the classroom. These experiences should take place in highly socialized environments aided by both peers and faculty (Banks & Houser, 2014).

The design of these experiential learning environments must be done in collaboration with both students and faculty and must take into account special considerations needed to individualize the experience for participants (Coker & Porter, 2015). Faculty can align
institutional learning outcomes with experiences while simultaneously working with site supervisors to create developmental scaffolding for the learning opportunity (Verenikina, 2008; Stupans et al., 2010). Despite this direction, cost to students and faculty still remains a barrier to wide scale implementation. Specifically for students through lost involvement, family responsibilities, and transportation issues and with faculty for development, training, and teaching release (Coker & Porter, 2015).

However, games, games-based learning, and gamification stand poised to provide a cost effective solution to meeting student experiential learning and development. The use of individualized feedback, motivation, and scaffolding are all characteristics of games that can be applied to experiential learning (Oblinger 2004; Stupans et al., 2010). Smith et al., (2012) added that students who are engaged in an intrinsically motivating process are more likely to interact with material in both the curricular and co-curricular environment. Therefore, the student centered application of games-based learning stands as a viable method to address student development (Stupans et al., 2010).

Games-based learning is a pedagogical process that incorporates creating educational games with specific instructional learning outcomes (Connolly et al., 2012). While extant literature addresses games-based learning applications, little has been discussed regarding its use as an experiential learning process. Specifically about how experiential learning characteristics like feedback, social interaction, and player immersion can be applied (Prenski, 2001; Fu et al., 2009). Leaning (2015) indicated that games-based learning encourages students to engage more deeply and with greater efficacy. Therefore it stands that its application in an experiential learning environment would best address the needs for the applicability of a liberal arts
education. However, the lack of understanding, evaluation, and unilateral effort in implementation stands are barriers to its success (Mayer et al., 2014).

As a whole, liberal arts education addresses the primary needs and drivers for student learning and development. Students must become independent thinkers, critical strategists, and skeptical observers should they intended to excel in a professional world. However, current liberal arts pedagogies do not address the needs for learners to apply their knowledge in a student centered manner. Experiential learning allows students, faculty, and institutions to address this need through the development of opportunities for educationally purposeful experiences. However, barriers such as cost limit such unilateral changes. In spite of this, games-based learning possess characteristics such as intrinsic motivation, feedback, and social immersion that addresses students' need for an individualized learning environment; faculties' need for an engaging format; and institutions' need for low cost applications. The use of games-based learning therefore stands poised to address the reformation needs of liberal arts institutions, experiential educators, and developing students.

**Games-Based Learning Applications**

Games-based learning concluded the preceding stream of literature. The following stream will examine applications of games based learning and how its structure has affected student learning outcomes. In addition flow state and fun are examined as characteristics of successful game and games-based learning design. Lastly, simulations are specifically examined as one of the more prevalent applications of games-based learning. This stream of literature seeks to better understand how current applications of games-based learning in curricular environments can be applied to co-curricular learning.
**History of games-based learning.** Most recently there have been student movements to find better preparatory paths to entering the professional world (Tymon, 2011; Tomilson, 2013). This has given rise to the implementation of greater experiential learning initiatives. Experiential learning has been discussed in the previous streams of literature as a model for understanding games-based learning. However games-based learning application has not been fully implemented widely. An early barrier to entry was its classification of "edutainment" in which games provided merely a forum to practice skills instead of gaining mastery (Gros, 2007). However these early applications of games-based learning have only scratched the surface for learner outcomes. Now games-based learning applied through experiential learning theory places a greater emphasis on creating a student centered learning environment. Such a shift in pedagogy towards active learning represents contemporary applications for games-based learning (Tomilson, 2013). These contemporary applications have been most widely applied as "serious games" wherein accurate and realistic simulations of game models (i.e. simulated stock markets) represent practical applications for theory (Pannese & Carlesi, 2007).

**Why games-based learning should be implemented.** One cannot ignore the experiential aspect that is games-based learning. The experience itself is the driver for student involvement and engagement in the learning environment. Good pedagogical design reflects good game design in the involvement of structure and purposeful activity. Therefore, implementations of games-based learning should prioritize a becoming and enjoyable experience for the individual (Gros, 2007). The focus on student-centered learning prioritizes challenges, engagement, cooperation, and the development of group and individual strategies that are all critical aspects of games-based learning (Gros, 2007). These characteristics represent good game design. However, they can also be applied towards educational attainment and learner
fulfillment. Specifically, serious games promote high user engagement which in turns creates an atmosphere for greater student efficacy in learning environments (Prensky, 2000; Pannese & Carlesi, 2007). These high engagement environments simultaneously promote student centered engagement as well as cooperative work, attentional skills, and deductive reasoning in addressing task based challenges in a game environment (Gros, 2007).

**Games-based learning structure.** Games-based learning must be applied with structure if it is to have full effect. Much of that structure is based on players' self-determination in which individuals are made to feel responsible for their actions and attitudes. Such connection between actions and determination leads to a much more thorough understanding of a game system as well as economic relationships (Pannese & Carlesi, 2007). Serious games embody this self-determination in droves where players are offered opportunities to play and experiment with different actions and how they affect the game environment. This concentration on agency gives individuals a sense of control and reciprocal effect so as represent autonomy in the game environment. In addition to experimentation and activity in the environment, games-based learning applications should also include elements for reflection and discussion (Gros, 2007). This inclusion supports student learning and understanding of casual relationships, action and effects, and group performance evaluation.

**Flow State**

Flow is defined as a psychological state wherein individuals are composed in a focused and concentrated state during activities which they find intrinsically enjoyable (Csikszentmihalyi, 1990; Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2003; Hamari et al., 2016). This heightened state is highly sought after as a means from which players engage with game activities at their highest levels. Participation at this point begets greater educational
outcomes through the process of envelopment (Hamari et al., 2016). This enveloping process as a symptom of flow embodies deeper engagement. Flow state is further refined by students' perceived knowledge and perceived skill (Li, Cheng, & Liu, 2013). The interplay of both represents the components necessary for students to first engage in a games-based learning environment and then participate though active and regular experimentation.

**Philosophy of flow implementation.** Games and flow form a natural pair with one another when engaged in activities with scaffolded challenges. These challenges are also backed by player motivations from the environment where participation is intrinsically rewarding. Games are attractive to students when the content or presentation interests them (Li, Cheng, & Liu, 2013). This engagement begets flow when game challenges constantly meet the limit of students skill sets (Hamari et al., 2016). Games which provide a high level of flow for players can therefore be applied to games-based learning environments though collaboration and discussion of the experience’s learning outcomes (de Blanco et al., 2012). A combination of competence and chance of success therefore constitute characteristics of successful flow engagement (Hamari et al., 2016). This is further accelerated via adaptive game environments (del Blanco et al., 2012). The educational gains of flow are categorized through three types of engagement: behavioral, cognitive, and emotional (Hamari et al., 2016).

**Flow state application to games.** Flow state is a common attribute of excellent game design. However much of the literature concerning its relationship to games-based learning stems from its application of video games. Most popularly this has been attained through the application of commercial off-the-shelf (COTS) games. These are produced commercially and mainly for entertainment but also possess potential educational value (del Blanco et al., 2012). However, the concept of flow remains the same. In order to have successful engagement,
students must continue a cycle of slowly building challenges that test and push their competencies (Fullagar, Knight, & Sovern, 2013; Hamari et al., 2016). This cycle of continuous engagement is fueled by player intrinsic motivation in attempts to master a skill set. Additionally, serious games also have the ability to engage players in flow. Serious games, unlike commercial-off-the-shelf games, are often applications of more realistic simulations or actual recreations of scenarios. These games are played with the intent of engaging and offering learning outcomes through indwelling, or the familiarization of processes and practices that become ingrained in individuals (Hamari et al., 2016).

**Flow balance.** Engagement of flow alone in games-based learning does not guarantee success. Rather, players must already find the game an intrinsically motivating endeavor where they are self-determined to take part (Hamari et al., 2016). Additionally, players must be balanced against preparing to engage in challenging activities in the game state and actually executing them (del Blanco et al., 2012). This cycle of preparation and execution embodies the active experimentation phase of experiential learning theory. Lastly, a flow state is kept in balance for individuals players when it continuously challenges their developing abilities (Hamari et al., 2016).

**Flow structure.** The most important aspect of engaging players actively in a flow state in the concept of low threshold and high ceiling design characteristic (Li, Cheng, & Liu, 2013). This allows players to engage in an activity with a very low skill threshold that allows them to quickly develop competencies in outlined skill sets. Salter et al.(2012) specifically included fun interactive elements in their games-based learning environment in order to promote flow state and maintain continuous student engagement. The development of further challenges before reaching a high ceiling of peak ability is known as scaffolding (Hamari et al., 2016) and allows
students to continually test their abilities in a structured way that keeps them playing at the near limit of their skills. The initiation of this engagement cycle and persistent engagement through low threshold and high ceiling design begets the most engaging kinds of learning activities (Li, Cheng & Liu, 2013).

**Supporting Simulations in Games-Based Learning**

Ruben (1999) acknowledges that knowledge acquisition alone is not sufficient for personal effectiveness. Feinstein, Mann, Mann, and Corsun (2002) indicate that simulations via games allow students to implement and apply learned knowledge in a meaningful format. The use of scenarios that represent or serve as an analog to real life circumstances are considered simulations and is one of the most popularly implemented forms for games-based learning. The application of simulations have demonstrated effective learning outcomes for students of diverse learning backgrounds (de Fritas, 2004; de Frietas & Oliver, 2006). This is due to the active and student center learning that is considered more effective at both creating and mastering knowledge as opposed to more traditional and passive forms of education. The application of simulations to games-based learning environments provides a concrete component while remaining connected to curricular pedagogy (Kaparlos, Hogan, Pribetic, & Dubrowski, 2011). However, the application of active learning and concrete experiences alone do not justify the use of simulations for educational purposes. In addition, simulations are able to provide opportunities for learners to replicate difficult, challenging, and even impossible scenarios that best aid in reaching targeted learning outcomes (Kapralos et al., 2011).

**Types of simulations.** While simulation applicability has been used significantly in education there still remains a divide between using simulations as a metaphor versus their use in an immersive game-based learning environment (de Freitas & Oliver, 2006). The results between
the two have been mixed but either application supports learning outcomes for a diversity of learners. The main difference between simulated metaphors and immersive simulations is the diegesis (Stam, Burgoyne, & Flitterman-Lewis, 1992; de Freitas & Oliver, 2006) created from the latter. Diegesis is a term used to describe the narrative environment of a simulation in a games-based learning application. This narrative serves to structure the environment in a story that more accurately represents the theme of the simulation and promotes student engagement and immersion.

One of the most recognizable forms for simulations is represented by virtual computer driven applications and video games. These simulations provide a high level of audio and visual fidelity which promotes intimacy between the player and the simulated environment (Kapralos et al., 2011). These immersive learning environments are some of the most popularly known applications of simulations, but do not represent all types. In addition, serious games include city building video games like (SimCity) and stock market simulation games that provide scenarios that more accurately represent real world applications of player actions. These simulations are less about creating an immersive environment with high levels of diegesis and more about replicating scenarios that learners may encounter through the application of their learned knowledge.

**Simulation's connection with curriculum.** The adaptation and relation of simulations to curriculum is an important aspect to consider. The process of adapting commercial-off-the-shelf games to academic needs can be a difficult proposal (Dawes & Dumbleton, 2001; de Frietas & Oliver, 2006). This is especially so for games possessing high diegesis related to the curricular material but low structural relevance to priority learning outcomes. Despite whatever application of games may be used in a curricular environment, there remains a need for the feel of the
simulation to remain connected to the academic material (Kapralos et al., 2011). This connection is necessary in order for students to develop some onus and motivation in order to engage with the simulation. In addition, students who better relate to the connection between the simulation and curricular material benefit from increased engagement (Mawdesley, Long, Al-Jibouri, & Scott, 2011). This is manifested through several aspects which include competition amongst peers, group reflection, and cooperative activity. Lastly, successful application of simulations in games-based learning environments requires both connection to curriculum as well as educator familiarity with the simulation’s application (Kapralos et al., 2011). Such preparation is logistically necessary should problems arise.

Simulation connection to practice. Simulations originally came into being through its connection to practice. Specifically because of the experiential learning process embodied through professionals and their work. However, the translation of this experience to curricular learning via simulations has been challenging (de Frietas & Oliver, 2006). In order to successfully implement such simulations in vocational preparatory environment, purposeful care must be taken in order to accurately represent scenarios that may arise. These are best addressed through serious games, but the concept also applies to games-based learning environments. Additionally, simulations best connected to practice must also introduce tiered challenges that address students’ rise in proficiency (Mawdesley et al., 2011). The application of these gradual challenges also reflects good game design to best incur flow state. Lastly, simulations must also be user friendly (Kapralos et al, 2011). These characteristics are not only necessary for simulations, but are also features of good game design.

Conclusion
Games-based learning has been identified as a viable application of connecting curricular learning with preparatory paths to the commercial world (Tyson, 2011; Tomilson, 2013). This has been achieved over the previously held perceptions of the “edutainment” of games instead of the valuable service they can provide as a forum for practicing skills (Gros, 2007). Such a change in perception has lead towards more contemporary applications of games-based learning (Tomilson, 2013).

Current applications of games-based learning have been widely applied via “serious games” which provide a simulated environment that allow students practical applications of theory (Pannese & Carlesi, 2007). However, applications of games-based learning can expand to include more innovative uses and include more fun and enjoyable experiences for individuals (Gros, 2007). These enjoyable experiences can further a student centered learning environment that provides challenges, engagement, cooperation, and individual development that furthers educational outcomes (Gros, 2007). This student centered connection between the game environment and the individual provides a more thorough understanding of educational material as well as better connection of theory application to real world practice (Pannese & Carlesi, 2007).

Engagement that students experience via game play is an activity identified as flow state wherein individuals are completely focused and concentrated on a particular pursuit that they find intrinsically enjoyable (Csikszentmihalyi, 1990; Shernoff et al., 2003; Hamari et al., 2016). It is here where student participation in a game environment begets greater student learning outcomes through envelopment (Hamari et al., 2016). Such envelopment is further refined though the dissonance and resolution of students’ perceived knowledge compared to perceived skill (Li et al., 2013).
The application of games-based learning has traditionally followed two tracks. The first includes the creation of a specific game for a specific learning outcome. The second includes the application of commercial off-the-shelf (COTS) games which are produced commercially and mainly for entertainment but also possess potential educational value (del Blanco et al., 2012). Despite the application, the development of flow state remains paramount where students must engage in a cycle of increasing challenges that test their competencies (Fullagar et al., 2013; Hamari et al., 2016).

These activities should be implemented with a fair degree of scaffolding that provide individuals a low threshold of participation but a high ceiling for mastery (Hamari et al., 2016). The existence of skill tests is important as Ruben (1999) indicated that knowledge acquisition alone is not sufficient for personal effectiveness. Rather, games-based learning applications must provide students with the ability to apply learned knowledge in a meaningful format (Feinstein et al., 2002). Games-based learning used in simulations best achieves these outcomes through the connection of concrete experience to curricular pedagogy (Kaparlos et al., 2011). However, use of simulations in games-based learning environments has been split between their application as a metaphor for learning outcomes versus a complete and immersive environment (de Freitas & Oliver, 2006). This curricular connection is important as stronger ties between the simulation and curricular material relate to increased engagement (Mawdesley et al., 2011).

Games-based learning has been applied in multiple different formats despite needing to alter the perception of its exclusive entertainment value. The structure of games including player feedback, tiered challenges, and high engagement identify its value to education in an experiential environment. The application of flow state induces individuals to engage more regularly and deeply with intrinsically motivating activities. When these activities are introduced
in games-based learning environment students are given the opportunity to attain educational learning outcomes through intrinsically motivating and fun activities. Many applications of games-based learning have previously revolved around the use of simulations. However, simulations alone do not exclusively cater to the market of games-based learners. Rather, educators who pair the most effective aspects of games-based learning with educational outcomes are significantly poised to capitalize on the effectiveness that games can play in experiential learning.

**Games-Based Learning Criticisms, Design, and Table Top Applications**

Previous streams of literature have discussed experiential learning, student engagement, and how games-based learning possesses characteristics which support both. The following stream of literature addresses some of the weaknesses of games-based learning as well as its shortcomings as an application for educational achievement. Games-based learning is compared to other pedagogies as well as its limited impact on student learning and engagement. Furthermore, specific aspects of games-based learning are discussed that help mitigate some of its shortcomings as an educational learning application. Lastly, table top games are discussed as a specific application of games-based learning that will be used in this study.

**Criticisms of Games-Based Learning**

Both games and games based learning have been met with skepticism amongst those in the education community. Much of this reflects perceptions of games lacking educative substance and their incongruence with a structure that wholly values learning and development and is at odds with applications that promote entertainment (Westera, 2015). Other more tangible criticisms relating to the implementation of games-based learning are discussed by Bidarra, Rothschild, Squire, and Figueiredo (2013) and include the following: institutions slow
to adopt to change; unwillingness to give up traditional education; values tied to established pedagogies; personal negative feelings about the applications of games to learning; games promotion of skills not easily assessed in traditional examinations; and limited access to equipment and information. The combination of the above constitutes the majority of criticism against the implementations of games-based learning. Additionally, Westera (2015) indicates three distinct areas where games-based learning purports to have strength: individual learning, social connection; and personal impact which can all be addressed by other pedagogies, but are wholly better suited to games-based learning.

**Comparisons of games-based learning.** Criticisms of games-based learning stem from its comparison to other more established pedagogies. While other forms of education have a long track record of implementation and adaptation, games-based learning can further these outcomes through well-developed implementations where there is little to distinguish between learning and playing (Bidarra et al., 2013). The establishment of this flow state or intrinsic engagement in the game environment is one of games-based learning’s strongest characteristics. However, this high level of engagement can negatively affect performance by reducing the amount of quality interaction with peers and content (Bidarra et al., 2013). However, a blended learning application between both game worlds and reality is possible. While it is difficult to achieve, such a balance best addresses student learning and development (Schmitz, Klemke, Walhout, & Specht, 2015). Additionally, the development of cognitive flow best benefits players in games-based learning applications, but has the possibility of inhibiting the development of metacognitive skills (Westera, 2015). Students may become proficient with skills necessary to succeed in the game environment, but may not meet the learning outcomes necessary for making the games-based learning application an educational success. Therefore, care is needed to include
peer and individual debriefing and reflection in order to better connect the game with educational content.

**Limitations of games-based learning.** Some of the largest criticisms of games-based learning are its limitations. While many applications utilize commercial-off-the-shelf games there are simply a lack of games that can meet all learning outcomes. The sheer variety and diversity of games and applications necessitate an educated investigation of what games can meet which learning outcomes with what appropriate delivery method (Bidarra et al., 2013). If no commercial-off-the-shelf games are available then it may be necessary to create one from scratch which raises the costs and resources necessary for development (Bidarra et al., 2013).

Similarly, some games-based learning applications can provide too much stimulus or feedback for the learner which results in a cognitive overload without the benefit of dissonance necessary to meet some learning outcomes (Schmitz et al., 2015). The problem is further exacerbated when game types are antithetical to stated learning outcomes. With the competitive nature of many commercial-off-the-shelf games it may be difficult to find an appropriate platform necessary to achieve cooperative engagement (Westera, 2015). Additionally Rondon et al. (2013) revealed that games-based learning generally supported short term gains but traditional lecture was more effective for long term knowledge retention.

Assessment also serves as a limitation for games-based learning as continuous monitoring of improvement is possible for only some digital and video games. However, the determination of cognitive flow and achievement is sometimes only possible via self-reporting instruments (Westera, 2015). This limitation severely impacts games-based learning’s ability to meet learning outcomes in a holistic and intrinsically motivating way. Instead, games-based learning applications must intertwine experience with reflection and assessment in order to
successfully reach its educational goals. Experience and personal satisfaction with games alone is not enough to satisfy stated learning outcomes, rather students must demonstrate their cognitive gains through reflection and assessment.

Lastly, there will always be some elements that limit game-based learning applications beyond the control of the educator or student. These can include issues as diverse as religion, politics, or race (Bidarra et al., 2013) that can influence pedagogical changes as a whole. Rather, games-based learning should continue to be explored as an emergent pedagogy and application of personalized learning emphasized through experiences. One of games-based learning’s biggest threats is the speed of the commercial game industry and its ability to bring new products to market (Westera, 2015). These new products could potentially meet student learning outcomes, but without further study and research, educators may forfeit their ability to holistically apply them to practice. Without further research, games-based learning stands to become nothing more than an educational fad (Bidarra et al., 2013).

**Games Based Learning Curricular & Design Connection**

Design is an important facet to consider when applying games-based learning principles. This is especially important for curricular applications as well as any planned co-curricular implementations. Careful consideration must be made to balance the characteristics of engaging games with curricular and student learning pedagogy (Turkay, Hoffman, Kinzer, Chantes, & Vicari, 2014). For successful games-based learning design to take root, traditional game designers must accept learner philosophies of educators while educators need to adapt some of the concepts of creating engaging games from designers (Hirumi, Appelman, Rieber, & Van Eck, 2010).
When it comes to designing educational games one must specifically connect game design with learning outcomes. Such that the game design and activity cycle of players motivates students to fulfill the learning objectives of the educator (Pivec et al., 2003; Ahmad & Jaafar, 2012). It is through this activity cycle when students are supposed to grow via several vectors. Those vectors include cognition, behavior, and emotion. In order for this type of growth to take place, instructional designers and game designers must work together closely and intimately in order to realize the game development vision. Such cooperation embodies the collaborative spirit necessary to produce a truly successful games-based learning environment (Hirumi et al, 2010).

**Active involvement.** Active involvement in both the learning as well as activity cycle is wholly important for a successful games-based learning environment. Students and players alike must actively pursue the acquisition of knowledge, the manipulation of knowledge, and the testing of knowledge in order to successfully meet the intended learning outcomes of the designers (Pivec et al., 2003; Ahmad & Jaafar, 2012). These cycles can commence in several different ways. However, games-based learning best utilizes its format to challenge players to solve problems, actively experiment and work collaboratively with their peers (Ahmad & Jaafar, 2012). These cycles constitute the constructed environment that is games-based learning. For the creation of artificial challenges for players embodies the very denotation of what a game is. Therefore games-based learning relies on these constructed environments in order to promote learning through experience (Turkay et al., 2014). Additionally, the creation of choice in the active learning cycle promotes student self-efficacy and self-determination. These two aspects are important for developing a sense of player control and agency in the learning environment. (Zuckerman, Porac, Lathin, Smith, & Deci, 1978; Turkay et al., 2014).
**Phases & stages.** Well designed games-based learning experiences should be purposely simplistic rather than overly complicated (Juul & Norton, 2004; Turkay et al., 2014). The overcomplication of a game could lead to player attrition and negatively affect the learning outcomes sought by the instructional designers. A simple design linked to a different modalities for student learning is the heart and essence of excellent game-based learning design. These learning modalities include cognitive, social, and cultural aspects of knowledge development (Turkay et al., 2014). Students learn cognitively through the creation of dissonance. This dissonance is created through the resolution of pre-conceived notions compared to empirical experience. Students learn socially through peer mentoring as well as collaborative and cooperative interaction. Lastly, students learn culturally through the development of community standards and etiquette and what is permissible or not accepted in the constructed game environment.

These three stages of learning should ideally be paired with the structural mechanics of games which include game, learning, and assessment (Turkay et al., 2014). Specifically, the game refers to the structure of the constructed world. This includes and defines the participants, the environment, resources, and objectives. Learning constitutes the three characteristics of knowledge creation which were previously discussed included cognitive, social, and cultural growth. Lastly, assessment includes the cycle of player engagement and challenge where students are continually tested for learning efficacy in the game environment. Such challenges also serve to encourage players to enter a flow state from which increased motivation and performance best meets the learning outcomes of the designers.

Lastly, the game-based learning development cycle should include five different phases between instructional and game designers to include concept development, pre-production,
production, and post production (Hirumi et al., 2010). Concept development encompasses instructional designers sharing the learning outcomes for the game. These are compared with the capabilities of game designers to create the constructed world. Pre-production operationalizes these ideas and creates working documents outlining player objectives, narrative, structure, early, mid, and late stage goals. Finally, post-production includes the creation of a working prototype which is play tested, re-configured, and augmented in order to best align the expectations of instructional and game designers alike.

**Evaluation.** Evaluation in games-based learning applications is incredibly important in order to assess the learning outcomes of the students as well as to evaluate the efficacy of the game (Hirumi, et al., 2010). However, knowing when and how to apply different evaluations methods is of particular importance. Both instructional and game designers should discuss and determine the structure of the assessments and whether or not they should be included as in game or out of game applications. Additionally, designers for both sides should examine and focus on how game mechanics and learning methodologies affect students' experiences and game play (Turkay et al., 2014). Such developmental assessment could yield important information on player engagement, activity, and developmental efficacy so central to games-based learning. This evaluative model can be applied and practiced for both students and designers as well. For student learning through feedback creates an active learning cycle that begets student growth and development. Likewise, designer feedback from both the game and students generates operational information from which to improve the games-based learning system as a whole.

**Table Top Games-Based Learning**

Table top games are a popular type of commercial game that served as the forerunners for modern video and digital gaming. Unlike their video game counterparts, table top games feature
tactile representations of game elements embodied in dice, cards, and tokens. However, the differences between digital and tabletop games end there. Many of the defining characteristic delineating different types of games encompass both video and tabletop games. Bochennek, Wittenkindt, Zimmerman, and Klingbiel (2007) identified these to include categories such as role-playing games, simulations, quiz, and strategy games. Some unique tabletop game categories include dice and luck games, outlay games, and dexterity games. Furthermore, tabletop games can be classified according to their predominant game mechanism as well as their victory conditions (Bochennek et al., 2007). Game mechanisms include area movement, auctions, card drafting, deck building, set collecting, storytelling, and trick taking. Victory conditions can be delineated as either cooperative (all players trying to accomplish a common shared goal) or competitive (all players competing against mutually exclusive goals.). Lastly, Bochennek et al., (2007) identified at least four stages of tabletop games determined by player interaction. Two stage games included only player experience followed by reflection and review (i.e. dice games). Three stage games included player experiences, reflection, and planning (i.e. movement area games). Finally, four stage games included experiences, reflection, planning, and abstraction (i.e. quiz games).

**Experiential connection.** By nature games embody an experiential learning cycle (Bochennek et al., 2007). As with any experience based activity there is the possibility of either enjoyable or non-enjoyable activities for their participants (Henderson, 2005; Gibson & Douglas, 2013). However the diversity of interaction lends tabletop game play the ability to address different learning styles for a diversity of learners. Like their video game counterparts, tabletop games possess clear goals, opportunities for feedback, and clear player interactions. However, unlike video games, tabletop games possess the unique functionality of being modified and
changed from their published structure to benefit the student, instructor, or both. The option of modification allows players to engage in creativity and experiential narrative that allows them to explore the basis of rules and structure of the game environment (Marchetti & Valente, 2015). It is through this learned abstraction mediated by peer interactions that students learn the value of questioning the structure of a table top game. The very basis of this meta-analysis allows for a greater level of critical reasoning and cognition (Marchetti & Valente, 2015).

**Table top strengths over video games.** Both table top and video games require an active and involved environment in order to be successful. This further expands to games-based learning applications in which excitement must be created in order to best engage learners (Bochennek et al., 2007). Furthermore, table top games must also allow for the ability for players to modify the play conditions in order to further serve a student centered learning environment (Marchetti & Valente, 2015). This form of free interaction and environmental augmentation represents a characteristic of play in which students can create their own narrative and shift between active participants and passive observers (Sutton-Smith, 1997; Marchetti & Valente, 2015). This is a drastic change compared to video games as a set and fixed environment that does not engender the same degree of creativity and interaction. Instead, table top games allow students to fully explore the possibility of their narrative expression inclusive of their agency in the game environment (Marchetti & Valente, 2015).

**Limitations of table top games.** Despite their inherent value, table top game possess some unique limitations that affect their deployment as a games-based learning activity. First is the cost of production of such table top games for specific learning environments (Gibson & Douglas, 2013). This can be overcome through the use of commercially available off-the-shelf games. Yet commercial availability may limit the extent of their application to games-based
learning outcomes. Furthermore, table top games' social nature may create conditions negatively affecting fellow player interaction. Such interactions in competitive games could cause anxiety. Interactions in competitive games could be undermined by dominant and passive personalities (Gibson & Douglas, 2013). However, these limitations also exist in a digital games-based learning environment. These challenges can be mitigated through instructor expectations and peer influences. Finally, a middle ground between the inflexibility of digital games and the open nature of table top games can be explored. The rich diversity of different game types and deliveries begets the development and augmentation that allow for player agency to affect the game environment (Marchetti & Valente, 2015). Such ability allows students in these games-based learning applications to more fully explore a rich narrative capable of their personal augmentation.

Conclusion

Games have been a marginalized medium, one criticized for its lack of substantive educational relevance (Westera, 2015). Thus games-based learning also suffers from this criticism due to its relevance. In addition Bidarra et al., (2013) illustrated that greater games-based learning implementation is limited due to educational institutions’ unwillingness to change and give up traditional pedagogical values; faculty personal feelings about the use of games for education; the lack of applicable assessment; and limited access to equipment and information. Furthermore, games can also provide students with too much feedback without the dissonance necessary to meet stated learning outcomes (Schmitz et al., 2015). This limitation is further complicated by the use of commercial-off-the-shelf games that may not meet all necessary learning outcomes (Westera, 2015). The diversity of games also factors into the availability of student assessment. The variety and scope of games sometimes makes self-reporting the only
process available to determine learning outcomes (Westera, 2015). Lastly, one of the biggest factors affecting games-based learning applications are issues beyond students’ and educators’ control such as religion, politics and race (Bidarra et al., 2013) that can influence pedagogical changes as a whole. Despite these challenges, games-based learning exceeds at developing individual learners, social connections, and creating personal impact (Westera, 2015) through intrinsically motivating activities (Bidarra et al., 2013). Therefore both experiential education and games-based learning stand to gain through the blended application of both in order to address student learning and development (Schmitz et al., 2015).

In order to capitalize on the nature of games-based learning, both designers and educators need to adapt philosophies that have made each other successful (Hirumi et al., 2010) Designers must include activities which are beneficial to student learning and educators must adopt structures which engage student motivations and desires (Pivec et al., 2003; Ahmad & Jaafar, 2012). No matter what strategies are implemented both designers and educators must rely on the constructed environments of games in order to deliver students with experiential learning environments. It is the promotion of these environments that best enable students to learn through experience (Turkay et al., 2014). The development of these learning environments in turn address the three aspects of learning modalities through game play which include cognitive, social, and cultural gains (Turkay et al., 2014).

Table top games exist as complements to popular video and digital game alternatives. Both sides share similar categories such as role playing, simulation, quiz, and strategy games. However, table top games share some unique categories like dice, luck, outlay, and dexterity games (Bochennek et al., 2007). Furthermore, table top games are classified according to their win conditions including cooperative or competitive games (Bochennek et al., 2007). However,
table top games differ from their digital and video counterparts through the option of player ability to modify the environment. Such modification allows students to explore the basis of rules and structure of the game environment (Sutton-Smith, 1997; Marchetti & Valente, 2015). However, table top games-based learning is still limited by certain factors which include cost and domination of the learning environment by certain personalities (Gibson & Douglas, 2013). Despite these limitations, table top games are uniquely positioned to provide students with the greatest degree of agency and freedom in augmenting, interacting, and changing the game environment to meet learning outcomes (Marchetti & Valente, 2015).

Games have been criticized for their dubious connection to learning and education as well as their primary focus on entertainment. In addition the cost of game development and barriers to application in education are significant. However, the use of games-based learning to meet curricular learning objectives has been established despite limitations for wider applications. Games-based learning can better meet student learning outcomes through well-reasoned design that combines input from both educators and designers. These inclusions should primarily include active involvement in a student centered environment; progressive stages for development and production; and evaluation of student learning outcomes and assessments. Table top games can further these learning gains in an environment that is wholly experiential and builds on strengths established by their video and digital game counterparts. Despite some shared limitations, table top games-based learning provides an application for experiential education in the liberal arts environment that focuses on student experience in intrinsically engaging activities.

**Literature Review Conclusion**
Current applications of liberal arts education emphasizes the primary needs for student learning and development. To become a successfully educated liberal arts graduate a student must think independently, strategize critically, and skeptically observe. These characteristics are also necessary for excelling in a professional world. Yet, current liberal arts pedagogies do not address the needs of these learners. However, experiential learning allows students, faculty, and institutions to address these extant needs through opportunities for educationally purposeful experiences. Despite these strengths, there remain barriers to widespread adoption of experiential learning applications such as cost, institutional priorities, and disparate learning outcomes. However, games-based learning possesses powerful characteristic such as intrinsic motivation, feedback, and social immersion that address the needs for students to learn in a socialized environment. Games-based learning also addresses faculties’ need for greater student engagement and institutions’ needs for low cost application. Therefore the use of games-based learning stands as a viable solution to address liberal arts educational reform in experiential learning.

The application of games-based learning has faced scrutiny as it has had to overcome its perception as an entertainment only medium. However, the structure of games including personalized feedback, tiered challenges, and highly engaging activities promote its value as a tangible application to experiential education. Specifically, the use of flow state in game play induces individuals to engage deeply and regularly in intrinsically engaging activities. When these activities are paired with educational learning outcomes student are provided opportunities to learn in environments that are both personally motivating and fun. Games-based learning applications in the past have revolved mostly around the use of simulations. However, not all simulations are applicable to all necessary learning outcomes. Therefore, educators must take
deliberate steps to pair the most effective applications of games-based learning in an experiential learning environment in order to capitalize on this emergent pedagogy.

Despite their strengths, games have long been criticized for their dubious connection to learning and their focus on entertainment. In addition the cost of game development has stood as a barrier for the creation of educational games. However, the assets of games-based learning far exceed its limitations. In order to prioritize the former, both game designers and educators must work together. This collaborative environment must emphasize the engaging characteristics of games prioritized by designers with the learning outcomes and experiential cycle of engagement promoted by educators. Characteristics of successful games-based learning applications will include active involvement in a student centered environment; progressive challenges for engagement; and student learning outcomes and assessment. Table top games can meet these learning outcomes and more in a wholly experiential environment. The application of games here provides both educators and designers with a more malleable and cost effective solution to experiential learning while simultaneously providing intrinsically engaging activities.

Overall this literature review provided a broad synopsis of games-based learning and its application as an experiential educational component in liberal arts environment. Games-based learning's student centered and engaging philosophy was discussed as an asset for meeting student development and educational outcomes. Despite this, games were not previously considered an application of experiential learning before. This literature review provided background on experiential learning and student centered engagement and how games-based learning addresses characteristics of both. Therefore, this dissertation will address games-based learning’s ability to meet students’ co-curricular learning and development in higher education. The study will focus on the semiotic (Leaning, 2015) state of games and thus will examine how
undergraduate students at a liberal arts college make meaning from their game play.
Chapter 3: Research Design

The climate at colleges and universities currently focuses on a teacher-centered pedagogy. This method fails to address individual learner preferences via constructivism (Kolb, 1984). However, a more applicable pedagogy exists in order to address this need. Experiential learning applies constructivism so that students learn through four distinct phases: concrete experience (CE), abstract conceptualization (AC), reflective observation (RO), and active experimentation (AE) (Kolb, 1984; Kolb & Kolb, 2005). A more contemporary application of experiential education exists through games-based learning which centralizes the student in the learning process through the use of highly engaging forms of interaction such as flow state, intrinsic motivation, and self-determination (Kiili, 2005). Past studies have focused exclusively on academic applications of games-based learning. This study will address a complex problem of practice facing college student engagement and retention. Both are affected by a multitude of issues (Bergen-Cico & Viscomi, 2013; Berger & Milem, 1999; Chapman & Pascarella, 1983). Some of this includes community building and student engagement. The benefits of games-based learning are increased engagement (Vogel et al., 2006), flow state (Kiili, 2005), self-determination, and intrinsic motivation (Smith et al., 2012) which are significant for student development. The focus of this study on the aforementioned problem of practice honors Astin's (1984) involvement theory which emphasizes greater student outcomes relating to greater student involvement. Therefore the research question for this study is:

How do undergraduate students at a small liberal arts college explain and make sense of game play in an academic setting?

Qualitative Research Approach
The purpose of research as a whole is three fold. First the researcher must pose a question; data is collected in order to answer the question; then finally the question must be answered (Creswell, 2012). All research follows this format through different approaches. Qualitative research refines this approach through a constructivist-interpretivist paradigm. This is composed of two parts. The first involves constructivism which is defined as the creation of knowledge through a socialized process (Kolb, 2005; Dewey 1966). The creation of this knowledge is bred through the relationship that individuals have with one another. This relationship is embodied between the researcher and participant in a qualitative study. Knowledge gained in this way carries the subjectivity embodied in the learned experiences and activities of each party. Knowledge generated in this manner is subjectively formed and is influenced by the biases and predispositions of both the researcher and the study participants.

The second part consists of interpretivism which assumes that reality is not completely objective. Instead interpretivism assumes that "reality is intersubjective" and is something that has been constructed socially from multiple perspectives. It outlines the existence of multiple ways to view reality and that multiple perspectives informs how information is understood. The identification of patterns in data sets as well as how meaning is created is the key goal of interpretivists (Butin, 2010). This paradigm further assumes that "truth" is something that is constructed. Interpretivism indicates that truth is created from an individual lens. Therefore the real pursuit is not truth but rather the meaning behind it. Interpretivism seeks to create and identify the "story" behind the data set. Information is provided and then interpreted according to specific and distinctive lenses which create meaning. The creation, understanding, and interpretation of "meaning making" is the unit of analysis for interpretivist researchers. Therefore the key criteria utilized by interpretivists is the trustworthiness and authenticity of both the data
collected and the conclusions drawn from a study. For accurate meaning cannot be extracted without both.

The constructivist-interpretivist paradigm forms the basis of a qualitative research study. Lincoln and Guba (2004) identifies this paradigm as following a specific format of inquiry. First a problem is explored wholly with the researcher establishing a detailed understanding of the phenomenon under study. This understanding is developed and demonstrated through a literature review which frames, delineates, and justifies the problem under examination. Furthermore, the researcher then articulates the research question in a broad manner that will be addressed by the study. Qualitative research primarily differentiates itself from quantitative research through the use of data collected from a small sample of individuals to answer the research question. Furthermore, qualitative research analyzes said data in order to determine themes and descriptions in an interpretative format in order to generate larger meanings. Lastly, qualitative research ends with the creation of a report which takes into account themes that emerged from the data as well as the researcher's own individual subjective bias.

**Interpretative Phenomenological Analysis**

The specific method of inquiry to be used in this study is interpretative phenomenological analysis (IPA) which is an approach to qualitative inquiry that prioritizes understanding the meaning making process of participants. While originally developed for use in areas such as social, health, and human sciences it gained prominence for use in educational applications (Smith, Flowers, & Larkin, 2009). Interpretative phenomenological analysis was selected for this study due to game players interaction with semiotics (Leaning, 2015) which is the interpretation of meaning from the game environment. Such interaction is paramount for the game playing process and is best suited to study through the application of interpretative
phenomenological analysis, as this method concentrates on how individuals make sense of life experiences (Smith et al., 2009). However, the application of interpretative phenomenological analysis does not include just the individual under study. Rather, the interpretative portion of the analysis requires that the researcher play a significant role in determining, extracting, and presenting the meaning made by the individual. This double hermeneutic (Smith et al., 2009) is most evident in table top play which was the main focus and application of this study. The role that the leader (game master) plays in explaining and moderating such game play represents a symbiotic relationship between players and the leader that is best served through the application of interpretative phenomenological analysis.

**Background of interpretative phenomenological analysis**

Interpretative phenomenological analysis was previously identified as a qualitative method in which the researcher engages in a double hermeneutic process. This is different from other phenomenological processes such as descriptive phenomenology where the researcher seeks to exclusively understand the experiences lived by the participants. This approach differs from descriptive phenomenological analysis in that hypothetical interpretation is avoided (Smith, 1987). Interpretation is acknowledged at various junctures through descriptive phenomenology, but as a whole it is treated separately.

**Addressing “voice” in interpretative phenomenological analysis**

Interpretative phenomenological analysis does not closely separate the difference between interpretative and descriptive instances in participant meaning making. Rather the double hermeneutic model of interpretation and description blend into a single stream. This stream's interpretative phenomenology is a voice given to the specific perspective of each individual participant. This voice represents the description of experiences from the viewpoint of
that particular individual. However, that experience is received, reflected, and interpreted by the researcher in a way that communicates that data through coding, memos, and written reports (Smith et al., 2009)

**Structure of interpretative phenomenological analysis**

Eidetic structure or the essence of experience (Ahsen, 1977) is an important component of phenomenological methods. However, interpretative phenomenological analysis does not identify the eidetic experience of the participant. Rather, the experience of the individual is surmised by the individual’s meaning process. The meaning of the experiences constitutes the corpus of data that is interpreted and analyzed by the researcher in the double hermeneutic model. This interpretation, documentation, and reporting constitutes the bulk of interpretative phenomenological analysis application.

**Double hermeneutic and sample size**

The double hermeneutic process (Smith & Osborn, 2003) is the heart of interpretative phenomenological analysis since it represents a symbiotic relationship between the participant and the researcher. This relationship is based upon the researcher's own meaning making process of the meaning making of a participant’s experience. This particular study will focus on the meaning making of undergraduate students at a liberal arts college who engage in game play. As such, participants will seek to make meaning from their own play experience. By extension, the researcher will make meaning from the individuals meaning making process. Both groups will draw references to their process from their understanding of the world around them. However, the researcher exists on a more informed plane as one who understands the underlying theory and framework of the experience (Smith et al., 2009). Conversely, participants are unburdened by this additional knowledge. Therefore, participants’ meaning making process consist of first
order interpretations of experience whereas researchers meaning making process consists of second order interpretations (Smith et al., 2009).

**Outcomes for interpretative phenomenological analysis**

Interpretative phenomenological analysis was selected for this study in order to utilize its double hermeneutic model. The nature of the table top game play includes the introduction of the game, overview of objectives, the structure of play, and an explanation of theme. This activity involves two roles. The first role includes the leader (researcher) and the second encompasses the players (participants). The interaction of both roles embodies the double hermeneutic meaning making process in game play. Additionally, semiotics (Leaning, 2015) represents the interpretation and meaning making created in the game environment. Therefore, interpretative phenomenological analysis was uniquely positioned to answer the research question. Lastly, Kolb & Kolb’s (2005) theoretical framework on experiential learning both frames the research question as well as informs the nature of the interaction that players have with the game environment.

**The source of interpretative phenomenological analysis.** An understanding has emerged identifying game play as a part of experiential learning based on Kiili’s (2005) theoretical underpinnings of games-based learning and Kolb & Kolb’s (2005) experiential learning theory. Therefore, games-based learning utilizes experience in order to both educate and accomplish learning outcomes. Interpretative phenomenological analysis’s use of phenomenology (Smith et al., 2009) connects the opportunity for experience with a method to develop an understanding of its meaning. This meaning constitutes a process in which all individuals form an understanding of the world around them. Husserl (1982) identified phenomenology as a careful analysis of this human experience. Specifically, Husserl sought to
comprehend how someone came to understand and make meaning of said experience (Smith et al., 2009). This position combined with Heidegger’s (1962) interpretation of experiential meaning making provides the basis for interpretative phenomenological analysis. Therefore, this study will concentrate on meaning making process of games-based learning and how the game master (leader & researcher) interprets the phenomenology of participants.

**Appropriateness of interpretative phenomenological analysis.** Interpretative phenomenological analysis was previously discussed as the preferred strategy for this study due to its double hermeneutic model. While this strategy can be applied to many implementations of games-based learning it is specifically appropriate for this study’s use of table top games-based learning. This is due to the dual role of the researcher as both the leader (teacher) of the group as well as the game master. Additionally, Leaning’s (2015) focus on semiotics in game play further supports the use of interpretative phenomenological analysis. Semiotics’ development of the interpretation and meaning making in the game environment best suits the theoretical framework, methodology, and extant characteristics of games-based learning.

**Approach of interpretative phenomenological analysis.** Questions asked of participants covered broad areas such as a summary of the experience, the significance of the experience, and what will change for the individual in the future because of that experience. These questions ranged from evaluative and narrative to comparative and descriptive. These encompass questions categories that Smith et al. (2009) identified as eliciting both broad and deep responses from participants. Questions will asked of participants after each game play session. These questions were fielded in semi-structured interviews. In keeping with this format, the interview schedule gave the participant advanced knowledge of the questions to be
asked. In addition, each participant was encouraged to speak at length with minimal input from the researcher (Saldana, 2016).

Data from these interviews was captured via audio recording, researcher notes, and analytic memos. All three formats were read and re-read by the researcher prior to analysis. Transcriptions of the audio from the interviews were made and member checked by participants in order to confirm accuracy and intention (Saldana, 2016). A cycle of coding and memoing by the researcher followed this step. The first cycle coding of transcripts involved the development of preliminary themes based on participant data. In addition to first cycle coding, the researcher conducted analytic memo writing in order to reflect on both the coding process as well as emergent patterns in the data’s corpus (Saldana, 2016). Both the initial cycle of coding and preliminary memos were developed to gather first cycle themes. Such themes were then revisited and recompiled during second cycle coding processes (Lewins & Silver, 2007; Saldana, 2016). At this stage some preliminary codes were consolidated into larger themes or dropped altogether. The grouping of themes were then organized into superordinate themes.

Participants

The research question for this study encompassed how undergraduate students at a small liberal arts college explain and make sense of game play in an academic setting. Therefore the study sought currently enrolled undergraduate students at a small liberal arts college. In addition the participants were diversely sampled to include a variety of demographics. Those demographics encompassed (1) gender identity; (2) class year (freshman - senior); (3) residential status (resident or commuter); (4) admissions status (traditional student, non-traditional student; transfer, NCAA athlete, honors program; HEOP program; international); (4) age; and (5) ethnic identity (African American, White, White Non-Hispanic; Hispanic; Asian /
Pacific Islander, Other). In addition, this sample group of participants was classified into at least four categories: (1) light game player; (2) casual game player; (3) persistent game player; and (4) serious game player. Game play is defined as any activity in which anyone engages in any game play for intrinsic purposes across any platform (i.e. video, digital, or table top). Light game players are defined as those who do not regularly play games or average 0-1 hours of play per week. Casual game players play games currently and average playing at least 2-5 hours per week. Persistent game players are individuals who play games consistently and average playing 5-9 hours per week. Lastly, serious game players play consistently for at least 10+ hours per week.

**Setting**

The setting for the study was a small, private, religiously affiliated liberal arts college located in the northeastern United States. The institution is approximately 60 years old and enrolls about 1,780 undergraduate students on a suburban campus. Approximately 45% of students are male and 55% are female. The institution utilizes a rolling admissions program with an 80.8% acceptance rate. The college's Carnegie classification identifies it as a private not-for-profit organization with balanced arts & sciences/professions with some graduate coexistence. It is identified as a very high undergraduate serving four year institution, full time, small, primarily residential environment.

**Sampling technique**

Participants for this study were purposefully sampled (Smith et al., 2009) from the selected institution. This was accomplished via general email announcements to the student population in order to recruit study participants. Participants for the study were selected according to their availability, eligibility, and diversity according to the player demographics.
outlined previously. A final sample size of 12 participants were selected to participate in the study (Appendix B Participant List). This sample size is in keeping with interpretative phenomenological analysis's ideographic approach (Smith et al., 2009) to understand the meaning making of individuals via a double hermeneutic model. Students sampled in this manner possess the commonality of currently enrolled undergraduate students at a liberal arts college in the northeastern United States. However, their experiences learning through game play produced data in order to understand their meaning making experience affecting their personal development.

**Sample size**

While this sample size was small compared to other qualitative research methodologies and techniques, it was uniquely appropriate for addressing the research question for this study. In order to best understand the meaning making experience of students in a table top games-based learning environment a small sample is necessary. This sample size ensures that all players will be available to participate and play various table top games in both competitive and collaborative formats. Furthermore, other interpretative phenomenological analysis studies have utilized same or smaller sample sizes in their work. Kabilan (2013) interviewed 6 pre-service teachers in order to better understand their professional development experience during an international teaching practicum. Klockare, Gustafsson, and Nordin-Bates (2011) conducted six semi-structured interviews with 6 female professional dance teachers in order to ascertain how they used psychological skills with students. Lastly, and applicably, Whitty, Young, and Goodings (2011) interviewed 5 participants in order to understand their experiences witnessing symbolically taboo activities in MMORPGs (massively multiplayer online role-playing games).

**Interview schedule**
In order to gather significant data for analysis participants engaged in 6 weeks of table top play sessions. Each week, 6 participants played 1 table top game for no longer than 3 hours. Appendix C lists Table Top Games played during the study. At the conclusion of each session, each participant engaged in an approximate 60 minute semi-structured interview with the researcher. Each interview was audio recorded utilizing a primary recorder and an auxiliary recorder. A transcript was generated to be member checked and coded for analysis. This format will produced 36 interviews from over 6 weeks.

**Procedures**

The application of interpretative phenomenological analysis influences all areas of its design and implementation. Beginning with the research question, this study was crafted to best understand the meaning making process of undergraduate students at a small liberal arts college through game play in an academic setting. Therefore this study's data collection procedures and analysis followed established interpretative phenomenological analysis studies' structure. This structure is detailed and outlined in the following sub-sections.

**Data Analysis**

Data analysis for this study was divided into two phases. Each phase encompassed three steps in order to best extract the meaning and understanding of participants utilizing interpretative phenomenological analysis via the double hermeneutic model (Smith et al., 2009). The first phase included developing a dialogue between the researcher and participant; line by line analysis of the written transcript to extract claims, concerns, and understandings; and finally member checking with the participants in order to determine coherence and plausibility of the meaning making process (Smith et al., 2009). The second phase concentrated on the coding process and included the identification of diverse emergent themes that are broad, narrow,
common, and nuanced; reflections and perceptions of the researcher via memoing; and finally the development of a structure and relationship between themes (Smith et al., 2009). Data gathered from this study was analyzed by each individual first before developing superordinate themes. The structure of this process allowed the researcher to engage sequentially, methodically, and comprehensively (Larkin & Thompson, 2011) with the data. This relationship ensured that a continuous cycle of understanding and reflection occurred. Once data was analyzed, the researcher then examined superordinate themes and considered them in relationship to Kolb & Kolb's (2005) theoretical framework of experiential learning to determine how findings are influenced by existing theory.

**Data organization & coding.** After interviews were conducted a written transcript was generated utilizing a transcription service. The generated transcripts were read and re-read by the researcher (Smith et al., 2009) in order to verify the accuracy of the transcription as well as data provided. In addition, the transcript was provided to the participant in order to member check and re-verify its veracity. The data was then subjected to a line-by-line analysis (Smith et al., 2009) and initial coding was conducted in order to ascertain emergent themes embodied in the corpus. The next step included the grouping and development of the individual emergent themes generated from first cycle coding into larger bodies (Smith et al., 2009) according to emergent trends. These first cycle grouping trends were then examined and consolidated in order to ascertain larger themes. Lastly, these grouped themes were examined from the perspective of the individual throughout the entire study; the group from each play cycle; and the group throughout the entire study in order to develop superordinate themes and patterns that emerged throughout (Smith et al., 2009).
**Qualitative software support.** NVivo® was utilized in order to support analysis and data gathering. This software aids the researcher in organizing, analyzing, and discovering insights in qualitative data sets. This software package was selected in order to reduce the work and time required to analyze and manage large amounts of qualitative data. In addition, NVivo® provides the researcher with resources in order to discover connections between data points that may not be evident utilizing a manual approach. Overall, the software package provides a single source for the researcher to analyze and manage data in order to best discover and generate insights in a more efficient way.

**Interpretative phenomenological analysis focus.** The application of interpretative phenomenological analysis to this study also informed data analysis. As the essence of understanding lies in the double hermeneutic process of interpretative phenomenological analysis the researcher was also included in the interpretation of meaning (Smith et al., 2009). This occurred via dialogue with the participants, reflection of the written transcript, and creation of analytic memos. Such processes best positioned the study to understand the claims, concerns, and understandings of participants and identified emergent patterns and themes from diverse perspectives. These themes were then consolidated and developed into a larger and fuller narrative which best presented data to answer the research question.

**Ethical Considerations**

This study is not likely to cause physical, psychological, or emotional harm to participants. Despite this, Weiss, Geppert, Coverdale, Louie, and Edenharder (2004) indicate that researchers must remain cognizant of the ethical consideration that arise during research activity. Therefore, this study remained in full compliance with intuitional review board guidelines and mandates at both the home and participating institution regarding protection of human subjects.
Furthermore, this study recognized the existence of cultural division, power imbalances, and political influences that could comprise the integrity of its outlined procedures. However, these limitations were mitigated by providing a safe, open, and welcoming environment for participants in order to reduce the impact of these negative effects. The study ensured this by protecting participants’ identities. Each participant was given a pseudonym to mask their identity during the study. Furthermore, any information which could identify the participant was held confidentially. Any key used to identify participants from audio recordings and transcript files was securely stored in separate locations. All identifying markers were erased from any documents. Transcripts of interviews were labeled with assigned participant pseudonyms. Additionally, transcription services were used to transcribe audio data. As such, the outside transcriber did not have any contact with any participant and was only able to identify individuals by pseudonym. Audio files used for interview transcription were only accessible by the researcher and primary investigator. These audio files were permanently deleted at the conclusion of the study. Physical documents such as a signed consent forms and interview notes were held in a locked receptacle accessible only by the researcher. Lastly, all digital documentation was both encrypted and password protected in order to maintain confidential integrity.

Trustworthiness

The subjective nature of interpretative phenomenological analysis has often been cited for its lack of objective validation and methods of verification. Therefore the establishment of the study's credibility is essential for supporting any conclusions drawn. Creswell (2012) indicates several verification strategies that qualitative researchers use to authenticate their findings. These strategies include participant integrity, data corroboration, and triangulation.
Due to the relationship that the researcher has with students during this study it was integrally important to minimize any potential threats to internal validity. As a student affairs administrator at the participating institution, the researcher holds a potentially close relationship to study participants. Therefore care was taken to purposefully sample participants who did not have a power relationship (supervisory or advisory) with the researcher. Furthermore, the researcher made clear to selected participants the purpose of the study ensuring an open, welcoming, non-judgmental, and confidential environment. To assuage any ambiguity of the study's purpose and direction a copy of study's proposal was provided to all selected participants for review.

**Credibility.** The study will utilize member checking and clarification of the researcher's bias. Member checking occurred during the data gathering stage. Participants were provided transcripts of their one-on-one interviews in order to verify the veracity and accuracy of their statements. This is necessary in order to verify semiotics (Leaning, 2015) and the interpretation of meaning from the game environment. Additionally, member checking was integral in corroborating participant statements and verifying the communicative essence of the experience (Doyle, 2007). Thus, member checking allowed the researcher to annotate primary data sources in order to most authentically represent participants' views. These annotations were included with the transcript and referenced during the data analysis phase.

Additionally, the researcher's own bias was closely examined in concert with the verifiability efforts of the study. Finally, the thesis advisor's background of qualitative data analysis informed and provided feedback during the data gathering and analysis stages.

**Transferability.** The researcher provided details about the setting, participants, and methods in order for readers to make educated decisions about the study's transferability. Full,
transparent, and contextually supported information regarding the study's structure and implementation was provided in order for the readers to make their own judgment regarding veracity within the context of their own experience and claims in existing literature (Smith et al., 2009).

This study provided thick descriptions (Spencer, 2011) in order to offer both the reader and the researcher with a fuller portrayal of experiences. These descriptions formed the basis for the interpretation of passages utilizing interpretative phenomenological analysis's double hermeneutic analytical process. As such, this process utilized the researcher's own experiences, education, values, and philosophy in order to inform the discussion and conclusions drawn from data gathered during the study (Saldana, 2016).

The idiographic focus of interpretative phenomenological analysis provides the reader with new data and findings that better informs and influences extant literature. This relationship is formed through two parts. The first addresses the relayed and interpreted experience of the study's participants. The second addresses the reader's own understanding and focus of the problem of practice. Both relationships frame the understanding of the theoretical transferability (Smith et al., 2009) of the study and the applications of how experiential learning may be applied in a games-based learning environment.

**Dependability.** Compared to quantitative post-positivist models, Guba and Lincoln (1982) propose the application of internal credibility for qualitative studies. As such, external validity is replaced with transferability, reliability replaces dependability, and confirmability replaces objectivity. More specifically the proposition of dependability refers to the ability of readers to review and audit the findings of this study in order to determine if conclusions are...
supported by empirical data (Anney, 2014). This study accomplished dependability through three methods: establishing an audit trail, utilizing coding cycles, and implementing member checking.

The first step involves an audit trail which provides readers with a comprehensive presentation of the research data to verify the veracity of conclusions and claims made by the study. This audit involves accounts of research decisions and methods for how data from the study was gathered, documented, and analyzed (Anney, 2014). Coding cycles describes the process in which the researcher will perform first cycle coding and then pausing to reflect and compose analytic memos before engaging in second cycle coding after a significant amount of time has passed (Anney, 2014). Lastly, member checking constitutes the internal auditing process in which transcripts were provided to participants in order for them to review and annotate such data. This process ensured that the idiographic focus of interpretative phenomenological analysis was integral to the analytic process.

**Confirmability.** Confirmability from this study was supported via three means. The first is provided to participants at the data collection phase of the study via member checking. Participants were provided with un-encoded raw transcripts after each one-on-one interview in order to annotate any text and clarify meaning and experience prior to the researcher engaging in the coding process (Creswell, 2013). This was done in order to fully capture and understand the raw data prior to the interpretive phase of the coding process in which the researcher engages in the double hermeneutic of interpretative phenomenological analysis. The second means involves the provision of an audit trail. This allows readers to trace and verify the veracity of the researcher’s claims to provide confirmability (Anney, 2014). The third and final means is the drafting and inclusion of analytic memos detailing the researcher’s perspective during the data gathering and analysis phases (Smith et al., 2009). These memos provide both initial and
reflective documents regarding the data’s state and the researcher’s own appraisal and interpretation to be included in the analytical process. The inclusion of all three means demonstrates a level of confirmability in keeping with Shenton’s (2004) expectations that findings emerge from the study’s data rather than exclusively form the researcher’s own interpretations.

**Potential Research Bias**

This study addresses the research question “How do undergraduate students at a small liberal arts college explain and make sense of game play in an academic setting? This question is examined through experiential learning as a theoretical framework; student affairs practice as my professional’s lens; as well as through my personal lens as an avid gamer.

As a student affairs practitioner I have focused on making student engagement a cornerstone of my professional philosophy. However, the rising cost of higher education; the increasing need for access; and the necessity of tying learning outcomes to professional preparation questions the viability of extracurricular student engagement. This study intended to combine experiential practice and games-based learning in a feasible and financially economical model to positively influence student affairs practice. As an experiential educator I know that experiences play a large part in influencing student development. As a practitioner I have included experiential learning opportunities via many avenues. I have also had the opportunity to study, participate, and implement games into experiential education with great success in student engagement. As an avid gamer I have introduced game mechanics and game elements as part of educational practice. Therefore, I have a close affinity to various implementations, uses, and limitations of the latest and most established games. I believe that these games can be used to address many challenges with student development but simultaneously realize that an
understanding of limitations will shape successful practice. Furthermore, I believe that the inherent processes possessed by games-based learning can work in concert with higher education and student affairs to engage, stimulate, and promote the active learning of today's undergraduate students.

As a child that grew up with games for most of his life I have a bias towards wanting to implement games-based learning into student affairs work. My belief is that this implementation can further student affairs and promote student engagement. While societal hegemony does not exist regarding game play (Jupp & Slattery, 2010) I still believe that proliferation of games-based learning can aid student engagement. My personal journey in life and in education have at one point all related to games. They have remained a consistent aspect of my being. I would like to see gaming practices implemented on a wider scale so long as they benefit the audience.

Briscoe (2005) indicates the inclusive representation of researchers from a variety of social groups provides greater diversity and scholarly debate. While "gamers" do not necessarily identify as a marginalized group, they nonetheless represent a subculture who are passionate about their interests. I have a vested personal interest in seeing games-based learning take root in student affairs practice. However, as a researcher I must remain neutral. Ethically I have a duty to represent research and findings despite my personal desires. Because of this I present my topic from a perspective that honors all views: inclusive of those that are supportive as well as unsupportive of my position. Therefore in order to mitigate any potential personal or professional bias for this study I will include three structures to inform discussion and support conclusions. Member checking will ensure that the intended meaning of data is conveyed by participants. An audit trail will establish the line of reasoning for creating codes and drawing conclusions. Lastly, analytic memoing provided me with the ability to document the double hermeneutic of the
interpretative phenomenological analysis process. All three aspects combined ensured trustworthiness, supported credibility, certified dependability, and warranted confirmability of the study.

**Limitations**

The limitations of this study are constrained to generalizability of conclusions offered. Participants were purposefully sampled in order to best represent the small liberal college that is the site for the study. However, the participants do not represent all liberal arts college students from other institutions. Moreover, this study’s concentration on table top gaming limits the generalizability of conclusions to gaming studies as a whole. As such, readers should understand the conclusions drawn are based on the particular participants, at a specific institution, experiencing a delineated phenomenon. Furthermore, the application of experiential learning (Kolb & Kolb, 2005) as the theoretical framework limits any conclusions. These limitations include the theory’s subjective nature, the structured and progressive form of knowledge creation, personal reflection, situated learning process, and the perspective from which learning takes place. Finally, the application of interpretative phenomenological analysis reflects the experiences of only the participants selected to undertake it. The games-based learning environment that these undergraduate students at a small liberal arts college experienced in an academic setting is representative of these particular and unique circumstances. Therefore the study’s conclusions may not be applicable to other groups of students or institutions.
Chapter Four: Findings and Analysis

The purpose of this study was to investigate how undergraduate students at a small liberal arts college explain and make sense of game play in an academic setting. The analysis of the data yielded four superordinate themes which included: 1. Structure, 2. Self-Determination, 3. Social and 4. Strategy. In turn each theme included a variety of sub-themes which are: 1.1 History, 1.2 Family, 1.3 Immersion, 1.4 Preference, 1.5 Peers, 1.6 Separation & Influence, and 1.7 Malleability; 2.1 Challenge, 2.2 Competition, 2.3 Cooperation, 2.4 Cheating, and 2.5 Games-Based Learning; 3.1 Relationships, 3.2 Experience, 3.3 Leadership, 3.4 Negatives, 3.5 Emotions, and 3.6 Strategy; 4.1 Logic, 4.2 Experimentation, 4.3 Cooperative Elements, 4.4 Competiveness, 4.5 Luck, 4.6 Skill, and 4.7 Social. Superordinate themes were identified as those that occurred in all of the interview participants. Sub-themes were identified as those that occurred in at least three of the twelve participants’ interview data. Table 1 provides a listing of the superordinate and sub-themes that manifested during the analysis process, as well as the recurrence of each theme across participants.

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<td>Identification of Themes</td>
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<td><strong>Superordinate Themes</strong></td>
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<td><strong>Subthemes</strong></td>
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**Structure**

Structure was the first superordinate theme revealed in the study. Specifically, structure related to the experiences that each of the study participants embodied throughout their game play careers both in the study as well as personally within their own lives. This superordinate theme was subdivided into seven sub-themes which included history, family, immersion,
preference, peers, separation and influence, and finally malleability. Each one of these sub-themes are examined in depth according to the relationship each one holds within the structure of each participants’ game play experience.

These sub-themes included relationship to each participant’s history with game play, how they began playing games, what their relationship with game play was, and what their earliest gaming memory included. This often related to the family sub-theme which identified and exposed how many of the participants were connected to their families throughout their game playing career as well as how familial relationships impacted their gaming habits. Familial habits in turn influenced immersion in a game play environment and the factors that played a role in how players perceive game play and immersion. Immersive characteristics were revealed to be included in multiple platforms. Those platforms are described in the preference sub-theme which identifies where students play games (with each other, on table tops, online, in person etc…) and what attraction each participant has to each medium. The mediums of interaction inform how and when these players interacted with their peers in game play environments and the types of relationships created from these interactions. These relationships coupled with characteristics of game play then inform aspects of separation and influence. This sub-theme explores how players divorce themselves from the game world versus being influenced by it. Lastly, the malleability sub-theme identifies one of the most salient characteristics of game play exposed by participants' ability to change and influence their game world as part of their own agency.

History

The historical nature of play for participants revealed an intrinsic and vital role in determining their gaming direction later in life. Both Alastair and Pablo referenced how playing their Nintendo Game Boy represented some of their earliest gaming memories. For both
participants, this represented their entry into the gaming world and sparked further interest in something that would help shape the rest of the habits throughout life. Matthias had a wider view of what included game play. When asked if playing soccer “counted” as game play he responded that he had been gaming “…pretty much my whole life.” His soccer history fueled his competitive drive and spirit. This represented something echoed in Peggi’s responses when she indicated that being the youngest sibling fueled her competitive nature, which in turn spilled over into game play.

Since their earliest beginnings, the gaming habits of study participants grew to include games other than traditional table top games, video games, and sports. Findlay has since become involved in a local billiards league and is a regular beer pong player. Frankie’s earliest childhood memories affected his decision to begin emulating games from his past like Super Smash Bros and F-Zero. Though, Matthias has the most interesting gap from childhood to adulthood as most of his gaming habits ended when he was a child and picked up again after beginning college.

The intellectual property of games was a facet that attracted players. Specifically, Farra was attracted to the newly released Pokemon GO not simply for its game play, but also for its nostalgia value stating:

Yeah, and I think it's also besides that and especially when it first came out. It's also nostalgia value because when I was younger I played the Pokemon games. I think I stopped after Diamond and Pearl or something. It's like going back and recognizing all these things especially since Pokemon it's doubled in size and stuff. I don't know what's going on anymore.

The social and physical aspect of playing served as additional bonuses. Besides Pokemon, Farrel also consistently played Magic: The Gathering as a collectible card game and
dropped off at the beginning of his college career, but recently re-kindled play because of its nostalgic effect.

Lastly, the historical reason that players played games was not always intrinsically motivated. Peggi mentioned over the course of several interviews that she most frequently played mobile games to “kill time” as opposed to being attracted to the game. This aspect was also supported by Matthias who began playing games again at the beginning of his college career in order to both kill time as well as to socialize with new classmates. The socialization focus in player histories reflected references in both their peers as well as family members.

**Family**

Family was one of the more common themes in the structure of players’ histories. Some of these references represented the closest and most becoming relationships between participants and their families and represented many formats. Peggi spoke about playing the games Spit and Spoons with her sister. Sheppard indicated one of his earliest memories was playing the video game Bomberman on a PC with his cousin. Rosemarie recounted her earliest memories playing table top games with her parents. Since Peggi was the youngest sibling out of her family she was always competitive to defeat them at family game nights. She indicated: “I'm the youngest actually of 3 children so basically I'm always like the lowest on the totem pole, so once I win it's good.” This competitive aspect shaped both her personal drive for competition as well as her desire to derive pleasure from overcoming others as a challenge.

This games-based contentious relationship with family members was referenced in other interviews. Barris indicated that his mother represented this dualistic nature in the relationship fostered between them. His mother was the first person to introduce him to games by playing Connect Four against him when he was younger. As he aged, his gaming interest grew and
became more varied including modern video games like Fallout 4. However his dedication to these new games has tested his relationship with his mother who consistently chastises him for spending too much time playing them. The maternal relationship fostered between Barris and his Mother was echoed in the beginnings of Matthias’s gaming life as his mom introduced him to simple rudimentary games like Slides and Ladders and Candy Land which formed some of his earliest gaming memories. However, unlike Barris, Matthias didn’t indicate how his relationship with his mother changed in his return to gaming activities. Though, a distinction can be made between both participants as Barris’ gaming activities take place home alone whereas Matthias plays on campus with peers away from his home environment. Conversely, Pablo articulated a differentiated view of family gaming when he indicated that table top games have recently become a familiar and social aspect of his gaming life with his family. His family recently included weekly game nights that encompass traditional games like Mahjong as well as a short, filler, modern table top games. These gatherings for him represent an integral social element to his family dynamic as well as a maintained connection to the gaming hobby.

**Immersion**

Theme and content of games contributed to players “immersion” in the world of the game environment. Farra indicated how the world of playing Pokemon GO was an immersive enough experience of her enough to be addicted. This carried over to role-playing games where she would become even more lost within the theme and story. Barris shared the same opinion regarding his play of Battlefield 1 which he described as very engaging and immersive based on its historical content. However, story alone didn’t contribute to individual players’ attraction to games. Findlay indicated that the art style alone in Team Fortress 2 was enough to draw him to play and explore. The existence of an open world for exploration and interaction was incredibly
attractive for Farrel who saw it as an opportunity to find all the game had to offer. This exploration was best described when Pablo explained his individual experience of what game play represented for him:

Just the fact that I guess playing with this people, because at first we were kind of awkward as to you know, we're sitting here on a Sunday night and we're going to play a game. That was sort of very methodical and very formal. Then once you dive into it and you lose yourself in the game, you get to know who this people are. You sort of dive into who they are as individual. Not only as individual but how they interact with other people as well. You don't realize it but you become vulnerable and everybody else also becomes vulnerable in that moment because they're giving their identity up to the game. They're giving everything that sort of like limited them as an individual becomes a second concern to the goal of the game or at least the interaction of the game.

This was something he connected very specifically to playing a game like Fallout 4 where the immersive world of the game mirrored what was possible in the social structure of table top play. The immersive factor of the theme and story was not something that merely augmented their experience. Rather, Matthias, Richmond, and Peggi indicated that closely adhering to the theme behind The Resistance: Avalon solidified their personal narrative in the game play environment and furthered their enjoyment overall.

Likewise, the story and characters within the game environment also contributed to players’ immersion. Pablo posited that the combined narrative and story along with the non-player characters (NPC’s) from Fallout 4 created a sense of fullness and embodiment of a world that was alive and distinct without his necessary input. This story driven nature of games was also present in both Farra and Barris’ responses of how their experiences aided their immersion
and attraction to games. However, the characters of digital games alone did not share attachment to players. Peggi, Rosemarie, and Farra also became attached to the non-player characters in the game Flashpoint: Fire Rescue where cardboard chips representing people and pets to be rescued from a blazing inferno were sorely missed when they succumbed to the fire and were removed from the game board. However, Sheppard was able to separate the thematic environment from their actual game play when he considered these cardboard chips as an “Acceptable lose I guess. Because, we found a way to dehumanize these people.”

In addition, immersive theme, story, and characters of games aided players in escaping reality thought game play. Rosemarie indicated that some of her childhood was spent playing table top games solo as a means of escape from real world situations. The immersive theme, stories, and characters of games aided in that process. Furthermore, Richmond indicated that active role-playing by other players further solidified the game environment’s immersion. Specifically he stated that other players making comments like

"Let's go on the quest." That just added another fun element to it. Other than, "We're going to have these people choose success or fail." Having a storyline behind it really made a difference in the game.

This in turn helped him escape the structure of reality and fully immerse himself in game play. However role-playing alone did not convince everyone as Farrel responded that the theme didn’t really satisfy his immersive tendencies in the context of the game and did not provide any significant value to his experience.

Preference

All participants indicated playing some sort of digital game in their past history. This study was really the first time that some participants played table top games at length with
others. However, some study participants had played table top games as one of their earliest memories. Rosemarie indicated that she enjoyed playing both table top and digital games and would vacillate between both formats. This was mostly due to time constraints as digital games often took less time than their table top counterparts to setup and play. This choice alone didn’t involved just time as Richmond indicated that he plays chess both in person and online and prefers different formats dependent on how he feels like playing. Engaging opponents in a chess match online allowed him to move faster but often slowed him down when thinking about possible moves he could make. Whereas playing in person he is able to better strategize against an opponent that is sitting in front of him. Lastly, this preference in game play also extended to the different types of digital games available. Barris talked at length over several interviews about how he was currently transitioning from console game play on PlayStation 4 to PC play as it would allow him to remain at the current edge of gaming hardware instead of relying on the performance of pre-built console systems.

**Peers**

The history of game playing for participants also indicated a strong connection to the social aspect of playing with their peers in their own socialized environment. This included responses by Barris, Richmond, Frankie, and Matthias who indicated that both before and during the study they were able to connect with their friends and peers. That helped solidify their connection with their classmates and other students in the community. This helped some participants in some ways more than others. Frankie indicated that by playing with peers he was better able to understand how they played and what strategies they would often pursue. Conversely, Rosemarie indicated that playing with her peers allowed her to pursue, experiment, and create her own strategies. These opportunities developed in both cooperative as well as
competitive play. Lastly, Matthias indicated that he continues to play games for the social element of interacting with his peers in addition to a more functional reason like killing time.

The interaction of players with their peers was something that was shared both in the digital as well as the table top environment. Frankie indicated that his attraction and history to playing games was mostly driven by his desire to play something with his friends. This was echoed by Matthias, Richmond, and Peggi who stated that their personal relationships were strengthened with their friends when they engaged in game play with them. This connection between socialized structures in students outside of study was further explored in Peggi’s gaming activities with her roommates. Unlike the study, Peggi reported that introducing game play to her roommate didn’t work out because her roommates did not learn as fast she did. Peggi elaborated by stating:

Because I tried to teach it to my friend and she didn't know how to play it and she didn't find it as fun because it wasn't...I was like, "Can I go real speed?" Because I was going slower than I usually do. Then she was like, "Yeah." Yet she was still losing when I was going slow.

While the learning aspect of game play is inherently part of the experience, the enjoyment of that experience didn’t carry over to her relationship with her roommates.

Lastly, peer interaction in the history of participants exposed some behavioral changes in players. Specifically, Alastair observed the contentious relationship that existed between Peggi and Frankie during one particular gaming session. The observation was born out of different play styles that caused friction over multiple play sessions. This relationship encouraged Alastair to change his play style, indicating that he needed “…a little more patience for those who don't work as fast as I do.” This behavioral change extended to Farra, Rosemarie, and Peggi who
responded that the communications lessons learned from playing cooperative table top games were applicable to their work in academic group projects. This was best emphasized in Sheppard’s final conclusions about the study in his grown ability to better empathize with people and see different points of view more clearly.

**Separation and Influence**

Separation and influence played significant roles in the history of participants game play habits. Peggi indicated that the experience of playing a game is wholly separate from the real world. Therefore, the grudge that she held against Frankie from previous play sessions did not carry over to her relationship with him outside of the game play environment. This was echoed by Sheppard who indicated the same as the feelings and reactions that from the game do not extend outside the game. This is in stark contrast to Barris who indicated the opposite: that games provide not only a separation from his actual life, but also an immersive and escapist opportunity for him to flee the rigors of academic work and personal challenges. When asked about balance between his academic, personal, and gaming life he indicated:

> It doesn't feel like I'm missing out. It feels like I'm just not getting anything done. I'm in the same place and not moving forward. Right now it's more of a detriment. It's a drug right now. I don't want to take it but the thing is it's the only thing that makes me feel good at the moment, so I keep taking it.

This influence stands in both contrast and comparison to the separation indicated by Peggi and Sheppard who not only cognitively separated game play from their real world interactions, but divorce it wholly from their personal lives. Barris on the other hand seeks it to find separation from his real world in an attempt to escape personal challenges.
Additionally, anxiety was a reason why two players chose to pursue gaming as an activity. Farra indicated that she suffered from ADHD and therefore plays games in order to escape the challenges that the conditions that cause it. Rosemarie revealed that she suffers from anxiety and currently seeks treatment. However, playing games does ease the anxiety that occurs for her. Lastly, some players indicated that there was no impact for them in either separation from their game play habits, immersion, or escapism. Matthias and Farrel both indicated that their game play had no affect on them personally and therefore fell into neither category.

**Malleability**

Malleability was a concept that was shared by many of the participants in the study. The relationship with this concept varied according to the kinds and types of games played. Farra connected her history of playing the SIMS to the ability to enact and effect change to the game world. She indicated that the structure of the game was such that any decisions made would affect the characters within it. Farra envisioned that choice as binary: either acting malevolent or benevolent towards the simulated characters in this game environment. While given the choice to be either a “good” or “bad” player, she chose benevolent but recognized that it is up to the individual person to make that decision.

The concept of malleability also extended to two particular games that were played in the study. Specifically in the game King of Tokyo where players acted as kaiju or gigantic creatures battling both each other and the city of Tokyo for dominance. The game has a clear rule which states how players may be eliminated. Since the game is about dominance, player elimination is a key objective of the game. However, other players involved in this play session all came to a consensus about player revival after Alastair was knocked out early in the game. Thus, when
given an option to resurrect and re-join the game Alastair actively lobbied for his inclusion, stating specifically:

> I felt very out of control because my opinion is, "Yeah, let's throw in this house rule because I'm already dead. Nobody else is dead yet." It was me trying to maybe convince my opponents to make this house rule, make this house rule fair I guess fair for everyone, so they'd accept it, but it works out in my favor because I get to come back, so we were talking about that they were fine with me coming back. The real conversation was about how much health I'd have when I come back. We came to the consensus, people originally wanted five, but from my experience I went from, I think we made it once around the board before I died and so it was like five health is really easy to get knocked out. If someone rolls two attacks and someone rolls three, that's two rolls and I'm already out. Having to convince people to let me get seven to come back in was really helpful.

While Alastair could have acted in pure self-interest, he instead found a solution to the problem that allowed him to continue playing with a fair handicap compared to the existing players. This change in rules and consensus building represents the malleable aspect of this game play. However, it was only revealed later in interviews that while the group came to a consensus about allowing players to re-enter the game, both Barris and Rosemarie cited criticism for this change. Barris indicated that he was against it but preferred to remain a “good sport” and thus allowed the change to continue. Rosemarie was more lenient in her acceptance of the change but was critical that some players used it up to three times during the course of one play session.

The malleability aspect was also present in the cooperative game Flashpoint: Fire Rescue in which players acted as fire fighters battling a house fire while also trying to rescue trapped occupants. One of the minor rules for the game limited the use of the “deck gun” in the provided
fire engine that was very effective at extinguishing fires. However, it was limited to only parts of the board not occupied by firefighters. The players came to consensus to ignore this rule stating that it would have been too hard and not fun to play with the rule as stated. Alastair, Farra, and Peggi indicated as much when asked if ignoring the rule constituted cheating. The only player to deviate from such a conclusion was Sheppard who stated that it was not cheating. Rather, the players chose not to play the whole game. Given that scenario, he would have rather played the game with this rule included and at its most difficult level.

Conclusion

The major sub-themes explored in the superordinate theme of structure included the history of game play for each participant, the role that family played in their game play history, the factors that influence immersion in the gaming environment, their preference of which types of games to play and in what format, the role that peers had in their gaming habits, the separation and influence of game play in their lives, and finally the malleability of game play for players.

The historical aspects of game play for each participants indicated that they all started at relatively young ages and gaming had been a significant aspect of their lives when compared to other types of involvement they had as children. As such, the role of family in their game playing histories was a critical one. Family connection was one that often had a dialectical relationship between gamers and their parents. The game play habits of each participant also addressed the immersive qualities of games. This was specifically referenced in the themes, story, and characters of the games that these participants played and their connection to each element as part of a larger world building mechanism. Granted, some of these immersive qualities helped players “lose” themselves in the game world, but for others it served as a method for their attraction to game play. This immersion represented itself in multiple formats including both
digital and table top games. Participants indicated as much when they discussed preference for the different types and modalities including different types of table top and digital games.

However, immersion and preference alone did not affect students’ game play habits as much as peer relationships did. Responses from all participants indicated a socialized structure and nature that was present both inside as well as outside the game environment. This affected the structure of their play overall in their connection with peers and how their relationships with each other affected their mutually generated connections. These peer relationships best informed the social superordinate theme discussed later. Lastly, separation and influence addressed how some participants were able to divorce themselves from the nature of the game world as well as how instances of game play affected their lives outside of gaming. Some participants indicated their ability to keep everything totally separate while others felt a strong pull to continue to immerse themselves in the environment. This push-pull relationship between participants was also shared in their responses to the malleability of game play as it represented their ability to affect change in the game environment.

**Self-Determination**

The self-determination superordinate theme represented participants’ interaction with different elements of game play as well as with other players. This superordinate theme is broken down into five separate sub-themes which include challenges relating to the play of the game, competitive elements in competing against other participants, cooperative elements of game play, the effects of cheating, and the applications of games-based learning. This theme addressed the elements of challenge as part of game play as participants responded to elements imbedded in different structures of the game itself. This structure was represented personal challenges, game challenges, and peer challenges. This directly related to the competition aspect of game play
which characterizes a zero-sum game theory that requires player elimination to win. The competition sub-theme represented participants’ views on the requirements to strategize, know opponents, and the necessity of making correct moves as critical to their success. Conversely, the cooperation sub-theme presented a different face in light of the competitive nature of game play. These cooperative elements were viewed not only in contrast to competitive games, but also to the binary nature of zero-sum game theory.

Cheating is described as a sub-theme of self-determination and represents one aspect of the malleability of game play. Participants in this study discuss how specific areas of cheating are self-identified versus being identified by other players. The latter instances of cheating are given special credence if given the approval from the entire group and are decidedly “non-issues” for all. Finally, games-based learning is discussed as some participants are able to connect the outcomes and scenarios of the game to real world applications. These connections consisted of real world economical and social issues as broad topics, and cooperation and diplomacy as personal ones. Regardless, players applied themselves in finding meaning for their game play through their own embodied behaviors despite the presence of any applicable scenarios inside or outside of the game environment.

**Challenge**

Addressing challenges was one of the first defining features of the self-determination superordinate theme. This was best identified when Farrel indicated that he specifically seeks out difficult games which require refined skills and demanding challenges. Ideally he identified "roguelike" games as his preferred genre because they were designed and structured to be incredibly difficult and challenging. Sheppard shared the same preference for the same reason and both participants indicated how it was one of the genres of games they played most
frequently. Sheppard discussed details about the personal challenge he encountered playing Defenders of the Ancients (DOTA2) online when it came to reaching a plateau of development "…you'll hit a ceiling. There's this rank thing, so once in a while you'll hit that rank, and you will never get past it." This part of the game was indicative of both his frustration and his attraction to playing something highly challenging. This attraction to keep playing a game like this was best embodied in Alastair’s response about "grinding" in games and about spending countless hours playing to gain the best gear, skills, and loot.

These challenges alone were not present only in the game's structure. Rather the roles that other players had also affected the challenging nature of game play for these participants. Pablo indicated as much when discussing the study's play of COUP: Reformation: a card game based on social deduction and bluffing. Originally calling it "frustratingly challenging" for him, he eventually learned to examine other players past moves in developing his own strategy. He described his learning process as:

…because the frustrating element, it's ingrained in the mechanics of the game, and you either have to love that or you have to hate that, but it's there because that's the theme of the game, rather than if it was like some sort of misunderstanding in the rules or some sort of clunkiness to how the game works, then that is something you can complain about. When you're playing a game that's centered around that uncertainty and that frustration of not knowing and that frustration of not knowing what to do, then you can't complain about it, because that's what the game is about. That's what you sat down to play with.

He relied on trial and error, experimentation, and reading other players in order to improve his play. Small gains grew into larger insights as he pursued more advanced strategies
like baiting other players indicating that the game was more about manipulation and aggression. Interestingly, Matthias was challenged by game play not through competition, but rather through cooperation. Specifically in the play of Hanabi which relied on participants to work together to launch the best fireworks display possible through a series of cards with numbers and colors hidden from personal view but available for everyone else to see. Matthias' response to game play and competition were so ingrained in his psyche that cooperative play elements were often the most challenging for him to overcome.

The type and structure of games served as a source of common challenge and difficulty for some players. Barris indicated that he regularly had trouble learning the structure and flow of certain games and often took a while for him to understand how they worked before being able to formulate a coherent strategy. Farra indicate as much specifically referring back to COUP: Reformation in being bad at bluffing and having to overcome that challenge to succeed. Both the bluffing and the overall deductive reasoning of COUP: Reformation also made a difficult time for Findlay who admitted to both being bad at bluffing as well as having no set strategy. Specifically, he stated:

My bluffing should be more strategic than crazy and sporadic because sporadicness, I guess, is not so much a strategy, I guess. I don't know. Maybe it can be, but I need to craft my bluffing a little more intricately and just stop dicking around, I guess, with my bluffs.

Perceived social elements also served as a challenge for certain players. Especially for both for Matthias who believed that Sheppard was difficult to play against due to his unpredictability. Likewise, Sheppard felt that Matthias was a very good player and excellent at bluffing which increased their mutual challenge. Farra was overall intimidated by Pablo and Mathis since they both revealed early in game play that they had experience with the game and
were seasoned players. Lastly, one of the most interesting insights gained from the examination of challenge in self-determination was the impact that success had on the Pablo's morale. This related specifically to his play of a competitive game where he was the sole winner. He described winning in this scenario as "survivor's guilt" since unlike a cooperative game, there were no other players to share the victory with.

**Competition**

The games included in the study involved both cooperative as well as competitive games. Competition was a theme that was prevalent throughout participant interviews including aspects of competition that were present in cooperative games. This made it difficult for both Peggi and Rosemarie to adapt since they preferred playing competitive games. However, players like Farra were tested by the highly competitive nature of some games and were often negatively influenced by challenges from certain participants. This was balanced by the often cool and objective nature of a player like Sheppard who justified all of his actions as "...just trying to ensure my own victory."

This selfish dedication to one's own victory was also embodied in the zero-sum nature of some participant’s reactions when asked about the competitive aspect of these games. This nature really emphasized personal winning at the cost of others' losses. Barris, Richmond, and Peggi all responded to this effect when talking about competing against other players. Specifically they each cited needing to eliminate others to ensure they had a chance to win. However, this relational aspect of zero-sum competition was not embodied by all participants. Some saw the competitive nature as trying to outperform others rather than defeating or eliminating them.
The aspects embodied in the social relationship was best represented in how each participant felt about their fellow players in an often contentious environment. Farra indicated as much when she described competitive play as

I guess that there are winners and losers and stuff but it's like no harsh feelings. Everyone wants to win. I guess competitive games is just like ... Previously you'd be on teams or something and you have to watch out for your team. But then it's just yourself and you're trying to beat all the other players or something like that.

However, this social embodiment did not include a zero-sum structure exclusively. Rather, it also encompassed social aspects like reading other players and the personal challenges that participants felt in this process. Barris described his perspective competing against Farra and others by indicating:

I think the last few times I was pretty indifferent. I would say everything was the same, but maybe just the atmosphere because of the game and the people we were with, it felt a little more tense. Like I said earlier, you could cut the tension with a knife.

Farra was in turn intimidated by Pablo and Matthias due to their rivalry with one another and clear evidence that they were experienced players. This highly competitive environment combined with a reliance on reading players and bluffing contributed to tense games. The anxiety was exacerbated further when Pablo indicated that the lack of information on others players contributed to his uncertainty of correct plays and described it as:

I always get a rush whenever I take Tax, especially if don't have the Duke, because then, my bluff goes through. If I do, then there's also that sense of, oh, well, I have the Duke and I'm going to take Tax. If somebody doesn't believe me, then I could counteract them and they'll have to lose a card. It's always that rush of excitement.
Furthermore, the competition between players extended outside the game as well. This was evidenced in Sheppard and Alastair’s play in Flashpoint: Fire Rescue in which both players were in contention to lead the whole group in determining the shared strategy.

Lastly, Sheppard made a very incisive connection and insight in competitive gaming and its effect in real world scenarios: specifically when it came to the zero sum effect of competition and trying to distinguish oneself from one’s colleagues. He compared this effect to the time he spent at an international school in Singapore where students "competed" against each other in classes where grading was done on a curve. The competition for the highest grades made it so that classmates often competed with each other to their mutual detriment rather than study and master the material on their own.

**Cooperation**

In addition to competition, cooperation was a theme that existed with seven of the participants. This meant that even though only certain games really prioritized the cooperative element of play as a central element to how the game worked, even competitive games introduced some element of cooperation. That cooperation included preventing another player from attaining a runaway lead, preventing someone else from winning, or presenting a situation in which cooperation was necessary in order to better position oneself to win later. However, when addressing pure cooperative elements for players, each individual identified different reasons for their cooperative nature. This included the sharing resources, the commonality of strategy, the development of team synergy, the creation of teamwork, discussion, coordination, and the purposeful pursuit of a common goal. This was best embodied in the responses provided by Alastair, Farra, Frankie, Rosemarie, and Peggi in their interviews after our game play session.
of Flashpoint: Fire Rescue. Peggi, provided one of the most insightful responses addressing cooperative team play and its requirement to work together. This overview was a binary one, in opposition to the zero-sum competitive game play. Specifically she stated that “Cooperative play is when all the players playing the game, they have to work together to actually win the game, or you all lose.”

However, this cooperative nature was not one where all participants were attracted to the need to collaborate. Rather there were other reasons in which players enjoyed their time with cooperative play. Farrel talked about cooperation as a means of finding the best way to exploit the game. Specifically, he was most attracted to these types of games when he stated:

I like cooperative games more. As I said in my previous interview, I like finding ways that you can loophole the system, break out of that a little bit and when you have 6 people trying to breakout of the system instead of like one person, then you kind of get into the meta really quick.

This reference to strategy was one of the many becoming character traits for Farrel and was something that was germane to his highly logical and strategic nature. Despite this, Sheppard listed another reason for liking cooperative games and their teamwork element indicating that he was able to enjoy them more than their competitive counterparts.

Teamwork was perhaps the largest factor in player operations in cooperative play. Specifically, Pablo spoke about the inter-relational trust that was built between players and his reliance on it in order to define the flow of the game as well as pursue its objectives to win. This was echoed by Alastair who compared cooperative table top game play to playing StarCraft 2 online in 2v2 and 4v4 matches where synergy and teamwork were critical for success. Sheppard likened his relaxed demeanor with cooperative game play to the online game No More Room in
Hell which he described as “impossibly hard” when trying to play it solo compared to playing it with teammates. In addition, Sheppard loved playing cooperative games for their structure of working with other players. Overall it was the concentration of the relationship of players in this cooperative game play environment that focused on the aspect of teamwork as a self-determination factor. Lastly, cooperation had an unintended effect in finding clear applications for participants to use in their lives outside of game play. Specifically, this focused on Sheppard’s responses involving the lessons he learned playing cooperative games and its application he found in solving roommate disputes. He likened it to a specific scenario he encountered at his international school in Singapore where he was required to help resolve a tense situation between roommates. He closed by stating that cooperation was an element largely embodied by humans and that it was a defining feature of separating an intelligent human species from wild animals.

**Cheating**

Cheating was a theme in the self-determination of players that was prevalent during much of their interview responses. This aspect of “cheating” was something that could not be wholly defined by all of the players, but rather was subjectively categorized according to the knowledge, experience, relationships, and biases of each individual player. As such, the data was categorized as cheating observed by other players, cheating observed by the individual player, and the dissonance created from such activities.

Farrel indicated cheating on Frankie’s part when he observed his lips moving after he had given his single clue in the game of Codenames. This meant that Frankie had broken the game’s rule of limiting the clue given by a player to just a single word without any additional forms of communication: verbal or non-verbal. However Frankie indicating that he did not do this
purposefully. This was also represented in the relationship between Alastair and Pablo who communicated more information than was stated in the same game of Codenames. Furthermore, Frankie also indicating observing Peggi during the game of The Resistance: Avalon when she purposefully broke the rules in an attempt to make the game more interesting. In addition to being ousted by other players, individual participants also ousted themselves when they felt that their actions had compromised the integrity of the game. Barris indicated that his mother had introduced him to gaming when he first started playing Connect Four at a very young age. He elaborated that he had a history of cheating in that game, specifically taking two or more actions during his turn when his mother was not paying attention. He remembers taking these actions in jest rather that based on malicious intent. Furthermore, Farrel also identified as someone who was purposefully trying to circumnavigate the hint system of Hanabi when making moves on his turn. This represents his earlier expressed view of attempting to find loop-holes in the system and exploiting them for the benefit of his own team. Therefore, this move was not only attempting to make the game state more malleable for himself but also represented a concerted effort to seek the best outcome for his team. Richmond also identified the touching and committing to cards in Codenames as a possible break in the stated rules of the game but, acquiesced to the acceptance of this so long as the group accepted the behavior as “acceptable.”

Lastly, dissonance played a large role in the “cheating” theme as these efforts represented a change of thinking and of logical progression in the game state for players. Farrel described this as a “mind fuck” when Peggi made an illogical move during a game of The Resistance: Avalon when she purposefully took an action against her own team. This compromised Farrel’s own procedural logic and positively affected Barris’ role in the game. In addition, both Frankie and Richmond suffered from analysis paralysis – that is being parlayed in making a decision
from having too much conflicting information – due to this move. However, despite the impact that it caused, Peggi indicated that her intention was to just “mess with people” and had no greater strategy in mind. She stated “We had fun okay. I’m sorry that I cheated but it was for a good purpose.” This addressed not only the cheating sub-theme but both the malleability and the sociability themes of game play.

**Game-Based Learning**

Games-based learning, or the application of games to achieve learning outcomes was not an intended result of this study, but emerged as a sub-theme of self-determination when discussing the effects of meaning making in game play with participants. One of the most salient examples was the connections that Findlay made when playing COUP: Reformation and issues of economics, social justice, and equity when framed in real world applications. Specifically he talked about the relationship the game shared with “Economic inequality. The 1% and the 99%” and how it was easy for players in the game scenario with money to continue to gain money, while those with some or no money were in such bad positions to gain more. He also provided the quotation “Yeah people get assassinated and robbed all of the time. Go figure” as one of the more salient aspects of the game. He compared its cutthroat nature very much to what is represented in everyday realities to him.

In addition, players saw games-based learning application as it related to others and the relationships games played with them. Pablo cited the “fluidity of intelligence” when attempting to teach family members how to play new games. Because of this, some of his family members were better prepared to learn and play new games compared to others. Pablo went onto to further describe the nature of COUP: Reformation as having a “Darwinistic” effect on players from the start, stating that the competitive nature of the game represented actual biological
autonomic functions that are represented in nature. Furthermore, both Peggi and Frankie indicated that game playing helped them achieve specific skill mastery. This included strategic applications outside of a game environment for Peggi as well as better understanding and application of empathy for Frankie.

While many of the games-based learning effects were positive, some of them had a negative impact on participants. However, it can be argued that even these negative effects possessed a positive cognitive impact on participants as they were able to take lessons learned from these scenarios and apply it to future applications. Sheppard described his time bluffing through the study’s session of COUP: Reformation and how it overall caused him stress. Specifically because of its competitive nature as well as his thoughts on having to lie often he stated:

It was stressful. It was living of a lie, because I start straight up lying in the third round. By then, I already know how to lie. I was taking all the tacks. I have no Dukes…. It was the most stressful game, because I straight up lie from the start. The other games, I don't really lie a lot. I focus more on spotting other people's lie. Lying carries a burden.

Despite this incisive commentary on the toll of the game, Sheppard later indicated that the personal impact that he had from playing was mostly ineffectual as he stated being able to divorce impacts from game play from applications to situations outside of the game environment.

**Conclusion**

The self-determination theme yielded several subthemes and incorporated from participants’ interview responses. Those included the challenge of game play, competition in
game play, the cooperation in game play, the aspect and effects of cheating, and finally the applications of games-based learning. While participants touched upon these different sub-themes in different ways, the superordinate theme of self-determination was evident in each one of these sub-themes. Specifically, the aspect of challenge was a salient sub-theme as participants responded with the reasons they played games as well as the specific challenges endemic to their individual situations. This was embodied in the personal challenge of playing games for their structure and the challenge that the game environment gives to players.

Furthermore, competition was an aspect of self-determination that was consistent with many of the games played during the study: specifically the ones that focused on the competitive nature of game play. Responses in this sub-theme routinely referenced the competitive and often zero-sum nature of needing to defeat and eliminate other players in order to win the game. Conversely, cooperation was a sub-theme that was prevalent in the self-determination of participants particularly as it related to games that focused on cooperative elements. These cooperative elements were often viewed opposite to competitive games. Most saliently it was summarized in the same binary response as zero-sum games with the two outcomes being: everyone winning together or everyone losing together.

Cheating was also revealed as a prevalent sub-theme in the interview responses as the malleable aspect of table top game play often lent itself to this outcome. Participants were able to identify two specific areas of cheating in which they self-identified rather than identifying others. While cheating in others was more often more easily identified, self-identified cheating more closely related to the malleability of the game and the acceptance of the group as a whole on its efficacy and legitimacy. As such, instances of cheating became “non-issues” if the group as a whole accepted it. Lastly, games-based learning was presented as a sub-theme of self-
determination since some participants were able to connect scenarios and outcomes of game play to real world examples. Often these connections were made with sociological, economical, or social justice related issues. Other times, the applications were more specific and focused instead on personal instances of required cooperation and diplomacy. Regardless, players sought to find meaning in their game play through their own learned behaviors despite finding applicable venues inside or outside of the game environment.

Social

The social superordinate theme was present in all participant responses. This theme was broken down into six sub-themes that included the relationships between players’ peers and members outside of the study, the role that experience played for each participant in game play, issues of leadership that arose as part of the game play experience, negative aspects revealed through their experiences in game play, emotional connections that were created during the game experience, and finally the social-strategic element that was evidenced by participants.

This superordinate theme will cover relationships that were embodied by the participants throughout the study. The nature of these relationships encompassed different aspects of each player’s background and included both family members that introduced them to gaming as well as their interactions with peers throughout the study. These relationships also played a role in the formative experiences for some of the participants. These experiences encompassed some of the historical play moments that were described by each participant as well as the role that the introduction of gaming had for them. Since meaning making was the central aspect to the interpretative phenomenological analysis methodology of this study, the concentration on experience is such that all aspects permeated different themes embodied in the corpus.
Nonetheless, this sub-theme focuses on the learned knowledge gained by participants throughout the study as well how it was used as actionable information in order to inform play.

Both relationships and experiences informed the additional sub-theme of leadership that was a becoming characteristic for some players and affected other players. This was best evidenced in the cooperative games that were part of this study including Hanbi, Codenames, and Flashpoint: Fire Rescue. Leadership was a primary consideration for these cooperative games and often the players who took on these roles did so as a slight against one or more of their peers. These slights often informed the negative sub-theme which explored the negative aspects of the game play experience for players.

Emotional connections informed the next sub-theme which represented some of the most memorable moments of the study as it incorporated the most visceral interactions between players. These emotional outcomes ran the gamut of positive influences from game structure and other participants as well as negative outcomes from past experiences based on relationships between peers in the study. More often than not, these past negative emotional experiences were most closely linked the competitive nature of the some games as well as the social-strategic sub-theme. This sub-theme explored the different competitive game aspects such as bluffing, deception, and social deduction. Games requiring these skill sets often caused tension between players that was represented in their social connections with one another. Though “strategy” composes its own superordinate theme, this sub-theme specifically relates to the social component of strategic decision making in game scenarios.

**Relationships**

Relationships identified connections with other players in the study, connection with family members, congeniality in these relationships and the effect those relationships had on the
strategy of players. This was embodied in Alastair and Farrel’s responses that he often plays games online with people he has relationships with in real life. Farrel added that his friendships with players such as Richmond also affected his play style during games. Findlay added that his close relationship with both Farrel and Richmond aided in his play of Codenames during the study. These relational bonds were further emphasized between Frankie who often played Defenders of the Ancients (DOTA2) online with his roommate and fellow study participant Sheppard. However, not all relationships with others were becoming, as Peggi indicated by her attempt to get her roommate to play card games. Her introduction and explanation of the game yielded a negative response and therefore the two have not formed a deeper relationship based on gaming. Specifically, the tension grew from teaching her roommate: “Because I tried to teach it to my friend and she didn't know how to play it and she didn't find it as fun because it wasn't...”

In addition to connections with peers, several participants also made connections to their family members. Peggi referenced playing Words with Friends with her sister over her phone. Primarily this was done for the social aspect, but it was preferential to play with her in person when they were both at home. Frankie indicated he often played games with his brother in much the same way that Barris was introduced to gaming by his mother. In addition, Frankie elaborated that while his brother was often his compatriot in playing digital games based on consoles; his parents were often the ones he turned to play table top games. This concentration on playing games with his parents introduced him to other games that he wasn’t originally exposed to including both backgammon and chess stating that I just had it in a box because there was this whole crystal set which I had. It's really old. Backgammon, I really wasn't taught well how to play Backgammon, because not even my parents know. I just stumbled upon it with chess. It came with chess, it came with
checkers. Then, when you flip it, it is a Backgammon. I had to learn self-taught with my brother. I don't think we know what we were doing.

The want and need to connect with others was another part of the social element of game play. Pablo responded that he often liked playing table top games because of their social component and his desire for interaction with others. This interaction often took a competitive stance when he responded that “I don’t like to play games so much as I like to play with the people playing those games.” Rosemarie added that while she did have a history of playing table top games by herself, she also possessed an extensive collection of social party games because of the endemic connection to playing with others. This was echoed when she discussed purchasing and playing the Jack Box Party Pack 3 games with her friends. Both Farra and Frankie both added that their primary driver for playing table top games was the social element and wanting to interact with others, specifically Frankie with meeting new players.

These relationships however were best informed by the constructs embodied by players. Two players in particular had specific interpretations of the social construct embodied in the relationships between them and others. Specifically, Sheppard talked about online play and how his experiences online were severely and negatively impacted by rude and unbecoming behavior from players on the Asian server. He compared this to changing servers to North America when he came to the United States and remarked how different and nicer the players were in the US. This represented a social construct. In addition, Farra routinely commented on the state of the gender balance during play sessions citing the instances in which she was the only female player at the table. This affected her personally as she felt uncomfortable during these imbalances and more comfortable when there were other women around. She stated: “Well, it was nice, because I finally was in a game with other girls, so that was nice.”
Congeniality was an aspect that was present in this sub-theme and was represented by Farra’s input on the state of the social atmosphere in the game. This was embodied by cooperative games and the necessity of cooperation in order to succeed.

I don't know. It was a fun group to see what happened and stuff. We were all cracking jokes and stuff like that, so it made it easier to get into it. As I've said before, I'm not really a social person, and I like social aspects of the games like these. It was just fun, because everyone jumped into it. It was like, "This is what we got to do."

Because of this, Farra was routinely impressed by the cooperative nature of her teammates and often gave them positive reinforcement in her interview responses. However, not all congeniality was represented in positive responses. This was represented in Farrel’s gentle “ribbing” of Richmond during the game of The Resistance: Avalon in which he called his friend “You’re a dirty red Richmond” when he was outed for being the traitor of the group.

Finally, strategy played a role in the relationship factor between players. Pablo indicated that his play style and strategy depended mostly on the other people that he was playing against. He indicated that he was more interested in playing the people around the table than the game itself. A rivalry between both him and Matthias developed during the study’s play of COUP: Reformation when both players approached the game with sizeable experience from past play. This experience influenced a “meta” strategy between the players that was not immediately noticeable by their peers. Lastly, Richmond indicated that he was often reliant on the decisions and opinions of his friend Farrel as he knew him to always be a logical and analytical player.

Experience

Experience was yet another significant social sub-themes for participant’s meaning making through game play. Specifically, players who had played some of the games in the study
before used that experience to their advantage. This was most present in the game of King of Tokyo with Frankie; COUP: Reformation with Matthias and Pablo; and The Resistance: Avalon with Matthias, Farrel and Richmond. In each one of these instances there were clear indicators of the players knowledge of the game state and how their moves could affect others. This knowledge closely influenced the positionality and cognition of each player. This was best represented by Farrel’s interpretation and explanation of the game state in the play session of Hanabi in which players were sometimes knowledge less about a hand of cards that they held blind. While players are “knowledge less” about their hand he indicated that they were also not necessarily “powerless” because of their ability to cooperatively help teammates by giving them clues. Specifically stating:

Yeah, a little bit. I mean, ultimately, the decision on what to do lies with me so I couldn't just been like, "All right, well, time to play this." It is not powerless. It's just knowledge less. You don't know what you have and they weren't giving me a lot of clues 'cause I had late game hand kind of. I had two fives and a four and a one.

Players’ experience expanded to more than just their previous iterations of play. This also included individual players’ desire to seek experience with others for the fun aspects of game play. This intrinsic motivation was posited by Peggi in her response that game play sessions provided her a reason to leave her apartment as well as a fun experience playing with others. This fun aspect was part of Barris’ remark in the balance between the competition and fun in the game play session for King of Tokyo. Rosemarie also enjoyed the fact that not only was King of Tokyo fun, but the mix of competition and relaxation also made it a becoming experience. Lastly, Pablo indicated most lucidly the moniker representing these fun and enjoyable moments
he termed “little nuggets of experience” when playing table top games with friends. For him, game playing experiences with his friends represented:

…nothing innovative in the way we see our friendship. These games add a new layer. It makes us interact in ways that are fun, that are interesting, that we get to share this experience together and then create a meaning out of these experiences and create like this world of like things we enjoy about our relationships and certainly these jokes that we have and these little moments and these little nuggets of a bond.

Leadership

Leadership was identified as a sub-theme in the social superordinate them category by four participants. This was due to the flexible nature of table top games and the ability for different participants to take on different roles. This led to the leaders of certain games arising organically throughout the play cycle. In addition, some players were put in leadership roles due to the structure of the game. This sub-theme discusses the reasons, circumstances, and outcomes of each one of these areas as they related to leadership roles during game play.

Alastair was identified by several participants as the clear leader during the play of Hanabi: the cooperative table top game. Specifically, Alastair stated that he “took” the role because he was frustrated by how the cooperative play of the game was proceeding and wanted to help focus the efforts and direction of the group. Alastair stated I feel like if I have part in the planning process, and then things don't work out, I'll be like, "Fine, I now know that this doesn't work; how can I change this to make it work, then?" Peggi added that she would have claimed leadership during the game because of her self-identified nature as a competitive player that likes to take control. But the only reason she didn’t do so was because she didn’t act fast enough. By the time she felt comfortable enough to take the leadership role, Alastair had already done so.
This lack of speed was an individual limiting factor. Farrel added that not having a consistent group of players from one week to the next also hindered the development of the group as a whole and compromised the development of consistent leaders.

While some could interpret the demands and role of leadership as limiting factor, that was not always the case. Rather, specific players were amiable towards their time in a leadership position. This was exemplified by Barris who responded that he enjoyed playing the role of Codemaster in Codenames by providing clues to the rest of his teammates to capitalize on. Furthermore, Peggi praised Alastair during the play of Flashpoint: Fire Rescue stating that she found him funny and sociable as well as having good ideas and intentions. This was contrasted by the contentious relationship she had with him at the start of Hanabi when Alastair claimed the leadership role before Peggi could. This change in attitude was best summarized in her statement of Alastair’s leadership style in Flashpoint: Fire Rescue which she surmised as “solid” because of both his demeanor and experience as well as his avoidance of unilateral action.

Negative

In comparison to the other sub-themes present in the social superordinate theme, there were also negative emotions present that related directly or indirectly to the game structure or player relations. This encompassed several different areas that included responsibilities to other players, personal limitations from game play, and inter-relational tension. Unlike Barris who enjoyed his leadership responsibilities in Codenames, Frankie described the same experience as “tortuous” when asked to be the person to give the rest of his team clues. In addition to being challenged in this role, he was also subject to the same pressures required from his teammates to ensure success and leadership for his peers. This difficult relationship was one of many that were personally observed and recounted during interviews. The same feedback was provided by
Farra when playing with her teammate Farrel in Codenames. Normally teammates discuss with one another before “tapping” and thereby committing themselves to a card to play. In this play session, Farrel would normally tap cards without discussion and thus made the decision for his team. This disturbed Farra but she didn’t mention anything for fear of upsetting the status quo.

This appeasement of the status quo was further echoed by Peggi who indicating making moves in Hanabi that wouldn’t have a direct impact on the next player’s action. This was done in order to avoid blame that could arise from a bad play made on her part. She wanted to be able to shift that “blame” down to other players who would later find themselves in tough positions.

Conversely, selfish moves such as these were reinforced through other more social actions during game play. Rosemarie remarked that she would otherwise find Frankie’s personality and play style becoming, but was negatively affected when he acted like a sore winner indicating specifically:

…there's kind of like that line and then when people cross it, it kind of just gets annoying and frustrating. I didn't necessarily reach that really until maybe kind of towards the end because Frankie kind of- it was almost kind of like he was being a sore winner towards the end and it was just like yeah, we get it, you're in the lead, you've got the advantage, you don't have to keep reminding us

As a whole these negative emotions were permeated by tension created through the presence or absence of stimuli. Farrel indicated as much when he cited play in Avalon: The Resistance when a game was tied two to two in quests: meaning that the outcome of the next quest would decide the game for all involved. Frankie provided responses that prioritized a feeling of “mistrust” from playing Avalon: The Resistance. He described this experience as:
Personally it felt like you don't know who to trust or it felt like you had the knowledge of someone who's evil but you can't really call out the person or else others may think that you're wrong or that you're just going to call out but if you're just going to call out a person at random which had never happened, maybe they'll have to defend themselves. By that, I felt like there's that boundary of mistrust between everyone because you didn't know who to, unless you're Merlin.

While a social deduction game does require a fair amount of lying and convincing, he was often off put by the amount of tension created from the anxiety and paranoia that the game reinforced. Peggi added that specific roles (such as playing on the red & insurgent team) caused anxiety, which exacerbated the negative emotions felt during play. While most negative emotions were related to some sort of function or characteristic of the game, players, or game state. Not all of them were as significant or relative to these areas. Rather Matthias indicated that one of his negative emotions was often related to being bored during game play.

**Emotions**

The range of emotions experienced during game play encompassed many different areas; however data from participants’ interview indicated two major terminals for participants’ emotions. These included negative and vindictive emotions from other players as well as positive enjoyment derived from the game structure or from interacting with other players. The range of emotions were discussed by several of the participants. Alastair saliently represented this spectrum through his play of King of Tokyo where over the course of one play session he transited between different states: first starting with enjoyment and ending with despair and vindication.
Negative and vindictive emotions were present as part of the competitive nature of some of the games played during the study. While some games were focused on a more wholly cooperative nature, others were purely competitive and required player agency and a sense of competition for participants to succeed. Barris indicated on two different occasions over two different play sessions a vindictive desire to defeat Frankie. Specifically, Barris expressed a contentious perspective of his relationship with him indicating:

Then for some reason, not that I don't like Frankie, but he just got me to a point where I'm like, I just want to knock him out. I don't care about winning. I just want to make sure that he's out, especially when he kept giving me that smirk every time. I was like, I just want to wipe the smirk off your face. It became more of me wanting to beat Frankie and just make his life as miserable as possible in the game than to really win. Then Alastair was already doing that before I had that idea, so when I jumped into it, we both, without saying anything, already knew we were both going for him.

This was again mentioned in another play session. Both occurrences represent a clear and salient competitive drive as well as a desire to succeed in player elimination through vindication. Sheppard echoed these feelings in his play of COUP: Reformation where he was presented with an opportunity to win the game through a misstep provided by Findlay. Findlay identified this misstep as a clear lapse in judgment on his part. He explained he was attempting to gloat over his perceived victory. Sheppard responded in kind by deftly making moves which took the easy victory away from Findlay. Sheppard later summarized the situation with “I’m like karma is here and justice is served.”

Furthermore, Peggi indicated a personal vendetta against Frankie that matured during the study. This vendetta carried over from past games and was something that informed her play
style as well as defined her interactions with him in the game. Peggi remained critical of Frankie’s play that manifested itself in several game scenarios. One of the more salient examples was when Peggi was on the losing team in a game of The Resistance: Avalon due to a clear misstep by Frankie. This compromised Peggi’s previously held view in this game as “he couldn’t screw things up too badly.” She later identified her main criticism of Frankie’s play as someone that often misses subtle hints. A fact that represents a great shortcoming in competitive games where social deduction is required to make sounds plays. She even considered “kicking him” underneath the table in order to make him more aware of subtle game changes.

Not all emotional responses were negative however. While seven of twelve participants registered some sort of emotional responses to game play, all fell under different categories. Some found humor, enjoyment, and positivity from their play. In particular, Matthias found humor in Findlay’s facial expressions during the session’s play of COUP: Reformation due to required deductive reasoning in that game and his bewilderment by it. Peggi further indicated that she both enjoyed and felt very “powerful” playing the role of Merin in the play session of The Resistance: Avalon. Lastly, Rosemarie, who admitted to playing some games solo invested both time and money into the Jack Box Party Pack 3 games. She stated that she was most attracted to the social play involved and the relaxing and less serious nature of these games compared to competitive ones.

**Strategy**

While strategy did represent a major superordinate theme in the data’s corpus, it was also present within the social superordinate sub-theme as it related to players’ interactions with one another. The nature of these player interactions included positive aspects such as teamwork and synergy as well as strategic elements such as social deduction, bluffing, and deception. Positive
elements that were embodied in the social strategic sub-theme was the development of teamwork and synergy between players. This was most evident in cooperative games due to the nature of its structure. Those will not be discussed here as those collaborations were both organic and natural for the progression and success of players. Rather, teamwork was embodied in the collusion created between Barris, Alastair, and Richmond in their play of King of Tokyo. This collusion came about after it was evident that Frankie was the clear leader and would soon become the winner. Due to this revelation, all three participants colluded to work against him to prevent this. In addition, Rosemarie commented that while it was not always in everyone’s self-interest to collaborate and come to a common decision, the group was able to do so for the common good of the game. Specifically, Rosemarie indicated “…even though there might’ve been argument during the deliberation, we came to a consensus.”

In addition, individual players were also able to promote their use of social deduction in order to both benefit themselves in the game as well as develop their social and emotional intelligence by reading others player. Peggi indicated as much during the study’s play of The Resistance: Avalon in which she was incrementally became better at reading other players. She indicated that Barris was one of the easiest players to read, and that this revelation helped her succeed in future plays. The social deduction element, in addition to being a social-strategic component, also added to players’ enjoyment and overall satisfaction with game play. Richmond represented this in his comment that the social deduction component for him was the most fun aspect of play. Social deduction also related to players’ ability to both bluff and deceive one another in competitive games requiring them to do so. The necessity of which represented a challenge for some players that relied on more congenial and teamwork based games, but was opposite for those that enjoyed challenging and contentious game scenarios. Barris was one of
those players who indicated this salient difference stating that COUP: Reformation was a much more serious game than King of Tokyo because of the bluffing and social element. This strategy was further applied in advanced play by Matthias who worked on double and triple bluffs during games in order to best his opponents. One play involved his attempt to actively discredit Frankie during a game of The Resistance: Avalon which represented both an emotional and strategic component.

Finally, the reliance on social deduction, bluffing, and deception often caused an element of “analysis paralysis” for some players. This condition came about from scenarios in which players had too much information with too many decisions to be made which paralyzed their cognitive abilities to make rational strategic choices. Even Farrel, fell victim to this despite his logical and progressive reasoning which served him well for other games.

**Conclusion**

The social superordinate theme encompassed several different sub-themes. These sub-themes included the relationships embodied between members of the study, the experience gained by each participant as they progressed throughout the study, issues of leadership that arose through game play, any negative aspects that were included in their game play experience, emotional connections that participants made during the study, and finally the social-strategic elements of play evidenced by participants.

Relationships were perhaps the most salient theme that was evidenced in the social superordinate theme. This concentrated on the kinds of relationships that study participants formed not only with one another but how historical relationships that students formed with peers and family members informed and affected their play styles. Furthermore, participants experiences with games and their experience in the game environment influenced their meaning
making process in the social superordinate theme. This sub-theme examined how the experience of game play affected participants in their play styles both against and with their peers. The meaning making process is endemic to experience; therefore the description provided by study participants provided a rich basis for understanding how game play affected their meaning making in malleable scenarios. One of the most malleable scenarios in table top game play was the development of leadership practices for participants. This was evidenced mostly in players’ interactions in cooperative games. However, leadership was also espoused in some of the players’ competitive games which helped define the experiential process of game play. Such leadership often came at a cost as the change in social status often meant that others were slighted for the position.

These slighting were often one of the contributing factors for the negative experiences discussed by participants during the gaming study. While not all exclusively socially based, the negative aspects of game play were present throughout choices made by both the participants themselves and their peers. Some negative experiences in turn affected emotional connections between participants. These emotional connections were some of the most memorable moments of the study as they formed more of the visceral interactions between players. Some of these emotional outcomes were positive and were influenced by both game structure as well as other participants. However, some were negatively affected by the relationships and past experiences that some members had with one another. Lastly, strategy was an integral sub-theme to the social superordinate theme. Mostly because some of the games incorporated into the study involved some kind of social deduction, bluffing, or otherwise deceptive component. Therefore, socially coded data also tended to cross reference against “strategy” coding. Because of this, participants
often talked about how the structure of social deduction affected their strategy during play of these games and how peers influenced their decision making process.

**Strategy**

The strategy superordinate theme is one that examines the roles that seven different sub-themes plays for participants’ meaning making through game play. These sub-themes include players’ use of logic, experimentation to determine best strategy, cooperatives and peer interaction, competition in the game environment, luck and entropy as part of the game structure, skill and how it can mitigate luck, and finally social deduction when addressing play with peers.

These different sub-themes represented a look at how players’ meaning making was made when examined in the overall context of how strategy was applied in order to achieve game objectives. Logic was used most frequently by two of the participants in order to warrant actions and make future strategic moves based on the game state, perceived game state, and peer interaction throughout. This logic was often structured based on the experimentation that players conducted throughout the study. Experimentation was an important part of the experiential learning theory embodied by participants as they sought to understand how different interactions in the game, as well as with their peers, affected the game state. These interactions in turn affected how future decisions would be made.

Both cooperation and competition was found in the corpus to be a continuum of player interaction with each other. The balance of which was based on the objective of the game and the outcomes perceived by each individual participant. Players indicated that there were times when cooperation was necessary to achieve end game goals in competitive games. Additionally, competition was sometimes necessary to achieve the overall team objective in cooperative games. The necessity of each concept with its opposing game element represented one of the
more meaningful interactions players had with the game structure and peer relationship in each play session.

Likewise, luck and skill shared a similar continuum with players who indicated the different amounts of luck and skill required for some games compared to others. The corpus indicated that some players revealed a zero sum understanding of luck and skill whereas some games were more luck than skill based and vice versa. Luck was determined as the entropic nature of some games and was something that could not be otherwise affected through player interaction. However, skill was viewed as a learned behavior that could be used to mitigate the effects of luck and how players could attain agency in otherwise negative game circumstances. Lastly, the social sub-theme examines how players ‘viewed the social deductive concept of play throughout competitive games that required this skill set. While addressed in the social-strategy sub-theme, its reference here is more focused on the strategic nature of social deduction, deception, manipulation, and bluffing that is necessary for excelling at social deductive reasoning games.

Logic

Logic was one of the most becoming sub-themes in the strategy superordinate theme. This sub-theme was focused on logical strategy. This included perfect information gained from the game as well as imperfect information gained from other players. This concentration was mostly focused on Farrel who concentrated on logic as his primary form of strategy when making choices in game scenarios. Even in games of Codenames where all choices were biased by social interaction, he relied on logical deductive reasoning to inform his decisions in the game when he recounted strategic moments like:
Well, I don't actually do with the probabilities in my head, but it was. Okay, we have these four cards that could be. If we have 1 left, 1 and 4, you'll want to hit an assassin or red team point. Then we'll skip around.

Matthias not only used logical strategy in the game, but focused on learning from past outcomes to inform future moves. This reliance on learning focus throughout the logical sub-theme of strategy was very indicative of experiential learning and was representative in more than one participant. These were revealed in the corpus by both Matthias and Peggi who immediately sought to improve their plays based on the knowledge and information gained from the game state combined with their cognitive analysis. This cognitive flow was represented in other sub-themes as well, but no more frequently than was exposed in the strategy superordinate theme.

Optimal moves were also discussed as part of the logic sub-theme as representative of cooperative play. These optimal moves were executed in such a way where players could evaluate the game state and the known information shared by the players around the table prior to committing decisions to the game. Both Alastair and Peggi indicated as much during their interviews. Specifically Alastair stated his thought process during downtime in the game:

There was a lot of talking about what we should plan ahead of time, and how we should move specific people to either save a person or, I think, in the second game, I realized we needed to focus more on combating the fire than saving people, until the very end, where we lost, where I was like, "Okay, we're probably not going to be able to save that person, and we would be wasting our time to try." It was a lot of talking and considering how we should attack, what pieces we should attack.
Sheppard also shared a characteristic with Alastair during their play of Flashpoint: Fire Rescue in attempting to create opportunities to “min-max.” That is minimizing the group’s investment into one type of action in order to gain a maximum return somewhere else. Ideally this return would be in some sort of change that would promote the group’s advance towards the game’s objective. Richmond shared his outlook on the role of optimal play for him. He expressed his experience in the context of The Resistance: Avalon where playing as the king character provoked the most thought. Specifically, because he was in a position to choose what players went on missions.

Participants’ concentration on optimal moves and the scenarios surrounding them closely related to players’ interpretations and applications of game theory to play sessions. While none of them cited specific mathematical models indicative of pure game theory based on the rational decisions of logical persons, Farrel often cited instances of logical decision making based on game states. His thoughtful and analytical responses often evoked strategic focus and were based and warranted on reasoned observations. In short, none of his decisions were based exclusively on “feel” and rather relied on logic in order for him to make plays. Farrel’s closest friend in the study (Richmond) shared the same characteristics, but to a limited extent. Rather Richmond focused more on Farrel’s warranted reasoning in order to inform his own decisions.

While not always a primary consideration for logical and reasoned strategic decisions, a social focus was also indicated in the corpus. Matthias revealed as much in his decision to focus on eliminating players from The Resistance: Avalon if he was targeted in conversation. While not wholly based on logic alone, it served to inform his decision making process in a reasoned manner. In addition, Alastair sometimes also relied on “zany” plays that threw off his opponents and caused confusion at his direction. These unorthodox moves often caught opposing players
off guard. As a result, of this strategy he was often able to exploit an advantage that would not have been available through traditional plays alone.

**Experimentation**

Like the logical sub-theme, the experimentation sub-theme also had some aspects of social deduction or social reasoning associated with it. These social strategies were something that permeated more than one superordinate theme and was especially prevalent in competitive games that required a requisite amount of social deduction. Barris was one of the first participants to address this in his interview responses when playing The Resistance: Avalon and his concentration on getting other players to reveal their allegiances. He first started not so subtly convincing people to identify different objects that were of different colors as well as trying to feel if the table moved during the “night phase” of the game to determine what peoples’ allegiances were. These actions strained the meaning and spirit of the rules of the game but were still within the realm of play. Richmond countered this strategy by trying to shuffle his feet during the “night phase” to see if he could throw some people (namely Barris) off his strategy. Farrel instead relied on different physical and social cues during the game. Instead of overtly asking other players random colors of objects to get them to reveal their background, he instead focused on winking and passing nonverbal cues to his teammates in order to win the game for his team. Lastly, the concept of “momentum” was discussed by Alastair as a necessary aspect of gaining ground in competitive games. Momentum was best attained through active experimentation to determine which strategy created the most traction.

As such, a focus on different aspects of strategy and experimentation was a hallmark of the way different participants discovered effective plays throughout games. While not always focused on the table top game environment, Alastiar indicated that choosing to focus on different
aspects of game play to determine what moves were more effective compared to others represented a major characteristic of his strategy. This concept described by him as “grinding” was focused more on his play of Civilization 6 and his desire to prioritize the economy of the game. He indicated “I need to build up my civilization well enough to get the production value or the food value for my city or civilization so I can build these better things to make my civilization better.” While Alastair focused on a game long experiment to see if one strategy worked, Rosemarie instead focused on different strategies to determine what would produce the greatest return for her at game’s end. Overall, Rosemarie chose to prioritize whatever strategy best served her own skillet rather than discover one that might be more effective but cumbersome to implement. Matthias, after having played both the blue and red team in The Resistance: Avalon indicated after several plays that the red team had an easier time winning compared to the blue team and was therefore his preferable choice.

Finally, both background and experience played a role in individuals’ choices when addressing game play scenarios. This was evidenced by Matthias, Peggi, and Richmond who chose to avoid direct experimentation within games by first watching and waiting to see what moves other players made before choosing to make their own. This was an informed choice on their parts and something that represented a critical decision to reflect rather than to act given the scenario. This was also represented in both Richmond and Farrel’s gaming history whose background and reliance on chess and puzzles informed their play in how they applied those lessons to new games. Lastly, it was Richmond’s incisive observation about the effect of actions that determined the overall structure of the experimentation sub-theme when he described King of Tokyo play as:
There was always something happening that affected you. I learned turn based games is people doing things, taking their turn that it only applies to them they only gain property for themselves or whatever the case maybe. This game every action had an effect on you most of the time.

This represents knowledge of the effect that individual plays had and how the results could be applied to future learning and scenarios.

**Cooperative Elements**

As part of the strategy superordinate theme, cooperative elements were one of the hallmarks of play between individuals both in the study as well as out of the study. Experimentation represented some of the participants’ views and actions in terms of understanding the game environment and the role that they played within it. In contrast, cooperatives had a more vocational approach. Some of the games played during the study including Hanabi, Codenames, and Flashpoint: Fire Rescue required cooperation for the team to succeed. Some elements of other games such as King of Tokyo and The Resistance: Avalon required players to cooperate with each other temporarily in order to achieve an ultimately competitive end. Therefore, the relationship between cooperation and competition was represented more of a continuum where some elements of cooperation were required in some competitive games and some competitive elements were required in some cooperative games.

This continuum of cooperation and competition was one where specific players’ roles were defined as part of their relationship with their peers and the game itself. Sheppard identified this as part of his play in Hanabi when he defined his role in relation to his peers:
Feel like ... How do I describe? I was just trying to see where the clue is the most useful.

Yeah, I do feel the responsibility because the clues are limited. I try my best to put it where it is needed most.

While this was the duty that he outlined for himself, it was not necessarily the outcome gained from other players as Peggi attempted to prevent any blame to come to herself from a botched clue giving attempt. This focus on role was especially important in more complex cooperative games such as Flashpoint: Fire Rescue where players’ roles were asymmetrical, but still important for succeeding at accomplishing the objective. Rosemarie indicated as much when she discussed her role not being any more or less important than anyone else’s. Rather she felt that she could have played more aggressively in an attempt to prevent her team from failing.

Communication was perhaps one of the most important characteristic needed for successful cooperative play. This was especially evident in a game like Hanabi where communication was both regulated and enforced as part of the structure of the game. Both Sheppard and Alastair prioritized their own personal strategies of attempting to be as clear and as effective as possible when communicating with their peers by providing the needed information at the correct time to the correct people. In addition, Peggi indicated that even in a competitive game like The Resistance: Avalon, she was both encouraged and bolstered in promoting the communication between and with her other teammates in the game. While team synergy was important for The Resistance: Avalon, it was especially more important in a pure cooperative game like Flashpoint: Fire Rescue where players really needed to synergize and come to consensus about potential moves and strategies to employ. Both Frankie and Rosemarie personally committed to the strategy of building consensus with one another through the coordination of moves and supporting each other’s plays.
Lastly, different approaches were considered for players who were in tenuous circumstances of competitive games where a continuum of cooperative vs. competitive was needed in order to succeed. This was evidenced in King of Tokyo where Rosemarie attempted a non-confrontational approach in her path to victory; thereby providing passive collusion with other players. Whereas Frankie favored a more direct, combative, and contentious approach which eventually earned him victory.

**Competitiveness**

Competition like cooperation was indicative to the competitive games incorporated into the study including COUP: Reformation, King of Tokyo, and The Resistance: Avalon. Like cooperation, there were different strategies that were incorporated by different players throughout these games. These strategies ran the gamut of non-confrontational and passive collusion with Rosemarie through her strategy in King of Tokyo to Frankie’s direct and combative stance against other players in the same game. Competition was a sub-theme and concept that was defined wholly through the game structure than anything else. While there was room for cooperation in all games, the competitive nature was only indicative as part of the play styles of Matthias and Peggi. Whereas other players were more closely affiliated with the cooperative aspect of whatever game they happened to be playing.

This affiliation again relates more closely to how students perceived the continuum of cooperative vs. competitive play and its relationship to both their peers and the game structure. While not mutually exclusive, both ends of the spectrum required strategic vocational knowledge as well as emotional understanding of their peers and themselves in order to succeed. Like the participants who relied greatly on logic as part of their strategy, they likewise were greatly connected to the relationship that strategy played with competitive games. Matthias cited this
competitive drive in The Resistance: Avalon due to its diverse nature and reliance on imperfect information. This imperfect information contributed to the tension in the game and pressured Matthias to adopt a more competitive-cooperative stance when attempting to decipher which players were on his team and who he was playing against. Despite the knowledge of the continuum of cooperation vs. competition one of the most frequently cited definitions for competition indicated by players was the elimination of others. Specifically: winning the game by removing competition through advantages that were achieved through a combination of game structures and peer actions. Frankie cited his working definition of this by “punishing their mistakes” as a way of competing against others and extracting a competitive advantage.

While exploiting game scenarios for one’s own advantage was a construct of the game itself, social elements also played a role in the competitive nature of the same games. Barris indicated that in advance play of COUP: Reformation he attempted to psych out players as part of his overall strategy. Specifically he stated:

I mean, for the whole thing I was just trying to get him. I was trying to get him, I just knew I was trying to psyche him out in some way, shape, or form. I just wanted to see how it would play out…

This was an attempt by him to gain an advantage through a perceived psychological weakness in his opponents. Frankie pursued an alternative approach in psyching players out by relying on others to try to misread his intentions and commit errors that he could then exploit. Ultimately Barris indicated that his play in The Resistance: Avalon was most favored by being selected for the insidious “red team” where he was trying to undermine everyone else. Specifically, because he really wanted to “fuck with people.” Farrel likewise was attracted to this team because of innate competitive nature stating “I mean, I’m in it to win it for every
game.” Lastly, Pablo indicated that some of the competitive strategy he embodied throughout the study was not so much actively as it was passively focused. This included games where team play was important (The Resistance: Avalon) as well as games like COUP: Reformation where exploitation of other players was expected: citing specifically that often the most important part of competitive games for him was “forcing other people to do the work for you.”

**Luck**

Cooperation and competition played a role in the game structure and player interaction between study participants. The concept of luck and skill represented a sub-theme in how players interpreted their interactions in the game environment. Specifically in the luck sub-theme, players attributed either their own plays or the plays of their peers to random chance and occurrence. While some attributed this entropy to a construct of the game environment, some other participants viewed it as continuum of luck versus skill.

The reception of this continuum ran a gamut of different emotional responses. From Alastair’s despondency as the first player knocked out of the game in The King of Tokyo to Rosemarie’s lucky streak in dice rolling during the same game. In both instances, random chance played a role in affecting both players. However, entropy alone did not represent all game outcomes. Rather, players themselves made moves that affected what role luck would play in the game. The representation of luck this far into the study also represented something of a decision of player agency. For instance, Farra felt very invested in the cooperative game Flashpoint: Fire Rescue but indicated that most of her successful plays were mostly due to luck rather than her own skill and agency. She only acknowledged that luck played a role that was a central concern to all players: where the fire would spread by dice roll. Specifically she stated:
Well, luck definitely had to go whether the fire would end up in the good space or the bad space, if it would be in the kitchen or in the living room…. but then again, it was still luck to just make sure that you actually hit a good spot or not…

Rather, the integration of social deduction and strategy also played a significant part. This was especially evident for Farrel who as a self-described strategist attempted to mitigate the extenuating circumstances presented by luck through augmentation with his skill. As such, gameplay of The Resistance: Avalon was a combination of both elements requiring his decisions to be based on fifty percent guess work and fifty percent reading body language. Compared to Peggi, this represented a more holistic appraisal of the role that luck played in the game environment: especially one that can be mitigated by player skill and strategy.

Lastly, some players indicated that there was a clear division between both luck and skill: that there were certain game elements that were entirely luck driven while others were entirely skill driven. This division represents a divergence from the continuum of games that were a percentage of luck versus skill. Much so that players like both Peggi and Farrel could come to equal terms in determining how much each factor would play into their own personal strategies. For Frankie in particular felt that the only luck component to The Resistance: Avalon was choosing players to go on quests and that all other decisions relied on skill.

Skill

Relative to luck, skill was a significant sub-theme embodied by the study’s participants. Like luck, skill was seen as a construct representing individual player backgrounds rather than a collective resource. This was representative in players’ responses about how their own skill gained from game play affected and influenced how they would play or perform in the current game scenario. This was due to players’ interpretations of what kind of agency they were
expected to provide based on what was learned in the game. An example of a player with a great degree of agency was Barris who first interpreted COUP: Reformation as a difficult game to learn and adapt. However as the session progressed, and as was confirmed later in an interview, he observed that the game was more skill than luck dependent such that players could win by making smart plays based on observations about the game and players around them. This was especially evident in Flashpoint: Fire Rescue where players’ asymmetric roles presented two challenges: first to provide them with different skills sets in a uniform environment and the second to mitigate the luck presented by dice roles to stop the fire and achieve the game’s objective together.

Player experience combined to form an opinion on skill embodied by each participant. For many, most of the games played during the study represented their first plays of each platform as well as an introduction to modern table top gaming. In addition, this represented their first foray into some skill based games that required observation of both players and game states in order to make strategic choices. As such, there was a distinct comparison for players that had previous experiences in these scenarios to provide relevant and valuable feedback. Matthias indicated as much in his play of The Resistance: Avalon as one of the few players that had played the game previously and thoroughly. Compared to previous experiences he felt that this study’s participants were less skilled overall and did not present much of a challenge. Lastly, deduction played a role in the study as embodied in the skill sub-theme. This was represented almost exclusively in The Resistance: Avalon as a game that relied on social deductive reasoning. Barris indicated that this game was almost ninety percent dependent on skill. The major skill component included who to send on quests and his responsibility for making a bad play and sending the wrong players: thus comprising his team’s position to win. Farrel on the
other hand indicated that the game was one half guess work and one half reading body language. Only Frankie dissented from Barris and Farrel’s opinions on the role that luck and skill played in The Resistance: Avalon after indicating that choosing players to go on quests was the only luck based part of the game, the rest depending on the skill of players alone.

Social

The social sub-theme of strategy was most prevalent throughout game in which social deduction was a core competency. Therefore it was most prevalent in the interviews regarding The Resistance: Avalon. While addressed in the social superordinate theme before, responses still warranted its address in the strategy superordinate theme to acknowledge the role that social manipulation and interaction played between peers. Because of this, Matthias indicated that social deduction was about trying to convince other players to believe you. While this did not represent the entirety of the social deduction strategy, it does involve a degree of deception and warrants the ability to influence your opponents. Barris added that social deduction involved not only serving as a lie detector for other people, but also learning to become good at influencing others unnoticeably through speech. He identified as not being particularly good at this concept himself. Interestingly, Farrel indicated that social deductive elements were more an amalgamation of the different responses provided by both Matthias and Barris. Whereas one was trying to convince others and the other to detect manipulation, Farrel responded that social deduction included “using various hints and clues that people have or through their actions, to deduce what the player's role is.” This was a more comprehensive view of the play necessary to become successful at winning The Resistance: Avalon.

Furthermore, social strategy required that participants also become adept at reading their opponents. This was referenced by Barris who indicated that Matthias was one of the hardest
players to read while Farrel was the easiest. Frankie indicated the same, concurring that Matthias was a difficult player to read. Matthias had the added advantage of having played The Resistance: Avalon before and therefore knew what was expected of him, and what to observe in other less seasoned players. However, despite Frankie’s perceived challenges, his main objective was to attempt to read the facial expressions of his opponents around the table. He did this in conjunction with skepticism of any and all persons until he was able to discover their allegiance otherwise. This remained one of the more salient strategies during the game and was espoused through reasoned inquiry by Frankie alone. While utilized by all players for the purpose of winning the game, Richmond indicated that he saw a use of social deduction outside of the study as a student in order to better read and understand the emotions of others in an educational environment.

Deduction was only one part of the social strategy sub-theme as once information about players and the game state were ascertained, action needed to be taken in pursuit of victory. This was represented in manipulation of other players, and was a core part of Barris’ strategy. While taking care to manipulate others subtly, he confirmed this strategy early while still figuring out how the rest of the game was played. This was perhaps a successful opening move as Matthias, a seasoned player, focused immediately on convincing and manipulating others. Peggi also played previous games before, but unlike both Matthias and Barris, focused on listening and watching others passively rather than focusing on manipulation exclusively. Lastly, criticism played a role in this social strategy sub-theme. Specifically as it related to two particular games: Flashpoint: Fire Rescue and COUP: Reformation. This was indicative of Sheppard’s main concern with Alastair taking on the leadership position in Flashpoint: Fire Rescue and his style of taking too many risky moves that he didn’t need to take: a point of contention between both Alastair and
Sheppard during that session. The second situation identified a remorseful Findlay who could have easily won a game of COUP: Reformation but chose to make a move that was brazen instead of a safe one. This move was viewed critically by everyone around the table and easily provided Sheppard with what was an originally an improbable win.

Conclusion

The strategy superordinate theme examined the roles that strategy played for participants in this study through seven different sub-themes. These sub-themes included players use of logic to make strategic moves, players’ use of experimentation in order to determine best strategy, cooperative elements and how it affected player interactions, competitiveness and how it was affected by the game state, luck and how entropy affected player decisions, skill and how it was used by some players to their advantage, and finally the social element included in how social deduction in particular was utilized as a cogent strategy.

Logic was utilized as a method of determining what actions best benefited players given the specified game state and known information about other players. While not all participants used all aspects of logic to their advantage, most of them were able to appropriate different elements in order to further their own advantage through the game. Logic was embodied as a part of experimentation utilized by some of the participants in the study. Experimenting was not only a functional element of the experiential learning process throughout games-based learning, but was necessary in order to determine what strategies worked best given what was known about the game and others.

Cooperative elements and competitiveness were two sub-themes that developed as a response to the reasoned differences between cooperation and competition with other players during both cooperative and competitive games. Responses from participants indicated that this
was more of a continuum of cooperation vs. competition in most regards revealing that some cooperative games had competitive elements and vice versa. The most successful players learned when cooperation was necessary to further their own goals in competitive games. Likewise, successful cooperative players found it necessary to compete against their peers in order to direct the efforts of the group to succeed.

Luck and skill also shared a similar continuum when discussed by players. Games possessed different components of luck versus skill and the role that players had in mitigating the circumstances of each. Luck was seen as an entropic entity that affected game play but was accepted as part of the game structure. This was most indicative in Flashpoint: Fire Rescue where negative interactions with the game were largely due to luck. However these outcomes were best mitigated by the asymmetric nature of the different player abilities for everyone involved. Skill was seen as a construct which could be used to mitigate natural entropy from game play. However, players interpretations of how much this effect could be utilized was debatable as different players all possessed different opinions on the role that their own skill played in the game.

Lastly, the social sub-theme was present in the strategy superordinate theme as a concept that was based mostly on social deduction and reasoning and served as a counterpart to the strategy sub-theme in the social superordinate theme. Social deduction in strategy played a role in identifying how players were able to read and manipulate their peers for their own advantage. While social elements did play a role in all participant responses, the strategic element behind social deduction did much to distinguish certain player competencies over others.

**Conclusion**
The findings and analysis for this study yielded four distinct superordinate themes from the corpus of the data. Those themes included structure, self-determination, social, and strategy. The research question for this study was “How do undergraduate students at a small liberal arts college explain and make sense of game play in an academic setting?” The data gained from interviews with participants indicated that structure was important for participants. In addition, past histories informed their meaning making and understanding of game play. Of particular importance was how their gaming history, especially as it involved their family and peers, affected how they rationalized their own play. In addition immersion in game play, whether that be digital or table top, was important for their becoming involved and engrossed in the game. Furthermore, some participants were successful at separating the game play from their lives, whereas the line was often blurred for others. Perhaps the most significant characteristic of structure was malleability and how players were able to change the structure and affect the game as a means of how they derived meaning from it. These conclusions were drawn from responses from all of the study’s participants.

Malleability was a sub-theme of the structure superordinate theme and informed the self-determination superordinate theme. This superordinate theme included how players affected and influenced the game environment through mitigating challenges as well as competing against and cooperating with other players. While challenges were a part of all game play sessions, what was most evocative was the competitive vs. cooperative self-assessment of games in which participants responded. Some competitive games included elements of cooperation and vice versa. This represents an incisive view of how peer structures are formed in game play environments. Lastly, the effects of cheating and games-based learning are addressed by participants as representing ways in which the game can be compromised as well as how lessons
learned can be applied outside of the game environment. This represented a step in the experiential learning cycle involving abstract conceptualization.

The interactions between players was one of the most defining aspects of this study and included in the social superordinate theme. This theme encompassed the relationships between participants, prior experience with each other, the development of leadership, negative interactions, emotional reactions, and the connection between social ties and strategy. Table top game play was highly social and participants interacted with each other routinely during each play session, therefore a social hierarchy arose which gave some participants leadership positions over others. This caused some peer dissonance between players and lead to negative interactions in the game and challenging emotional experiences. The most salient observation made from the corpus was how individuals balance self and group goals in order to best achieve their interests.

Lastly, the strategy superordinate theme embodied how players used both game information and peer information in order to best strategize for themselves and for the group. This included player logic, experimentation, cooperative elements vs. competitiveness, luck vs. skill, and social deduction. While logic was thought to be a primary consideration for many of the participants, only a few indicated direct reliance on it while others preferred to experiment within the game environment to determine a best strategy. This was particularly interesting as it related to cooperative versus competitive games due to conflicting player interests. However, this sometimes resolved with alternating interactions of both luck and skill elements of games. The most salient conclusion drawn from the data was the amount of emotional intelligence and reasoning necessary to succeed in highly social table top games.

Overall, data provided in the corpus indicated that students’ meaning making through game play was highly contingent on the structure of the game and how that structure could be
affected through play. Players required self-determination in order to act on in-game challenges in order to define their place within the game environment. This hierarchal determination was done through social interaction with each other in often competitive-cooperative actions that influenced the strategy of all players. These strategies were affected on both a group as well as individual level.
Chapter Five: Discussion and Implications for Practice

The purpose of this doctoral thesis is to investigate how undergraduate students explain and make sense of game play. Knowledge gained from this study is expected to inform student affairs administrators as well as higher education professionals on how to implement aspects of games, game play, games-based learning, and gamification into practice. As such, the content and structure of this thesis was created in a way to best answer the research question as well as provide a detailed corpus of data from which findings could be drawn.

Data analysis and findings from this study were interpreted through the experiential learning theory (ELT) theoretical framework (Kolb, 2014). The use and application of experiential learning theory focuses on individual learning embodied through life experiences. This form of learning is most often compared to traditional forms of education present in higher education institutions today and includes pedagogies such as lecture and classroom instruction. Since experiences form the integral nature of experiential learning, this theoretical framework focuses on the individual learner’s direct interaction with realities (Keeton & Tate, 1978). This focus embodies highly individualized forms of learning that often dialectically oppose traditional forms of delivery such as oration, reading, and writing. These traditional forms rely greatly on abstract conceptualizations of knowledge. This format does not honor a process of knowledge creation through constructivism and the concrete experiences gained through individual learning and interaction with educational content. In comparison, experiential learning expands on learning interaction through the direct emphasis on experience from the learner. This concentration on experiences represents the focus of experiential learning theory and prioritizes the relationship formation between the learner, environment, and source material. ELT’s shift in focus represents a holistically different approach than what is emphasized in traditional higher
education instruction (Kolb, 2014). Thus, experiential learning employed in post-secondary education has been implemented in several distinct applications such as internships, cooperatives, service learning, study abroad, and outdoor education (Katula & Threnhauser, 1999; Kolb, 2014). These in turn have informed aspects of different types and implementations of experiential learning such as service learning, problem based learning, action learning, and team learning (Kolb, 2014). However, games-based learning has not yet been examined as an application of experiential learning theory and therefore represents the focus of this study.

In order to best answer the research question, a qualitative approach was instituted. The purpose of this approach followed Creswell’s (2012) focus on qualitative inquiry through the constructivist-interpretivist paradigm composed of two parts. The first involves the creation of knowledge through a socialized process (Kolb, 2005; Dewey 1966). The second consists of interpretivism which assumes that reality is not completely objective and is instead subjectively interpreted by the individual’s experience. More succinctly, interpretivism assumes that "reality is intersubjective" and is something that has been constructed socially from multiple perspectives. However, the development of patterns between data sets represents a communal creation of meaning through interpretivism (Butin, 2010). Because of this, the actual pursuit of qualitative inquiry is not the truth but rather the meaning behind it. Data examined by interpretivist researchers is examined through a specific and distinctive lens which creates meaning. Therefore, the creation, understanding, and interpretation of "meaning making" was the unit of analysis for this study.

The specific method of inquiry applied in this study was interpretative phenomenological analysis (IPA) which is a qualitative approach that prioritizes understanding the meaning making process of participants. This specific method was developed originally for uses in areas such as
social, health, and human sciences, but has also gained prominence in educational applications (Smith et al., 2009). Interpretative phenomenological analysis was chosen as the methodology for this study due to game players interaction with semiotics (Leaning, 2015) which is built upon the interpretation of meaning from a game environment. Such interaction is paramount for the game playing process and is best suited to study through the application of interpretative phenomenological analysis since this method concentrates on how individuals make sense of life experiences (Smith et al., 2009). However, unlike other qualitative research approaches, interpretative phenomenological analysis includes both participants and the study’ researcher. The researcher is involved in the interpretative portion of the analysis though the determination, extraction, and presentation of meaning making made by participants. This process known as the double hermeneutic (Smith et al., 2009) represents the heart of interpretative phenomenological analysis and is most evident in table top game play. The role that the researcher and leader (game master) plays in explaining and moderating such game play represents a symbiotic relationship between players and the leader that is best served through the application of interpretative phenomenological analysis.

Four distinct superordinate themes were extracted from the corpus of the gathered data. Those themes included structure, self-determination, social, and strategy. Of particular note were sub themes which outlined meaning making through game play. This often included participants’ gaming history and how it involved family and peers in rationalizing their own play. Furthermore, participants discussed immersion in game play through both digital and table top experiences as an important element for becoming involved and engrossed in the game. In addition, some participants were successful at separating game play for their actual lives but often this delineation was blurred for others. This informed one of the most significant
characteristic of game play: malleability. Malleability represented how players were able to affect and change the structure of a game as a primary driver for their meaning making process.

Malleability in turn informed the self-determination superordinate theme where participants affected and influenced by the game environment by surmounting challenges as well as competing against and cooperating with other players. Both competition and cooperation were examined as a continuum of experiences where some cooperative games included competitive elements and vice versa. This represented an incisive view of how peer structures were formed in game play environments. Additionally, the effects of cheating and games-based learning represent ways in which the game can be compromised as well as how lessons learned can be applied outside of the game environment.

Interactions between players was also a significant aspect of the study and included in the social superordinate theme built upon several different sub themes. These sub themes included the relationship between participants with each other, the development of leadership, negative interactions, emotional reactions, and the connection between social ties and strategy. The nature of table top game play was highly social and participants interacted with each other regularly which predicated the development of a social hierarchy wherein leadership positions were established. These new leaders caused some peer dissonance between players leading to negative interactions and challenging emotional experiences. The most salient observation extracted from the corpus included how individuals balance self and group goals in order to best achieve their interests.

Lastly, the strategy superordinate theme represented how players used both game information and information from their peers to strategize for both themselves and the group. This included participants’ representations of logic, experimentation, cooperative elements,
competitiveness, luck vs. skill, and social deduction. While logic was a primary consideration for most participants, only a few indicated their reliance on it. This was specifically interesting in cooperative versus competitive games due to conflicting player interests. In addition, this balance was offset by interactions between both luck and skill elements of games which were interpreted in different measure by participants. Lastly, one of the most interesting conclusions drawn from the data was the emotional intelligence necessary to succeed in highly social table top games.

The data provided in the corpus of the study indicated students’ meaning making through game play was based greatly on the structure of the game and how it could be affected through player interaction. Participants required self-determination in order to both address and act on in-game challenges. This interaction helped both shape and define their place in the game environment. Hierarchical determination was accomplished through social interaction with each other in the form of competitive-cooperative actions that influenced the strategy of all players.

Three main findings were constructed based on the structured inquiry of this study and data gained through interpretative phenomenological analysis. Those findings are organized in this chapter according to the following: applied experiential learning, focused approach, and educational gaming. Specifically, applied experiential learning examines the connection between games-based learning and the experiential learning cycle, the role of scaffolding in a gamified learning environment, and the prioritization of malleability for creating meaning from experience in games. The focused approach finding emphasizes the student centered nature of experiential learning and how games-based learning can support that focus. In addition, self-determination of students is prioritized as a means for creating player agency in a gamified learning environment. Furthermore, experimentation is stressed as a means of players’ determination of competency
and efficacy through experiential learning. The last finding focuses on educational gaming as a method of creating meaning through socialized play. This socialized play can generate opportunities for students to engage in flow state and engrossment of activities in a focused games-based learning environment. Conclusions are drawn from these findings and both recommendations for practice as well as future research are offered.

**Applied Experiential Learning**

Applied experiential learning is the first finding as a result of this study. It represents the application of experiential education through games-based learning as a result of the data extracted from the corpus. The experiential learning cycle is connected to games-based learning as well as the role scaffolding played in situating students’ experiences as part of their learning framework. Finally, malleability is discussed as a characteristic of a games-based learning environment and how player connectedness through malleability informs agency and self-determination.

**Experiential Learning Cycle**

Experiential learning was discussed in the study to engender a commitment and cyclical agreement between each party to educate through a bond with one another. While there was a formalized bond between participants and the researcher, an informal one also existed between participants and their peers. This was evidenced through player interaction with each other through both competitive and cooperative games and through their game play interactions. Learning through these experiences was represented in the literature where students generate knowledge through their interactions with the instructor, peers, content, and environment (game) where they are able to apply constructed knowledge to higher order thinking (DiCecco et al., 2004; Krane, 2005; Banks & Houser, 2014). This was particularly evident in Farrel’s responses
for finding loop-holes in the game and exploiting them for the benefit of his own team. This represented two findings: player agency through experimentation and self-determination to cooperate with teammates.

Discussion was often had between participants in all games, but most frequently in cooperative games in order to determine a best course of action for the entire team. This is represented in Gros (2007) who discussed phases of reflection and discussion as integral elements for learning applications. These are important characteristics that support student learning as well as their understanding of causal relationships, actions and effects. Such connection was often identified earlier by some participants than others. This was evidenced in the development of the leadership sub-theme. Leaders organically emerged through player insights and discussions with one another about changes to the game environment and how such changes could positively or adversely affect them as a whole. While this discussion holistically arose through player interactions with one another, one component identified in the literature but missing in the corpus was debriefing and reflective activities lead by the instructor. Rather, these were accomplished through the group. Despite this, learner led reflections represent the self-directed nature of experiential learning and an activity that wholly connects both experience with personal and group assessment.

**Scaffolding**

Personal and group assessment is accomplished best through scaffolding of games-based learning scenarios that are opened with expectations from the instructor or leader. These can be done in “low risk” environments where learners are expected to experiment and develop agency before making bolder decisions in how their actions affect the game environment and peers. Barris indicated as much when speaking about the “immersive” environment of playing Fallout 4.
where his character is slowly introduced to a world where his actions and agency produce meaning from the environment. This immersion served as scaffolding for players to more thoroughly engage with the game before taking greater and bolder steps.

Mawdesley et al. (2011) supports this finding where immersion and curricular connection interplay with one another. The authors posit that students who are able to connect simulated material to curricular learning outcomes benefit from greater engagement. Such immersion in a games-based learning environment representative of curricular education serves the same purpose to more holistically link experiential learning to applicable outcomes. However, the corpus could not support the conclusions drawn by de Frietas and Oliver (2006) who indicated that game-based learning environments utilizing simulations as a metaphor achieve the same student outcomes. The tabletop learning environment of the study represented simulations as a metaphor in this example, but active curricular connection was not so adequately obtained. Students in this case may become proficient in the skills necessary to succeed in the game environment, however there is no guarantee that they will attain the learning outcomes necessary for them to achieve academic educational success.

**Malleability**

Malleability represents a strong characteristic for students to develop agency and efficacy in a games-based learning environment. This characteristic emphasizes a player’s ability to modify and influence the game to focus on the learning outcomes of the student (Marchetti & Valente, 2015). The corpus supported that free interaction with the game environment allowed students to create their own narrative and therefore shift from passive observers in a traditional learning environment to the roles of active learners and participants (Sutton-Smith, 1997; Marchetti & Valente, 2015). This was represented in Farra’s history of her playing the SIMS
and the ability to enact and affect change in that environment’s game world. While Farra envisioned her choice in the game as binary: either acting malevolent or benevolent towards the simulated characters in the game; she chose benevolence as her course of action. However, she recognized that the choice is ultimately at the discretion of each individual player. This is compared to tabletop games where clear goals, opportunities for feedback, and clear socialized player interaction with one another represents many opportunities for malleability and change to occur. However, an additional characteristic that tabletop games possessed over their digital counterparts in this study was their ability to be modified and changed from their original structure to benefit the student, instructor, or both.

Based on the findings of this study situated in the literature, games-based learning does represent characteristics of experiential learning in its application towards students’ educational outcomes. The cycle of experiential learning can be applied in a gamified environment with most successful implementations taking advantage of the characteristics of scaffolding and malleability. However, these do not represent the only characteristics of successful implementation as care must be taken to make sure that the process is always student centered with a reliance on the development of self-determination and active experimentation.

**Focused Approach**

A focused approach was the second finding of this study with specific emphasis in creating learning environments that are student centered throughout the cycle of experiential learning. This focus on the student best embodies the constructivist focused nature of learning experientially. In addition, providing students with avenues and means to explore via self-determination was also extracted as a finding from this study. This includes students’ ability to discover and act on agency in the learning environment. Lastly, participants’ ability to
experiment in a malleable games-based environment is discussed as a way for them to develop constructed knowledge through interaction with peers and educational content.

**Student Centered**

Katula and Threnhauser (1999) discussed a student centered approach when addressing application of experiential learning. This student centered process embodied meaningful experiences as a way of maximizing personal gain throughout the learning process. Likewise, participants in the study were able to interact and connect with an environment that did not necessarily test mastery, but rather were encouraged to develop knowledge through their own agency and experimentation. This was also supported by Hains and Smith (2012) who indicated as much in students taking responsibility for learning through their own individual process. As a result of interacting with a game environment, participants were able to apply learned theory throughout their experience in order to affect change in their environment which supports conclusions drawn by DiCecco et al. (2004); Krane (2005), as well as Banks and Houser (2014). Data gained from the study emphasized the intrinsic motivational characteristics embodied throughout game play as indicated in a student centered design promoting experiential learning. This learning was focused wholly on the table top game play and is supported by structures outlined by Stupans et al. (2010). Compared to digital and video game counterparts, table top games were able to provide a scenario and venue for student learning that emphasized a malleable student centered environment. This malleability was due to students gaining agency through experimentation with the game, peers, and learned content that was intrinsically engaging as well as a motivationally appealing. These motivational aspects in turn fueled self-determination for participants.
As liberal arts education focuses on teaching and learning that gives students agency to address complex issues in diverse environments, so too did this study through a socialized and gamified application. This was embodied specifically in responses by Rosemarie who prioritized strategies in game play that favored her own skill set but was still open to adapt new strategies that presented themselves throughout game play. This represents players’ ability to make meaningful choices and supports self-determination throughout their learning process. The flexibility of games-based learning represents additional options for curricular and co-curricular learning presented to students that can complement more traditional experiential offerings (Fleming & Schantz, 2010). The presentation of which gives students the ability to make choices that best reflect their own skills, challenges, and aspirations as represented by Rosemarie’s response.

**Self-Determination**

In order to best engage with students meaningfully, active student participation that emphasizes self-determination is necessary. This was represented in the corpus of data through players learned knowledge in games a result of their own actions and agency. This is supported in the literature by the prioritization of active student participation in curricular as well as co-curricular learning opportunities of which games-based learning can play a part (Smith et al., 2012). Additionally, socialized components of experiential games-based learning are a positive addition to student learning processes as cooperative gaming in this study demonstrated. The necessity for students to engage with content and the environment are as important as successfully communicating and cooperating with one another. This was represented through Sheppard’s responses indicating the necessity of working with others throughout cooperative game play as well as addressing challenges that are adversely difficult without the help of others.
However, these participant conclusions couldn’t have been drawn without the effects of experimentation that students throughout the study integrated in their practice.

**Experimentation**

The process of active involvement in experiential learning activity is paramount for successful completion of student learning outcomes in a games-based learning environment. This active involvement includes experimentation throughout the cycle in which participants actively construct knowledge, manipulate it through meaning making, and test its’ applicability (Pivec et al., 2003; Ahmad & Jaafar, 2012). This experimental phase of experiential learning was evident in the participant responses from the study and was mostly evident in cooperative game play, but was also evidenced surprisingly in competitive game play. This was represented by the collusion created between Barris, Alastair, and Richmond in their play of King of Tokyo. Through experimentation in game play and observation of other players’ influence in the game they worked together to overcome their own self interests in order compete against the clear leader. This constructed knowledge gained through experimentation in game play represented known causal relationships and was supported by conclusions drawn by Pannese and Carlesi (2007).

The evidence of collusion through cooperative game play was surprising in relation to the environment it developed in. Though, experimentation and strategy in the corpus of the data often went hand-in-hand with knowledge gained through player experiences. This formed the basis for fueling future decisions in current as well as future games. The structure of the study favored alternative types of games from cooperative to competitive and created the foundation of understanding the cooperative-competitive continuum of player engagement and experimentation.
in the study. While not wholly addressed in the literature, this finding was gained through experimentation in the study and through direct observation of participants by the researcher.

Based on the findings of a focused approach gained from the corpus of the data, a student centered model should be the prioritization in a games-based learning model. This is one in which students are given the structure and the format to make decisions honoring their own agency and self-determination that could not otherwise be gained through traditional learning pedagogies. Agency and self-determination fuel the cycle of experiential learning in which experimentation represents a critical aspect to developing constructed knowledge. This aspect of experimentation bundles characteristics of student focus and agency into honoring a format where meaning making is derived wholly and personally. While such meaning making can be accomplished through traditional pedagogies, it can also be pursued through the application of educational gaming.

**Educational Gaming**

Educational gaming was the third and final finding extracted from the corpus of this study. Specifically, this finding addresses the socialized nature inherent in experiential learning and was especially evident in this games-based learning study. In addition, flow state is addressed where students’ engagement reached a degree of engrossment and connection so as to become deeply connected with the content and environment. Finally, games-based learning is examined as an applied pedagogy of experiential learning and how it can be used to achieve student learning outcomes.

**Socialized**

The nature of the study expected participants to work closely with one another throughout game play. This was indicative of the table top games that were chosen to be
included in the study. These highly socialized environments are supported in experiential learning as another core characteristic of successful implementation (Banks & Houser, 2014). This was supported in the corpus through Pablo’s responses as his reasons for playing table top games outside of the study. He is attracted to it mostly for their social component and interaction with others citing specifically: “I don’t like to play games so much as I like to play with the people playing those games.” This was echoed in Matthias’ response as he began his resurgence in gaming through the social ties and connections that were gained through game play. Though these social interactions were not always of the most positive nature, they served as a venue where students could still learn through personalized and socialized challenges encountered throughout play. This was embodied in Peggi’s responses about attempting to teach her roommates new games and needing to handicap herself in order to support their developmental learning. Furthermore, these social ties also served to connect in addition to strengthen existing social networks. This was evidenced in Barris, Richmond, Frankie, and Matthias who cited that game play helped strengthen community bonds through development of relationships with their peer groups.

Despite this, challenges still arose through social competitive play during the study. Specifically, Sheppard indicated stress when playing social deduction games where it was often necessary to bluff or outright lie in order to progress in the game. He specifically stated “lying carries a burden.” This is supported by Gibson and Dougals (2013) who indicated that such interactions in competitive games could cause dissonance and anxiety due to asymmetric representations of personalities. While negatively situated in this instance, participants cited the added ability to navigate complex human relationships with one another, in addition to identifying means of addressing disingenuous motives of others as a learning outcome from the
experience. While the socialized components of game play can run the gamut from positive to negative outcomes, the interactions between players and participants is what truly matters (Prenski, 2001; Fu et al., 2009). As was cited in the corpus, Farra indicated the interaction between herself and other players when engaging in cooperative games because “… It was just fun, because everyone jumped into it. It was like, "This is what we got to do." Such interactions, no matter what the perception, create a feedback loop where players were able to engage in relationships with each other, the content, and the game environment in order to develop a cyclical flow state.

**Flow state**

The flow state was evidenced in the development of good games design and excellent application of experiential learning. Such development is indicative of a cycle of feedback between players, content, peers, and the environment where players are pushed to the limits of their abilities and then challenged to exceed them. These environments test capacity while also expanding opportunities for players to put learned knowledge and mastery into play further challenging them to exceed their pre-conceived abilities. While traditional experiential learning does incorporate feedback into its structure, games are uniquely poised to do the same paired with intrinsic motivation, clear goals, and objectives. As such, Salter et al. (2012) indicated that the aforementioned elements of game play promote a flow state and maintain continuous student engagement. While no instances of flow state engagement were recorded during the study, students indicated events in the past where they could relate to the definition of flow state with their most salient memories surrounding instances of game play. This was specifically evidenced by Sheppard through his play of Defenders of the Ancients (DOTA2) online when discussing the development of his character and competitive ranking against other players. He
worked specifically on increasing the quality of his play until he reached a limit of achievement that he had yet to surpass. While the ceiling existed for him currently, it represented a plateau reached through a series of challenges addressed throughout his play of the online game. Therefore, while flow state represents a characteristic of successful student engagement; a combination of experiential learning and a student focused approach best informs and supports implementation of games-based learning (Oblinger 2004; Stupans et al., 2010).

**Games-Based Learning**

Mayer et al. (2014) indicated a gap in the literature regarding the application of games-based learning via experiential learning theory. However, previously discussed characteristics of games such as feedback, social interaction and player immersion (Prenski, 2001; Fu et al., 2009) represent an opportunity to utilize the pedagogy as such. Learning in this manner occurred in participants throughout game play scenarios in the study. Alastair recognized the tension, challenge, and dissonance from his peers when leading a cooperative game of Flashpoint: Fire Rescue and adjusted his engagement with his peers as such. This type of learning was evidenced most frequently in cooperative games. However, the study utilized both a mix of cooperative and competitive table top games to examine player interactions between both genres. While certain games appealed to some participants over others, Sheppard was a participant that connected competitive game play to actual scenarios experienced outside of gaming. Specifically mentioning how classmates from his international school “competed” against each other (to the detriment of everyone) in a class where grading was done on a curve. He indicated as much when discussing his displeasure at playing competitive games compared to their cooperative counterparts.
Findlay connected some of the tension experience in playing the competitive game COUP: Reformation to issues of economics, social justice, and equity framed in real world applications. Specifically he referenced “Economic inequality. The 1% and the 99%” when attempting to catch up in a game where he fell significantly far behind. This was supported by Westera (2015) who indicated that social connection and personal impact were specific areas of strength for the implementation of games-based learning. Findlay achieved both connection with his peers through play of COUP: Reformation as well as making the personal connection to what he sees as an analogous connection to societal challenges. Findlay, in addition to other players, sought to find meaning in their own play through learned behaviors despite finding applicable venues inside the game environment.

Thus, the students included in the study who were intrinsically motivated to participate and play games were incentivized to engage and learn from one another. This engagement through co-curricular activity was supported by Smith et al. (2012) and directly influences student engagement and development through applied experiential education in a games-based learning environment (Stupans et al., 2010). Games-based learning has historically been implemented in two tracks. The first with the development of games designed for achieving a specific learning outcome, and the second with the implementation of commercial off-the-shelf (COTS) games. COTS games, while produced for entertainment, also possess potential educational value. This study utilized the latter and bases its findings on the experiential application of these products in a games-based learning environment.

Therefore, this finding indicates that educational gaming can be implemented as an application of experiential learning utilizing commercial off-the-shelf games. These products should be implemented in a socialized environment where interactions between students, peers,
instructor, content, and the environment are supported and encouraged. This encouragement in turn promotes development of flow state opportunities where students can become engrossed and engaged in a feedback cycle of activity that is inherently and intrinsically motivating. Thus, games-based learning can be utilized as an active means of instruction utilizing experiential learning theory.

**Conclusion**

Current higher education focuses on a teacher centered pedagogy that does little to address individual learners’ preferences via constructivism (Kolb, 1984). Conversely an experiential learning system more adequately supports this need (Kolb, 1984; Kolb & Kolb, 2005). This study utilized games-based learning as an emergent pedagogy that both centralizes student learning as well as employs highly engaging forms of interaction such as flow state, intrinsic motivation, and self-determination that develops student growth (Kiili, 2005). Past studies have focused on purely academic implementations of games-based learning, whereas this study utilized entirely co-curricular applications. This approach honors Astin’s (1984) involvement theory emphasizing greater student learning outcomes in a co-curricular education. Therefore, the research question for this study was: How do undergraduate students at a small liberal arts college explain and make sense of game play in an academic setting?

This study answered the research question through qualitative inquiry and the application of interpretative phenomenological analysis to understand how meaning making was derived by participants. Data from these interviews were interpreted by the researcher and situated in the current literature to determine three main findings. The first finding includes students’ implicit acceptance of the experiential learning cycle as it was applied through games-based learning. The games incorporated within the study served as mediums from which students learned
through both scaffolding in game play as well as interacting with malleable environments. The second finding supports a student centered approach that honors constructivism in the formation of knowledge. Game play within the study supported students’ desires for self-determination when acting in their own best interest, the group’s best interest, or in some cases a combination of the two. Self-determination also supported players’ practices of experimentation within the malleable environment which further supported the self-determinative approach. The third finding supports the application of games-based learning as an educational application of experiential learning theory. This was supported by the socialized nature of interaction between participants which serves as an important characteristic of experiential learning. Feedback received from these interactions often served to engage players in flow state, which is the engrossment and immersion in an activity fueled by intrinsic motivation. Thus, the application of these three findings support the implementation of games-based learning as a paradigm of experiential education in a co-curricular learning environment.

This application of games-based learning connects to existing literature through the application of students’ ability to apply constructed knowledge gained through game play in order to support higher order thinking (DiCecco et al., 2004; Krane, 2005; Banks & Houser, 2014). This was demonstrated by participant responses indicating their influence and interaction with one another, their peers, the content, and the environment which affect later game decisions based on what they had learned previously. This was supported by Gros (2007) who indicated that the reflection and discussion evidenced mostly frequently in cooperative games served as integral applications of experiential learning. Such interactions with one another fueled the immersive qualities of these games that supported a reciprocal curricular/co-curricular connection (Mawdesley et al., 2011). These connections were often cited by metaphors for
learning (de Frietas & Oliver, 2006) that was indicated by participants when asked to connect what they had learned through game play and how they would apply it to applications outside of the study. This learning was often gained through the interactions of students within the game through malleable environments that served and aided the learning process (Marchetti & Valente, 2015). This in turn influenced students and empowered them to take a more active stance in their role which was indicative of an experiential learning environment for emphasizing active learners as participants (Sutton-Smith, 1997; Marchetti & Valente, 2015).

The student centered approach addressed in the second finding was supported by Katula and Threnhauser (1999) as a key aspect for the application of experiential learning. This student centered process was further emphasized in this games-based learning environment where individuals were able to test theories, apply actions and draw conclusions based on their interactions with the environment. This self-direction served to imbue these participants with a level of agency and efficacy gained through game play (DiCecco et al., 2004; Krane, 2005; Banks & Houser, 2014). This self-direction coupled with malleable learning environments served to promote the more flexible nature of games-based learning compared to traditional experiential offerings (Fleming & Schantz, 2010). Nevertheless, active student participation in this application of experiential learning serves to further development in the constructed acquisition of knowledge (Smith et al., 2012). This acquisition is then manipulated, tested, and compared to players’ knowledge often creating instances of cognitive dissonance fueling construction of new knowledge (Pivec et al., 2003; Ahmad & Jaafar, 2012). As such, the implementation of games-based learning furthers the exploration of causal relationships as indicated by Pannese and Carlesi (2007).
Causal relationships were most frequently a part of the more heavily socialized games that served to connect participants with one another. In addition to promoting relationships between students, content, and the gaming environment; a connection with peers is supported as a characteristic of success in experiential learning application (Banks & Houser, 2014). These socialized interactions with other players often caused interpersonal anxiety (Gibson & Douglas, 2013). However, these were observed in the study as yet another opportunity for participants to form causal connections and relationships with one another to better understand their environment. Thus, it is the interactions between students, the environment, content, and each other which is truly integral to successful experiential learning (Prenski, 2001; Fu et al., 2009). However, interactions with other elements of game play also support an environment where flow state is fostered. In flow state, players become engrossed and immersed in the game in order to maintain continuous student engagement. Thus a combination of different characteristics from experiential learning, self-determination, and socialized environments best informs and supports the application of games-based learning (Oblinger 2004; Stupans et al., 2010). Additionally, interactive forms of feedback, immersion (Prenski, 2001; Fu et al., 2009), and development of flow state represent evidence of this pedagogy’s efficacy.

Games-based learning has demonstrated to be relevant and applicable form of experiential learning which represents characteristics extracted from the corpus of the data from this study and is supported by the relevant literature. Furthermore, these findings serve to inform faculty, student affairs, and higher education professionals to the application of this pedagogy. Therefore, the next section will address how the findings of this study can be applied to relevant practice as well as explore future avenues for additional research in this emergent area.

Recommendations for Practice
Based on the findings drawn from the corpus of data situated within the extant literature, games-based learning exists as an application of experiential education. Past research focused on its implementation in a curricular learning environment. This study sought to implement this pedagogy in a co-curricular application. Therefore, these recommendations for practice further implement games-based learning for student development through its use of experiential learning theory. This can be done through the application of several characteristics determined to be relevant and critical for success which include scaffolding, self-determination, malleability, experimentation, flow state, and socialization.

**Applying Scaffolding**

Scaffolding exists as a characteristic already evident in some educational practices. This is most relevant for student affairs administrators in aspects such as new student orientation, club leader workshops, and resident assistant training. However, scaffolding has not been applied in ways that further develop students’ self-determination, agency, and energy into engaging with and affecting the learning environment. Therefore, this can be done through the application of smaller steps of challenges which first address student efficacy and then scale to larger challenges requiring mastery of previously covered content. Specifically, this can be accomplished in regular aspects such as new student orientation where programming is supposed to support stated learning outcomes. However, these learning outcomes are often diversified and decentralized from specific orientation programs. A gamified and properly scaffolded orientation program would therefore institute a low-risk, high reward structure; the creation of which could entice students to join the program by first learning more about their peers. This can be accomplished through a portal or interface which initially asks students for their first names and compares them to how many other students in the incoming class share that name. This could be
expanded to also include hometown, stated major, or other demographic characteristics that would clearly demonstrate and show how the student is related and connected to one another in the incoming class. This early scaffolding would be further developed to include, pictures, welcome video, and calls to action to contact, connect, and engage with their peers prior to joining any orientation program in a co-located environment. This small step to large gain scaffolding addresses the needs of students with social anxiety, nervousness, or concerns for experiencing something new.

**Prioritizing Self-Determination**

In addition, self-determination should be paramount in addressing student learning outcomes and developmental needs. This exists as a characteristic where students are provided with the resources but not necessarily the direction to take action. This structure further reinforces their agency and efficacy. This is best represented in support work such as career development where traditional undergraduate students are often assigned the unenviable tasks of resume creation for the first time. A gamified and self-determined program would seek to provide students with “templates” of different and common achievements often shared by undergraduate students. These can include being the captain of a sports team, founding a club, performing service work, or studying abroad. These small templates are then shuffled and distributed randomly where students demonstrate their own agency by finding relevant achievements that fit their own experiences and physically gathering and arranging them according to what they have done. Student affairs professionals can then take those student arranged templates and discuss individually with each student the story and meaning making process behind the decision to choose each one. These discussions serve two purposes: to reflect on the experience of choosing achievements relevant to them as well as to foster the opening
conversation of creating a central document that represents the culmination of their experiences (i.e. the resume).

**Creation of Malleability**

Such dedication to self-determination of choice is really the overarching theme relevant to different aspects of gamified interactions that can be endorsed by student affairs professionals. However, the maintenance of malleability represents an aspect central for applied gamification in order to reach learning outcomes. This malleability is best represented in situations, simulations, and scenarios where the students demonstrate self-determination and efficacy in order to effect change in their own environment. No more is this the case than with trainings for student staff for positions such as orientation leaders, resident assistants, or peer advisers. A gamified and malleable application of training for these student leaders would be to allow individuals with differing levels of mastery and efficacy to choose developmental “modules” that best address their learning and growth needs. This is opposed to a “one-size-fits-all” approach where the same training is implemented for the same staff regardless of their experience or seniority. Rather, this application seeks to provide students with learning modules broken down into separate parts where students are allowed to choose how they achieve the end goal: to complete training ready for their duties. However, in this malleable environment, students are provided with the resources and agency to choose the path that best fits their intrinsic desires in a format that is open to choice as well as addresses individuals’ past experiences.

**Opportunities for Experimentation**

The development of customized learning environments such as the malleable one described, are only successful so long as students are provided with opportunities to experiment and attempt different actions, courses, and strategies in order to achieve a common goal. As
such, experimentation represents a characteristic necessary for students to learn through experiential education. Student affairs administrators will most closely relate to student clubs and organizations as opportunities for students to find and connect with peers sharing the same interests. In addition, these organizations can serve as venues for students to experiment with different events, actions, and initiatives. While this opportunity is already in place for many institutions, a specific change that can be implemented is the comparison of actions between club members, clubs, and constituent organizations from other institutions. Ideally this would take place in a digital environment where clubs and organizations are connected to their relative counterparts at different institutions located throughout the world. As student organizations face common challenges such as fundraising, officer transition, and programming; students can connect with one another to share results of their experimentation. However, this experimentation with students in these environments can only be successful as long as commitment is demonstrated by advisers and club leaders to determine the empirical outcomes of actions taken and compare them to other effects that may have taken place. Thus, as opposed to giving organizations freedom to conduct whatever business they like, student leaders are instead called upon to experiment with changes where they can better anticipate and manage outcomes in order to determine common causal relationships previously unrealized.

**Supporting Flow State**

Experimentation’s application on this wide of a scale is not always best suited for engaging individual students. Thus, personal experimentation on a more granular level is often necessary for the engagement of flow state or the creation of engagement and immersion that completely engulfs game players. This flow state can be achieved through the immediate feedback and reinforcement of actions and activities for individual students. While difficult to
implement in non-game environments, student affairs administrators can instead replicate the
effects in applications such as scenarios and simulations. These are most prevalent in practice
through the use of mock interviews for career development and role playing scenarios for staff
training. A flow state can occur in these environments so long as students are prepared to address
challenges occurring in these simulations; they have been scaffolded to address these challenges;
their capacity meets the demands of the situation; and they have the agency and ability to
surmount these challenges. The aforementioned provides the structure for students to not only
fully engage and immerse themselves in these simulations but excel and achieve through
experiential learning.

**Emphasizing Socialization**

Lastly, these applications of experiential education through use of games-based learning
address how individuals can achieve learning outcomes through structured programs. However, a
necessary component to best address these achievements is the priority on a socialized structure
that promotes relationship building between students, peers, instructor, environment, and
content. This socialized environment best supports students through developing networks for
connections that honors individual agency while continuously challenging them through building
opportunity and capacity. Such environments therefore may require cooperative action in order
to achieve set goals and challenges. This can be addressed in student affairs practice through a
collective call to action that is answered not by individuals but rather socialized groups. This has
existed in the past through fundraising and service learning challenges where affinity groups are
called to compete against one another. Although, this characteristic can also be used to fuel
cooperation with groups to reach collective goals like meeting a senior class donation threshold,
funding a service learning project abroad, or promoting a food drive. The difference between
past applications and a gamified one is the priority on socialization and cooperation where certain challenges would be prohibitively difficult to accomplish individually, thereby emphasizing collective effort as necessary to win.

**Recommendations for Future Research**

This study focused on learning how undergraduate students at a small liberal arts college explain and make sense of game play in an academic setting. The data gained from the study, compared to existing literature informed warranted findings based on the conclusions drawn from reconciliation of the two. However, there exists opportunities for future research into this burgeoning area.

First, the study focused exclusively on undergraduate students enrolled at a small private liberal arts college. As such, data provided only forms the basis for conclusions for this specific population for the institution under study. Future research should be expanded to first include differing types of post-secondary institutions such as large public universities, community college, and other types of private institutions. Furthermore, future researchers can focus on differing types of student populations such as graduate students, medical students, doctoral students, athletes, veterans, and non-traditional aged students.

While this study did utilize a mix of both cooperative and competitive games overall, further research can emphasize and prioritize cooperative gaming as a means of exploring games-based learning as an applied form of experiential education. This study revealed a relative continuum of games applicability from purely competitive to purely cooperative with iterations in between. However, findings based on the cooperative applications of games, their social connective impact, and necessity for hierarchical relationship formation provide fertile ground from which to conduct future studies.
Most applicably, cooperative gaming should be explored in the table top environment for many of the same reasons that table top gaming was chosen for this study: its malleability, social connected nature, and relative cost savings. While cooperative gaming has more in common with project based learning and problem based learning, it also possesses assets inherent to its application that neither mentioned pedagogies involve. These include the discussed findings such as student self-determination, experimentation, and malleability that focus on students as the central determinant for learning.

Lastly, this study focused exclusively on the application of commercially available off the shelf games that could be played, implemented, and reflected upon with students. However, findings discussed and recommendations for practice illuminate opportunities for application of “gameful” characteristics into current educational practices. These implementations may provide both researchers and practitioners with options to include aspects of findings into their regular practice that merely augment current pedagogical approaches. Such small changes currently implemented as gamification in educational environments represents a rapidly emerging front in game studies and educational pedagogy. Thus, further research on gamification, its implementation, and its application for both curricular and co-curricular opportunities should be explored.
Appendix A

Internal Audit

Richmond: "Let's go on the quest." That just added another fun element to it. Other than, "We're going to have these people choose success or fail." Having a storyline behind it really made a difference in the game.

Findlay: My bluffing should be more strategic than crazy and sporadic because sporadicness, I guess, is not so much a strategy, I guess. I don't know. Maybe it can be, but I need to craft my bluffing a little more intricately and just stop dicking around, I guess, with my bluffs.

Role playing was part of the immersive structure of the gaming experience.

Speaking or role playing like characters associated with the world in the game aided in player attraction and captivation.

Learning how to bluff was a challenging part of playing this game and not part of the player's integral skill set. This was a very trying experience.

The participant revealed that the challenge was an integral part of learning the game in addition to representing a personal trial to overcome.

Farrel: Well, I don't actually do with the probabilities in my head, but it was. Okay, we have these four cards that could be. If we have 1 left, 1 and 4, you'll want to hit an assassin or red team point. Then we'll skip around.

The mistrust created by the participant's game relationship with others represented a negative social connection.

While negative experiences were defined as such by the participants, they were also connected to the game structure and the social nature of table top game play.

The calculation of probability represents a connection to rational reasoning and use of logic for strategy decisions in game play.

Frankie: By that, I felt like there's that boundary of mistrust between everyone because you didn't know who to, unless you're Merlin.

The connection and the use of logic, probability, and reasoning represent a rational individual. One capable of strategic thought.

Learning how to bluff was a challenging part of playing this game and not part of the player's integral skill set. This was a very trying experience.

The participant revealed that the challenge was an integral part of learning the game in addition to representing a personal trial to overcome.

Farrel: Well, I don't actually do with the probabilities in my head, but it was. Okay, we have these four cards that could be. If we have 1 left, 1 and 4, you'll want to hit an assassin or red team point. Then we'll skip around.
Appendix B

Participant List

<table>
<thead>
<tr>
<th>Pseudonym</th>
<th>Gender</th>
<th>Class</th>
<th>Status</th>
<th>Admissions</th>
<th>Age</th>
<th>Ethnic Identity</th>
<th>Gamer Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farra</td>
<td>Female</td>
<td>Sophomore</td>
<td>Commuter</td>
<td>Transfer</td>
<td>20</td>
<td>White</td>
<td>Casual 2-5</td>
</tr>
<tr>
<td>Peggi</td>
<td>Female</td>
<td>Freshman</td>
<td>Resident</td>
<td>Traditional, Scholarship</td>
<td>18</td>
<td>White (NH)</td>
<td>Light 0-1</td>
</tr>
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<td>Rosemarie</td>
<td>Female</td>
<td>Junior</td>
<td>Resident</td>
<td>Honors Program</td>
<td>20</td>
<td>White</td>
<td>Casual 2-5</td>
</tr>
<tr>
<td>Alastair</td>
<td>Male</td>
<td>Junior</td>
<td>Commuter</td>
<td>Traditional</td>
<td>21</td>
<td>White (NH)</td>
<td>Serious 10+</td>
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<tr>
<td>Barris</td>
<td>Male</td>
<td>Senior</td>
<td>Commuter</td>
<td>Traditional, Transfer</td>
<td>21</td>
<td>Hispanic</td>
<td>Casual 2-5</td>
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<tr>
<td>Farrel</td>
<td>Male</td>
<td>Junior</td>
<td>Commuter</td>
<td>Traditional, Honors</td>
<td>21</td>
<td>White (NH)</td>
<td>Serious 10+</td>
</tr>
<tr>
<td>Findlay</td>
<td>Male</td>
<td>Senior</td>
<td>Commuter</td>
<td>Traditional</td>
<td>21</td>
<td>White</td>
<td>Casual 2-5</td>
</tr>
<tr>
<td>Frankie</td>
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<td>Freshman</td>
<td>Resident</td>
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<td>White, Hispanic</td>
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<td>Sophomore</td>
<td>Commuter</td>
<td>Traditional, Athlete</td>
<td>20</td>
<td>Hispanic</td>
<td>Casual 2-5</td>
</tr>
<tr>
<td>Pablo</td>
<td>Male</td>
<td>Junior</td>
<td>Commuter</td>
<td>Traditional, Honors</td>
<td>21</td>
<td>Asian PI</td>
<td>Casual 2-5</td>
</tr>
<tr>
<td>Richmond</td>
<td>Male</td>
<td>Junior</td>
<td>Commuter</td>
<td>Honors</td>
<td>20</td>
<td>White</td>
<td>Casual 2-5</td>
</tr>
<tr>
<td>Sheppard</td>
<td>Male</td>
<td>Freshman</td>
<td>Resident</td>
<td>Traditional, International</td>
<td>21</td>
<td>Asian PI</td>
<td>Persistent 5-9</td>
</tr>
</tbody>
</table>
Appendix C

List of Table Top Games

**Codenames (2015)**
2–8 Players, Playing Time 15 Min, Age: 14+
Designer Vlaada Chvátíl
Artist Stéphane Gantiez, Tomáš Kučerovský
Publisher Czech Games Edition, MINDOK, Bergsala Enigma, Brain Games...

**Hanabi (2010)**
2–5 Players, Playing Time 25 Min, Age: 8+
Designer Antoine Bauza
Artist Antoine Bauza, Gérald Guerlais, Albertine Ralenti
Publisher ABACUSSPIELE, Asmodee, Brain Games, Cocktail Games...

**King of Tokyo (2011)**
2–6 Players, Playing Time 30 Min, Age 8+
Designer Richard Garfield
Artist Gabriel Butik, Romain Gaschet, Igor Polouchine, Benjamin Raynal…
Publisher IELLO, Bergsala Enigma, Delta Vision Publishing, Devir...

**COUP: Reformation (2013)**
2–10 Players, Playing Time 15 Min, Age: 10+
Designer Rikki Tahta
Artist Xavier Gueniffey Durin, Luis Francisco, Andrew Higgins, Jarek Nocon, Weberson Santiago
Publisher La Mame Games, Ferti, FunBox Jogos, Heidelberger Spieleverlag...

**Flash Point: Fire Rescue (2011)**
1–6 Players, Playing Time 45 Min, Age: 10+
Designer Kevin Lanzing
Artist Luis Francisco, George Patsouras
Publisher Indie Boards & Cards, 999 Games, Asmodee, Bard Centrum Gier…

**The Resistance: Avalon (2012)**
5–10 Players, Playing Time 30 Min, Age 13+
Designer Don Eskridge
Artist Luis Francisco, George Patsouras, Rafal Szyma
Publisher Indie Boards & Cards, Devir, Edge Entertainment, Heidelberger Spieleverlag…
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