ADULT LEARNING IN INGRESS AFFINITY SPACES

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Abstract

Continuing education initiatives often fail to consider the needs of adult learners in technologically-mediated spaces. Alternative means of engaging adults in the learning process, specifically games-based learning initiatives, are consistently underutilized. The purpose of this case study was to describe the ways adult participants interacted with and learned in the Ingress video game affinity space as a type of informal learning. This was intended to allow researchers to gauge the potential of the spaces around games to optimize adult learning experiences in other formal and nonformal learning contexts. The study utilized a multiple case study approach to comprehensively explore adult learning within the specific context of the affinity space. Data indicate participants experienced learning through asking questions, observing and imitating others, collaboration, mentoring relationships, and design- and systems-based practices. Findings affirm spaces with the demonstrated characteristics offer practitioners a way to: capitalize on learner interests, increase collaboration and active learning among adults in online learning settings, integrate technology into the adult curriculum, and foster critical engagement with media paratexts. Recommendations focus on the need for online learning environments to emphasize social learning by privileging the types of interactions found in the affinity space. Additionally, the study offers concrete suggestions to leverage the resources of the affinity space for educational use.

Keywords: adult learning, games-based learning, affinity space theory
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Adult Learning in Ingress Affinity Spaces

There is a growing body of work demonstrating video games can be efficacious for learning. Games that promote learning incorporate theories and principles that are supported by research in cognitive science (Gee, 2005; Steinkuehler & Duncan, 2008; Squire, 2011). For researchers and educators, one of the most relevant aspects of games-based learning is the meta-game, or the social practices between players within and outside of the games (Gee & Hayes, 2012; Squire, 2011). One such practice is participation in an affinity space, defined as a space where people organize around a common interest, or a learning system built around popular culture practices (Gee, 2005; Hayes & Gee, 2010). Formal and nonformal learning initiatives struggle to retain learners once enrolled (Angelino & Natvig, 2009, Sun & Rueda, 2012), indicating new ways to involve learners are required. Affinity spaces, as a type of informal learning, could be leveraged to engage and retain adults in the learning process. The purpose of this case study is to describe how adult participants interact with and learn in the Ingress video game affinity space to gauge the potential of such spaces to optimize adult learning in formal and nonformal contexts.

Statement of the Problem

While the literature has demonstrated the efficacy of game-based affinity spaces in pedagogical practice (Gee, 2004; King, 2012; Squire, 2006), little research has been directed toward the utilization of these spaces in adult learning programs. Nearly half of American adults play video games (Pew Research Center, 2015), suggesting games-based learning may be a viable alternative to traditional strategies for engaging adults in learning. Recent research demonstrates online learning programs are ineffective at engaging adult learners, leading to poor
academic performance and high dropout rates among adult learners (Sun & Rueda, 2012; Yoo & Huang, 2013). Thus, the adoption and implementation of more effective technological tools and strategies is necessary to appeal to and involve adult learners in computer-mediated spaces.

Studies have explicated the perpetual challenges of involving nontraditional students in learning, suggesting 21st century institutions and programs must be proactive in developing initiatives to engage learners outside of the traditional student mold (Kahu, Stephens, Leach, & Zepke, 2013; Wyatt, 2011). Engagement of nontraditional students in solely online environments has similarly remained a persistent issue (Boston & Ice, 2011; Dixson, 2012), yet the single study advocating adult learning through video games has focused only on elements of actual gameplay that have led to increased learner involvement (Whitton, 2011).

Literature specifically focused on the meta-game, including participation in affinity spaces, emphasizes children’s social learning aspects and increased opportunities for co-construction of meaning and knowledge through the interaction process (Gee & Hayes, 2012; Steinkuehler & Duncan, 2008; Squire, 2011). Meta-game research remains primarily concerned with how these features of affinity spaces support theories of pedagogy, as well as the possibilities for incorporating these features into the traditional Pre-K-12 classroom. Few studies have offered practical strategies for integrating the characteristics of affinity spaces across the curriculum, regardless of the age of the learner, and even fewer studies have explored the use of video games specifically in regard to adult learning. This qualitative investigation would provide detailed information from the perspectives of adult gamers regarding why and how they interact in games-based communities. The study would likewise inform the work of researchers and
practitioners seeking innovative ways to facilitate adult learning in formal and nonformal learning contexts.

To investigate adult learning in games-based affinity spaces, this inquiry examines the experiences of adult participants in the greater Nashville Ingress community. Ingress is an augmented and alternate reality, massively multiplayer, location-based mobile game. The game has an open narrative that requires players to collaborate to succeed. The greater Nashville Ingress affinity space is networked across mediums such as Google Hangouts, Slack teams, Zello, and Telegram. For the purposes of this study, the dispersed sites will be viewed as a single affinity space, in keeping with the current understanding of the affinity space as functioning across multiple mediums and modes (Albers, Pace, & Odo, 2016; Lammers, Curwood, & Magnifico, 2012).

**Significance of the Research Problem**

Postsecondary institutions in the United States have reported an 80% increase in online learning over the last ten years (NCES, 2012). The number of learners enrolled in one or more online courses has increased by 343.75% from 2002 (Allen & Seaman, 2015). The increase is attributed to growing numbers of adult learners who require a more flexible learning environment to balance educational goals with work and family obligations (Naaj, Nachouki, & Ankit, 2012). Despite the increase in adult learner participation in online programs, engagement in the learning process remains problematic (Sun & Rueda, 2012; Yoo & Huang, 2013). Previous research has shown games-based activities can strengthen learning through social interactions in communities organized around the shared interest (Salen & Zimmerman, 2003). This indicates strategies to engage these learners through social interactions such as those found in affinity
spaces could impact performance, involvement, and retention in higher education and professional development programs (Drago-Severson, 2009; Garrison & Akyol, 2013; Tinto, 1997; Yoo & Huang, 2013). Improving performance, retention, and involvement would in turn influence the number of adults attaining degrees or professional certifications. Individual benefits of degree completion and professional certification include higher earnings for all racial/ethnic groups and genders (Baum, Ma, & Payea, 2013). Societal benefits include lower levels of unemployment and poverty, leading to decreased demand on public budgets at both the state and federal levels (Baum et al., 2013).

At the local level, this research will inform the design of online adult orientation programs for the Metro Nashville Public Schools Virtual School and its partner schools. This investigation may determine whether video game affinity spaces can facilitate adult learning and support the integration of a games-based affinity space for parents learning to navigate the structures of the virtual school. Building the space within the learning management system could open doors to greater parental involvement, allowing for increased connection and collaboration among households in geographically dispersed locations.

The work is also significant due to its the potential to foster cultural change in traditional schooling institutions. The current culture is defined by standardized assessments and regimented learning determined by the dominant culture (Gee, 2003; Goodlad, 2004; Robinson & Aronica, 2015). In an affinity space, race, gender, age, ability, and social class are backgrounded, giving participants the power to develop their own identities and use them according to their own purposes (Hayes & Gee, 2010). Additionally, integrating characteristics of video gaming affinity spaces into the curriculum provides learners of all ages a chance to grow their own cultural
capital by becoming both producers and consumers of information (Gee, 2005; Squire, 2006). This can empower learners by “changing the traditional dynamics and…patterns of the classroom in ways which are considered to be transformational” (Burden as cited in Male & Burden, 2014, p. 426). When knowledge is no longer viewed as separate to the learner, but rather part of the intensive knowledge he or she brings to the space, traditional learning processes can be challenged and changed through a more participatory culture that rewrites the rules by which formal schooling operates (Jenkins, Purushotma, Weigel, Clinton, & Robison, 2009). Affinity spaces around games make a variety of learning paths available, suggesting that bringing affinity space theories into the classroom and other formal learning spaces opens the door for fundamental change (Curwood, 2013; Duncan, 2010; Squire, 2011).

In the broader context of exchange, there is also potential to give back to participants through the act of co-creating knowledge during the research process. Collaborating to construct knowledge has the potential to move participants along the trajectory from computer game consumer to computer game designer (Polman, 2006). Leading participants to identify as designers can provide opportunities to “develop coherent ways of thinking that they can bring to new situations. [Learners] with experience in ‘being’ [designers] gain a way of thinking that they can draw from in other academic areas” (Shaffer as cited by Squire, 2006).

As digital literacy practices become ubiquitous in our lives, it becomes increasingly important for research to further explore our conceptualizations of new media, as well as to divine the implications for teachers, teacher educators, media designers, and researchers in the fields of games-based learning and adult education. Understanding adult experiences with affinity spaces would not only allow researchers to expand on previous knowledge of informal
adult learning, but would also provide insight into the affordances of the meta-game in supporting theories and practices of adult learning. Moreover, an inquiry into the relationship between participation in affinity spaces and adult learning could help reveal deeper connections between games-based learning and social cognitive theory, which accounts for an understanding of the learner and an understanding of the environment in which the learning takes place (Merriam, Caffarella, & Baumgartner, 2007). Finally, the work will allow teacher educators, instructional designers, and game designers to create evidence-based content that not only encourages learners in self-direction, but also speaks to their everyday lives in a technologically-driven society.

**Research Problem and Research Question**

Continuing education initiatives fail to take into account the needs of adult learners in technologically-mediated spaces. Alternative means of engaging adults in the learning process, specifically games-based learning initiatives, are consistently underutilized (Whitton, 2011). The purpose of this case study is to describe the ways adult participants interact with and learn in the Ingress video game affinity space as a type of informal learning. This will allow researchers to gauge the potential of the spaces around games to optimize adult learning experiences in other formal and nonformal learning contexts. The central question guiding the study is: How do adults experience learning and engagement in the Nashville Ingress affinity space?

**Definitions of Key Terminology**

**Adult Learners:** Learners aged 25 and older. Also referred to as “nontraditional students” (National Center for Education Statistics, 2009).

**Affinity Space:** A space where people organize around a common interest (Gee, 2005).
**Affinity Space Theory (AST):** An analytical apparatus developed to compare learning in affinity spaces to learning in a variety of different venues, conceived by James Paul Gee in his seminal book, Situated Language and Learning: A Critique of Traditional Schooling. Gee (2005) offered this theory as an alternative to the notion of communities of practice, instead focusing on the idea of a “space in which people interact, rather than on membership in a community” (p. 2).

**Engagement:** “The time and energy learners devote to educationally purposeful activities” (Kuh, 2004, p. 1).

**Alternate Reality Game (ARG):** An interactive narrative unfolding online and in real world spaces, taking place over time, in which distributed players must work together to solve problems impossible to solve alone (McGonigal as cited in Kim, Lee, Thomas, & Dombrowski, 2009).

**Andragogy:** “The art and science of helping adults learn” (Knowles, 1980, p. 43).

**Augmented Reality:** “A medium in which digital information is overlaid on the physical world that is in both spatial and temporal registration with the physical world and that is interactive in time” (Craig, 2013, p. 20).

**Engagement:** “The time and energy learners devote to educationally purposeful activities” (Kuh, 2004, p. 1).

**Formal Learning:** The type of learning that is institutionalized, curriculum driven, and formally recognized by grades and diplomas (Merriam et al., 2007).

**Games-Based Learning (GBL):** A type of game play that has defined learning outcomes (Shaffer, Squire, Halverson, & Gee, 2005).
**Ingress:** A location-based, augmented and alternate reality mobile video game. The game has a continuous open narrative with a background story that derives its conventions from science fiction (Niantic Incorporated, 2017).

**Informal Learning:** Spontaneous, unstructured learning that takes place in everyday life (Coombs, 1985).

**Meta-Game:** The social practices that take place within and outside of video games (Gee & Hayes, 2012).

**Nashville Ingress Affinity Space:** The online community for greater Nashville area Ingress players of a specific faction, unnamed to protect the anonymity of participants.

**Nonformal Learning:** Organized, community-based learning opportunities outside of formal education (Merriam et al., 2007).

**Nontraditional Student:** A student aged 25 and above. Also referred to as “adult learners” (National Center for Education Statistics, 2009).

**Pedagogy:** The method and practice of teaching. In the field of Adult Education, pedagogy refers specifically to the teaching of children (Delahaye, Limerick, & Hearn, 1994; Knowles, 1980).

**Portal Recon:** A program aimed at growing the global network of portals in Ingress. The program relies on agents’ experience and knowledge of candidate criteria to evaluate portal submissions for inclusion in the location database (Niantic Incorporated, 2017).

**Self-Directed Learning (SDL):** Learning in which the learner takes responsibility for planning, carrying-out, and evaluating the learning experiences (Caffarella, 1993).
**Technologically-Mediated Environments:** An environment where activities are facilitated by technology tools, applications, and services. Also referred to as “computer-mediated” environments (Fiedler & Pata, 2009).

**Transformational Learning:** Learning that refers to fundamental change in the way people see themselves and the world they live in. It is synonymous with “transformative learning” throughout the literature (Merriam et al., 2007).

**Theoretical Framework**

The research will be framed by both andragogy and Affinity Space Theory (AST). Andragogy is defined as the art and science of teaching adults (Knowles, 1980). It is premised on assumptions about the characteristics of adult learners that are different from the assumptions on which traditional pedagogy is based (Knowles, 1980). Andragogy is often utilized as a theory to guide the scope of research and practice on how adults learn, how they should be taught, and elements that must be considered when adults learn in varying contexts (Henschke, 2015). An affinity space is defined as a space where people organize around a common interest (Gee, 2005). Gee’s (2004) paradigm presents affinity spaces as representative of ideal learning environments, wherein participants voluntarily come together to pursue interests shared across a diverse peer network. Affinity Space Theory is a framework commonly used to conceptualize interactions in the meta-game (Pellicone & Ahn, 2015). Although andragogy will provide a strong foundation for demonstrating adult learning is occurring in the Ingress affinity space, it is not enough to thoroughly ground the work. It is also necessary to apply Affinity Space Theory to study behavior associated with the acquisition of specific competencies in the online space (Gee, 2013; Curwood, Magnifico & Lammers, 2013).
Andragogy

In 1968, Knowles presented the first iteration of andragogy in the United States, often viewed as a major breakthrough in adult education due to its conceptualization that adults learn differently than children (Henschke, 2009; Merriam & Brockett, 2007). Although there is some debate surrounding andragogy as a theory, the literature does agree there are differences in the education of children versus the education of adults. One major difference is andragogy is learner-focused education, while pedagogy is teacher-focused (Conner, 2004; Knowles, 1980). Scholars contend that another major difference is pedagogy emphasizes the transmission of content subject matter, whereas andragogy focuses not only on the acquisition of knowledge, but also critical thinking about the content and its applications (Batson, 2008; Knowles, 1980; Pew, 2007). With such differences in mind, Knowles’ early work conceptualized andragogy and pedagogy as opposites; however, he changed the subtitle of his seminal work, *Andragogy vs. Pedagogy*, to *From Andragogy to Pedagogy* in later editions to reflect the evolution of his theories. His final iteration situated andragogy and pedagogy as two ends of a spectrum, with assumptions about learners in a given situation falling somewhere on the continuum (Knowles, 1984). Knowles’ (1984) theory was heralded a wakeup call to educators that they "should involve learners in as many aspects of their education as possible and in the creation of a climate in which they can most fruitfully learn" (Houle, 1996, p. 30).

The andragogical model is predicated on the following basic assumptions: adults move from being dependent learners to self-directed learners, experience becomes a resource for learning, adults become ready to learn things they need to know to deal with real life situations, adults are problem-centered rather than subject-centered, maturity brings internal motivation to
learn, and adults need to know why they need to learn something (Bash, 2003; Knowles, 1984; Knowles, Holton, & Swanson, 2005; Merriam et al., 2007). Taken together, the following assumptions define characteristics of adult learners that are different from the assumptions and characteristics on which traditional pedagogy is based.

**Self-concept.** The self-concept of adults affects their role as learners (Knowles, 1980). As children, learners are encouraged to be dependent upon the instructor for knowledge. Robles (1998) describes this as a hierarchical relationship where the teacher is dominant to the learner. When people begin to define themselves as adults, their role in life is no longer that of full-time learner, but that of worker, spouse, parent, and citizen. The self-concept becomes that of a self-directed personality (Knowles, 1980). This poses a problem in adult education, as previous conditioning suggests learners are to be dependent, while they are independent in every other aspect of their lives. The use of structures, methods, or content perceived as pedagogical in nature may generate resistance in adult learners (Gehring, 2000; McGrath, 2009), indicating a need for learning experiences that assist adults in developing skills in self-directed learning, while helping them move to a new way of thinking about their roles as learners (Knowles, 1980).

**Experience as a resource.** Adults enter into learning with a wealth of experience that they did not command in their youth. For children, experience is something that happens to them; however, for adults, it is an integral part of who they are. This establishes a fundamental difference between adult and child learners. Adults define themselves in terms of their unique experiences, suggesting they have a significant investment in the value of those experiences (Knowles, 1980). Adults want to use what they know, and they want to be valued for that knowledge (Fidishun, 2000). Education in general, and adult education specifically, emphasize a
need to “attach instruction to relevant schemata, which are considered internal knowledge structures” (Cercone, 2008, p. 144). Previous experiences allow adult learners to build on earlier knowledge by relating new concepts to past events (Cercone, 2008), suggesting learning is a continuous process, based on experience (Kolb, 1984).

**Readiness to learn.** While both children and adults learn best when pursuing knowledge to advance from one stage to the next, tasks undertaken by the young are primarily physiological and mental, while the tasks of adulthood are catalyzed by the evolution of social roles (Knowles, 1980). The requirements for performing different social roles change as adults move through life, which changes developmental tasks, as well as readiness to learn (Gehring, 2000; Knowles, 1980). Adults will seek out information to assist in developing skills, knowledge, and abilities necessary to cope with situations that arise as adults mature (Aderinto, 2006). Adult students typically know what they need and want to learn, thus it is imperative that learning experiences are organized toward adult learners’ personal goals (Knowles, 1989).

**Orientation to learning.** Education is basically a process of accumulating a repository of knowledge and skills that might be useful later in life (Knowles, 1980). Adults view learning differently in that they do not begin the learning process with the same time perspective as children (Knowles, 1980). For children, the application of most of their learning is postponed for later assessments and for experiences as adults. Adults are more focused on immediacy of application; thus, education is a process of improving their ability to deal with problems they face in the current situation. Adults are more problem-centered than subject-centered in their approach to learning (Merriam & Caffarella, 1999), suggesting the learning environment best meets their needs when instruction is presented in a context that aligns with their established
learning objectives. (Knowles et al., 2005).

**Motivation to learn.** As an adult, learning is motivated by internal factors instead of external ones (Knowles et al., 2005; Merriam & Caffarella, 1999). Some factors that motivate adults to learn include job satisfaction, self-esteem, and quality of life (Cercone, 2008). As learners move through the stages of adulthood, the inherent desire to succeed becomes more motivating than other forces necessitating the acquisition of knowledge (Aderinto, 2007). Instruction should support the intrinsic motivation to learn by providing an environment that encourages learners to be active participants (Aragon, 2003). When the climate is collaborative, respectful, and informal, adults respond more positively, and will be more motivated to attempt learning tasks (Cercone, 2008; Lieb, 1991).

**Relevance of the learning.** Adult learners are practical and need to know why they should learn something, as well as how it will benefit them (Knowles, 1989; Lieb 1991). When learners understand what they are expected to learn, they are more inclined to participate (Chan, 2010). Adult learners believe they are preparing for future tasks and responsibilities that are more challenging or complex than current tasks; therefore, it is imperative that coursework is relevant to their lived experiences (Cercone, 2008). Adults prefer hands-on, interactive instruction where they can apply new learning to issues that are of personal and professional significance (Robles, 1998).

**Critics of Andragogy**

Although andragogy has endured as a model of adult learning, there are limitations and weaknesses that must be considered. One area of criticism focuses on whether the assumptions are truly specific to adults, as some children have been found to be independent, self-directed
learners with a range of experiences greater than some adults (Merriam, 2001). In a similar vein, Cercone (2008) explains that not all adults are self-directed and may need assistance to become more self-directed. An adult who has little knowledge about a topic will naturally be more dependent upon the instructor for knowledge. Accordingly, St. Clair (2002) argues that “the andragogical approach does not provide a clear delineation between what can be considered adult education and what cannot” (p. 2).

Andragogy is also considered to be limited by its failure to adequately consider the context of the learning (Merriam et al., 2007). Scholars have argued that the focus on the individual learner often ignores the sociohistorical context in which the learning takes place (Grace, 1996; Pearson & Podeschi, 1997). Other scholars criticize andragogy for its assumptions that education is neutral and apolitical, and that all adult learners will learn the same (Sandlin, 2005). Likewise, andragogy is considered to support the status quo by its lack of attention to the tensions between power and social structures that influence learning (Pratt, 1993), specifically gendered structures of power in education (Tisdell, 1998) and organizational and social barriers that impact an individual’s freedom (Grace, 1996).

Assumptions of andragogy are considered specific to Western culture, and fail to recognize multiple ways of knowing and learning that have emerged from other cultures (Lee, 2003; Sandlin, 2005). As such, andragogy is considered to marginalize some social groups such as foreign-born learners and learners from an Africentric tradition (Lee, 2003; Alfred, 2000). Critics also claim andragogy underemphasizes both the need for critical reflection as a crucial component of adult learning, as well as the importance of dialogue and discussion (Mezirow, 2000; Welton, 1995).
The debate continues as to whether andragogy is a theory of adult learning or a conceptual framework to springboard emerging theory (Davenport & Davenport, 1985; Hartree, 1984; Knowles, 1989; St. Clair, 2002). Hartree (1984) observed that the assumptions could be considered a description of adult learners or a prescription for what adult learners ought to be like. The literature has demonstrated the benefits of the andragogical approach to the field’s understanding of adults as learners, yet andragogy is not seen as furthering the understanding of adult learning as a process (St. Clair, 2002; Pratt, 1993; Rachal, 2002). Although andragogy has demonstrated its usefulness in the exploration of the definitional and philosophical issues related to adult education as a scientific discipline (St. Clair, 2002; Pratt, 1993), its influence is said to be limited to its use as a guide to adult education practice (Merriam, 2001; Pratt, 1993).

**Affinity Space Theory**

Affinity Space Theory was conceived by James Paul Gee in his seminal book, *Situated Language and Learning: A Critique of Traditional Schooling*. Gee’s (2004) approach was developed in response to issues with Lave and Wenger’s (1991) communities of practice framework, which he believed could not be appropriately applied to geographically distributed populations. Gee (2005) offered an alternative to the notion of communities of practice, instead focusing on the idea of a “space in which people interact, rather than on membership in a community” (p. 2). Gee’s (2004) conceptualization stresses that the organization of the space, including the site and what it links to, is equal in importance to the organization of the people. Fan sites around games such as *Age of Mythology* and *The Sims* allowed Gee (2004, 2005) to develop the analytical apparatus necessary to compare learning in affinity spaces to learning in a variety of different venues.

Not all affinity spaces function in ways that are good for human learning and growth.
Some spaces are inclusive and supportive, fostering a sense of belonging, while other spaces give people a sense of “us” against “them.” Many spaces are cooperative and friendly, yet others are competitive and hostile. In a highly-functioning, nurturing affinity space, “learning becomes deep, and often life changing” (Gee & Hayes, 2012, p. 8). The following list details the principles that make up this ideal space.

**The common endeavor is primary.** In affinity spaces, people relate to one another in terms of common interests, goals, and practices. Constructs such as race, gender, and age are backgrounded (Gee, 2004). This feature is particularly important in virtual affinity spaces, as people can join these spaces with an identity they have chosen (Gee & Hayes, 2012). Survival of the space requires accommodating new members and encouraging their commitment to the shared endeavor (Gee & Hayes, 2012). Players have to participate with others to achieve common goals and acquire authentic expertise (Steinkuehler, 2010).

**Affinity spaces are not segregated by age.** The spaces involve people of all different ages working together. There are no assumptions that younger people cannot be more knowledgeable than older people, as older people may join the space as novices (Gee & Hayes, 2012). Affinity spaces can thus level the playing field, making it possible for younger people with more experience to provide support to older beginners (Gallager, Michalchik, & Emery, 2006) Participants are judged only by their willingness to learn and their growing skill, not by age (Gee & Hayes, 2012).

**Newcomers are not segregated from the masters.** The spaces accommodate players of all skill levels and interest levels. Different people have different objectives within the spaces, based on their own goals and identities (Gee & Hayes, 2012). The space offers opportunities for
participants to become experts, learning from others when and however they choose (DeVane, Durga, & Squire, 2010; Gee & Hayes, 2012).

**Participants can be producers, not just consumers.** People can go to the space to get content, but they can also go there to create content for others. Affinity spaces allow players to learn about design, but also to embody the role of designer (Duncan, 2010). When players create tutorials to help others with their own creative endeavors, this is another activity that helps “shape the community as a socially constructed design environment” (Marone, 2015, p. 101).

**The content is transformed by social interaction.** The content in an affinity space is a product of continuous social interaction in the group. The available content is not fixed, but is continuously negotiated and transformed by interactions between participants (Curwood, 2013; Gee & Hayes, 2012). The evidence is manifest in forum discussions surrounding tutorials or in-game narratives, as people ask questions or contribute new information that transforms the previous content (Gee & Hayes, 2012). Participants not only negotiate content in the space, but also standards, norms, and values (Curwood, 2013).

**The development of both intensive and extensive knowledge is encouraged.** Affinity spaces encourage participants to gain and spread both broad, general knowledge and specialist knowledge (Gee & Hayes, 2012). Participants bring intensive knowledge to the space, whereby they and others gain and share specialist knowledge and outside experiences (Hayes & Lee, 2012). People can easily develop and display their specialized knowledge in one or more areas, such as learning how to change or write code to modify gameplay and advising others on the subject. Players construct extensive knowledge by becoming involved in many or all stages of the work, learning numerous, overlapping functions, and recognizing the undertaking as a whole
system aside from their own role in it (Gee, 2003; Duncan, 2010). When participants gain and spread both intensive knowledge and extensive knowledge, this creates a community of people who share a great deal of knowledge, but where each individual has something special to offer (Duncan, 2010).

**Both individual and distributed knowledge are encouraged.** The space encourages participants to gain individual knowledge, stored in their brains, and to contribute to distributed knowledge, which is collective knowledge accessible in the space (Gee & Hayes, 2012). “People are encouraged and enabled to act with others and with various mediating devices (e.g., level editors, routines for tweaking the AI of the game, strategy guides, etc.) in such a way that their partial knowledge and skills become part of a bigger and smarter network of people, information, and mediating devices” (Gee, 2003, p. 23).

**Affinity spaces encourage and enable the use of dispersed knowledge.** Participants are encouraged to access information about the topic at other sites and other spaces (Duncan, 2012). In practice, participants may begin in a single location, but will gravitate to satellite locations (Duncan 2013). Some fantasy games are based on mythology, yet background information on such topics is not typically included in the affinity space. Participants are linked to books, movies, and other sites of interest through recommendations from others in the space (Gee & Levine, 2009).

**Tacit knowledge is valued and explicit knowledge encouraged.** Knowledge gained through practice is valued, and the articulation of that knowledge is encouraged (Gee & Hayes, 2012). Affinity spaces offer opportunities for people to learn to articulate their tacit knowledge through participation in discussions with others about a common problem, contributions to forum
threads, or engagement in real-time group chats (Albers et al., 2016; Duncan, 2010; Gee, & Hayes, 2012). Within the space, participants are able to share their expertise, making norms and criteria for success explicit, while actively providing support for players at all skill levels (Curwood, 2013).

Participation comes in many forms and from many routes. Participants may join the space any time, and anyone who enters the space belongs (Gee & Hayes, 2012). They may sometimes participate peripherally, as followers, but other times centrally, as leaders. Unlike formal schooling, the level of participation may change from day to day, as there are no fixed roles or patterns (Gee & Hayes, 2012).

There are many paths to status. Participants can achieve status by demonstrating skills in a wide variety of areas. Different people may be good at different things, gaining a reputation for accomplishments in content creation, tutorial design, site management, or narrative writing (Curwood, 2013; Gee & Hayes, 2012). The more nurturing the space is, the more variation, and the more paths to status (Gee & Hayes, 2012).

Leadership is flexible. As participation in the space is intrinsically motivated, there are no bosses (Gee & Hayes, 2012). Leaders cannot give orders, nor can they create rigid hierarchies. Affinity spaces have flexibility in leadership roles; therefore, although the spaces may foster respect for those with expert knowledge or advanced skills, leadership is more of a teaching role with a focus on providing resources and mentoring, and fostering apprenticeship relationships (Albers et al., 2016; Bommarito, 2014; Gee & Hayes, 2012).

Roles are reciprocal. At times participants may be teachers, and at other times learners. A participant may support others, or she may be the one who is receiving support. Experts have a
desire to “pay it forward” in the space, helping others to achieve the same success they have found (Gee & Hayes, 2012).

**Learning is proactive.** Affinity spaces encourage a view of learning where individuals are proactive, and where failure is a rung on the ladder to success (Gee & Hayes, 2012). While asking for help from the community is welcome, it does not replace a person’s responsibility for his or her own learning. Affinity spaces allow participants to be introduced to systemic ways of thinking about problems, and opportunities to engage in collective problem-solving to enhance the knowledge base of the space (Gee & Hayes, 2012; Williamson & Facer, 2004).

**People get encouragement from peer feedback.** A norm of a nurturing affinity space is to be supportive and encouraging when participants create or accomplish something (Gee & Hayes, 2012). This encouragement comes from a creator’s audience, meaning anyone who responds to the creation. Producers get constructive feedback and help from peers or those whom they view as experts, but who counts as a peer will change as new skills are mastered (Lammers, 2013).

**Critics of Affinity Space Theory**

Critiques have primarily centered on the limits of the theory, emphasizing that emerging research and changing technologies have made it necessary to expand on Gee’s (2004) formulation (Bommarito, 2014; Duncan & Hayes, 2012). “The notion of an affinity space, while productive, is one that is evolving and shifting as it has been applied to new contexts” (Duncan & Hayes, 2012, p. 11). One result of applications in new contexts focuses on the need for understanding the processes through which affinity spaces evolve and change over time (Duncan, 2012, King, 2012; Lammers, 2013), not addressed by Gee’s (2004) theory. When Gee
(2004) first developed his approach, it was common for an affinity space to be defined by a central portal, such as discussion board. Today’s affinity spaces now often function across multiple modes and mediums (Lammers et al., 2012). Bommarito (2014) emphasizes the limits of Gee’s notion of affinity spaces, noting the failure of the theory to account for the sense of belongingness participants feel in affinity spaces, and the difficulties experienced in identifying the boundaries of spaces.

Despite weaknesses, the theory remains viable, as it continues to serve as the foundation for the research of contemporary scholars. Scholars of both this decade and the last have applied Gee’s (2004) theories to investigate the social learning aspects of affinity space participation, noting increased opportunities for co-construction of knowledge as a result of the interaction process (Gee & Hayes, 2012; Steinkuehler & Duncan, 2008; Squire, 2006; Squire, 2011).

**Rationale for the use of Andragogy and Affinity Space Theory**

The problem of practice addresses the education of adults; therefore, it is necessary to frame the work utilizing a theory that recognizes adult learning characteristics, as opposed to employing ideology typically applied to the education of children. Research has found adult learners to be resistant to pedagogical strategies they remember from their youth, such as lectures, assigned readings, memorization, drills, quizzes, and exams (Gehring, 2000; Knowles, 1980; McGrath, 2009). To effectively design instruction for adults, participants must be educated as adults (Knowles, Holton, & Swanson, 2005).

Andragogy was also chosen as its assumptions are in alignment with Gee’s (2004) conceptualization of affinity spaces, which likewise serves to ground the work. Adult learners are primarily self-directed; they are internally motivated to plan and carry out their own learning
(Knowles, 1984). This is congruent to the literature on affinity spaces, which describes how participants voluntarily come together to engage in purposeful activities around their interests (Gee & Hayes, 2012). Additionally, both andragogy and affinity spaces are concerned with self-concept. Andragogy emphasizes decreasing dependence on others for knowledge (Knowles, 1980), just as affinity spaces encourage participants to become less dependent on others in the space as they move along the trajectory from consumers of knowledge to producers or designers (Gee & Hayes, 2012). Moreover, adult learners and affinity space participants can achieve status by demonstrating skills relevant to their interests (Aderinto, 2006; Gee & Hayes, 2012). Another assumption of andragogy is that experience serves as a resource for learning (Knowles, 1984). This is also the case in affinity spaces, where tacit knowledge gained through practice is valued (Gee & Hayes, 2012).

In andragogical practice, teachers and learners are viewed primarily as peers, with the teaching-learning transaction being the responsibility of both the teacher and the learner (Knowles, 1980). This practice holds true in affinity spaces, although in a less formal manner. In an affinity space, players of all skill levels contribute to the collective knowledge available in the space, and those with greater expertise mentor new players (Gee & Hayes, 2012).

Finally, andragogy and affinity spaces both emphasize readiness to learn and immediacy of application. Adult learners will seek information to assist them in developing skills and abilities necessary to deal with new situations as they arise (Aderinto, 2006). Affinity spaces encourage just in time learning, whereby participants seek knowledge from the group about a specific problem that has occurred during gameplay (Gee, 2003). The alignment between andragogy and affinity space theory suggests a crucial link between participation in affinity
spaces and adult learning that challenges limitations of predominant formal approaches. The application of this combined theory advances the research on the possibilities of affinity spaces for productive engagement of adult learners inside and outside traditional learning spaces.

**Applying Andragogy and Affinity Space Theory**

The theory of andragogy has suggested there are conditions necessary for adult learning to take place (Knowles, 1984; Merriam, 2001). Viewing andragogy as a guide to adult education practice, the theory will be applied as a model to analyze the Ingress affinity space in accordance with andragogy’s guiding principles. This will ultimately determine whether the affinity space has the potential to meet the required conditions for adult learning. Likewise, the more a space reflects Affinity Space Theory’s principles, the closer it comes to meeting Gee’s (2004, 2005) vision of the optimal environment for learning in technologically-mediated spaces. Therefore, the more evidence to demonstrate the Ingress affinity space meets these criteria, the stronger the argument for the space as efficacious for learning. Andragogy and Affinity Space Theory have guided the development of the general research question regarding how adults experience learning and engagement in affinity spaces. Meeting required conditions for learning outlined in andragogy and AST would thus suggest characteristics of the affinity space could be transferred to other adult learning contexts with similarly favorable results.

Affinity Space Theory led to the decision to utilize case study methods. Previous research applying AST has also implemented case study methods to explore how children learn as a result of participation in the space (Padgett & Curwood, 2016; Lewis, 2014; Wu, 2016). A case study design should be considered when the focus of the study is to answer “how” questions, and when contextual conditions are relevant to the phenomenon under study (Yin, 2003). This study
focuses on how adults learn through interactions in affinity spaces, and the contextual conditions, specifically social, are an integral part of learning in the space.

In keeping with recent research applying andragogy and Affinity Space Theory in online environments, data will be collected via in-depth interviews, online and virtual observation, and publicly-shared, user created artifacts (Lammers et al., 2012; Ozkan, 2016; Sharifi, Soleimani, & Jafarigohar, 2016). In-depth interviews with open-ended questions are required as participant-researcher interactions allow the researcher to uncover the hidden meanings (Ponterotto, 2005) underlying adults’ activities in affinity spaces. Interviews will provide narrative data to co-construct participants’ motivations for involvement, and their perceptions of the benefits of interaction.

Observations of participant interactions, obtained through forum posts and public messaging history, and the collection of publicly shared user content, are crucial to the understanding of the types of social practices and purposeful activities that take place as adults connect in the space. Interview questions will be guided by the assumptions of andragogy and Affinity Space Theory to elicit information about participant motivation, the types of activities the participant is engaged in, and social interactions between participants. The following sample interview questions were shaped by both andragogy and AST.

1. How did you come to join the Nashville Ingress space?

2. Tell me about a situation when you used the resources of the affinity space to learn something you wanted to know.

3. What do you feel you contribute to the community?
Interview question one is intended to elicit information about the participant’s motivation for entering the space. This question aligns with andragogy’s assumptions about the adult learner’s readiness to learn and his or her motivation to learn (Knowles, 1980). The question is also influenced by Gee & Hayes’ (2012) tenets 3, 4, 12, and 15 on mentoring relationships, production, accessing resources, and garnering feedback, which could influence a player’s motivation to join the space. Question two speaks to andragogy’s assumptions about the immediacy of knowledge application and the relevance of learning activities (Knowles, 1980). Likewise, question two refers to Gee & Hayes’ (2012) principles 4, 6, and 13 on production activities, the development of specialist knowledge, and proactive learning. Interview question three aligns with andragogy’s assumption referring to an adult learner’s experience as a resource, and it is peripheral to adult learners’ desires to use what they know, and to be valued for that knowledge (Knowles, 1980). Gee & Hayes’ (2012) tenets 4, 6, 7, 8, 9, 10, and 13, which explicitly discuss a participant’s contributions in the space, have influenced question three as well.

Despite its usefulness as a guide to practice, the andragogical model cannot comprehensively explain adult learning, and must be adapted as necessary (Knowles et al., 1998). Andragogy will thus be utilized as a point of comparison for adult learning experiences in affinity spaces. The affinity space as a theoretical concept will emphasize the interactions between participants as an affordance of the space, rather than describing the characteristics of the Nashville Ingress community (Pellicone & Ahn, 2015). While the integrated framework informs the research methods and the data collection and analysis, the researcher will remain open to hearing participants’ experiences, whereby findings may discount or confirm some
aspects of the theories and expand others (Merriam, 2006). Finally, the findings will be situated within the literature of andragogy and AST to show how the study clarifies or problematizes other research in the field.

**Conclusion**

The study explored how adults interacted with the greater Nashville Ingress online affinity space with the intent to inform alternative methods of facilitating adult learning in online environments, regardless of context. The work has the potential to influence retention with increased relevance to learners’ lived experiences, to empower learners through greater agency, and to impact parental involvement at Metro Nashville Virtual School. Due to the focus of the research on adult learning and adult gaming, Knowles’ (1984) theory of Andragogy and Gee’s (2004) Affinity Space Theory guided the development of the research question, case study methodology, data collection process, and the analysis of data. Going forward, it is necessary to ground the work not only in the literature of adult learning and continuing education in the United States, but also in the literature of games-based learning, expressly affinity spaces. The literature review offers an overview of research relevant to the study’s topic, and serves to situate the work within the larger context of the specified domains.

**Literature Review**

Adults are motivated to take part in learning activities for a variety of reasons, including improving communication skills, social contact, making up for past educational deficiencies, professional advancement, improving relationships in families, social stimulation, and seeking knowledge for its own sake (Boshier, 1991). The number of learners taking advantage of distance learning initiatives to meet these needs continues to rise (Allen & Seaman, 2007), yet
attrition rates are 10 – 20% higher than in face-to-face environments (Angelino & Natvig, 2009). Studies have demonstrated the ongoing challenges of involving nontraditional students in the learning process, suggesting educators must develop strategies to retain adult learners once they have begun (Kahu et al., 2013; Wyatt, 2011).

There is a wealth of empirical evidence regarding the efficacy of games-based learning in the education of young people (Gee, 2004; King, 2012; Squire, 2006), yet the literature is sparse concerning adult learners. To better understand the potential of video games and the spaces around games for supporting adult learning, it is necessary to situate the work in the literature of the fields of adult education, distance learning, and games-based learning. Beginning with the general topic of adult learning and moving toward a specific learning environment, the following paragraphs first examine the prevalent theories and models of adult education. This includes the foundations, practices, and gaps of self-directed learning, transformational learning, and experiential learning. This will be followed by an exploration of adult learning in technologically mediated-spaces, emphasizing instructional strategies and the role of technology. The affordances of affinity spaces will complete the review, discussing potential for social learning, the engagement of higher order thinking, and implications for literacy. Finally, a summation of findings from the literature will be presented to support the investigation of the research topic.

**Adult Learning Theories and Models**

Just as there are a variety of reasons why adults participate in learning activities, there are a number of different perspectives on adult learning that may be applied to higher education, professional development, community-based nonformal learning initiatives, or informal learning that occurs as a result of participation in daily activities. The theories and models explored in this review are considered foundational material in the field, arising from research and theory-
building efforts in adult learning during the 1970s (Elias & Merriam, 2005; Merriam et al., 2007). Previously, adult educators relied on psychological understandings of learning to inform practice, but attempting to codify differences between adults and children has resulted in the theories, models, and principles developed and implemented by researchers and educators (Merriam et al., 2007).

Predominant approaches detailed in the literature contribute to our understanding of adults as learners and the process of adult learning. The forthcoming paragraphs provide an overview of self-directed learning, transformational learning, and experiential learning, including how the literature defines each approach, how the theory or model has been applied by scholars, and the critical issues inherent in each approach.

**Self-Directed Learning**

**Foundations.** Building on the work of Houle (1961) and Knowles (1970), Tough (1971) developed the first model of self-directed learning (SDL) as a process of learning, wherein adults plan, carry out, and evaluate their learning experiences (Merriam, 2002; Merriam et al., 2007). Early models were more linear in nature, but later models highlight the interactivity between adult learners and their environments, personalities, cognitive processes, and the context of the learning (Spear, 1988; Brockett & Hiemstra, 1991; Garrison, 1997). Self-directedness is not only viewed as a process or an instructional method, but it is also viewed as an a priori attribute of the learner. Studies have indicated there is a link between self-direction and self-concept, which predisposes some learners to take responsibility for their own learning (Brockett & Hiemstra, 1991; Candy, 1991; Merriam et al., 2007). SDL is, in fact, four separate concepts, encompassing independent learning outside of formal structures, learner control, autonomy, and self-
management (Candy, 1991). Candy (1991) advocates for a view of SDL as a process of meaning-making, rather than the acquisition of information, thus the emphasis on the personal significance of the learning to the learner.

**Theory to practice.** SDL models in formal settings have emphasized assisting instructors in determining how to foster self-direction and learner agency (Grow, 1991; Merriam, 2002). Models found in informal learning environments have focused on learning that is catalyzed by an event, such as when a health event is diagnosed (Roberson, & Merriam, 2005; Valente, 2006). SDL has also been applied to professional contexts, such as human resources development, to determine how this type of learning can address organizational needs relating to employee training and enhanced social practices (Brown, 2000; Piskurich, 1993). SDL has likewise been applied in the medical field, to gain understanding of SDL in graduate medical education and foster SDL skills deemed necessary to practice (Keator, Vandre, & Morris, 2016; Sawatsky, Ratelle, Bonnes, Egginton, Beckman, 2017). Recent research on the impact of computers on SDL has indicated that the incorporation of technology into instructional strategies may enhance learners’ self-directedness, along with academic performance and learner engagement (Rashid & Ashgar, 2016; Kim, Olfman, Ryan, & Eryilmaz, 2014). Gurekis and Markant (2012) also focus on SDL and technology, emphasizing both the cognitive and computational aspects of the learning. SDL allows individuals to focus effort on useful information they need to acquire, uncover information otherwise inaccessible through observation, and may enhance the encoding and retention of content (Gurekis & Markant, 2012). On the computational side, emerging research in machine learning focuses on the development of active learning algorithms that can select their own data. The study argues that recent advances in these fields may offer a “fresh
theoretical perspective on how people gather information to support their own learning” (Gurekis & Markant, 2012, p. 464). Despite minor points of conflict, both early and modern studies predominantly demonstrate that learners have their own reasons for participating in the learning process, and that they are capable of engaging in autonomous learning.

**Areas of critique.** One area of ongoing discussion focuses on the defining characteristics of self-directed learning. Both Tough (1979) and Knowles (1975) view SDL in the context of a process of designing activities where the individual takes the lead. Other writers view SDL as more complex, arguing that earlier definitions fail to take context into account. Kasworm (as cited in Merriam & Brockett, 2007) highlights the failure to consider the “internal state of the individual learner” (p. 138), while Brookfield (1985) focuses on the social context. Merriam and Caffarella (1999) also note the need to address how issues of power and control interact with self-directed learning models. Furthermore, researchers highlight the importance of shifting from the individual adult learner to learning in a sociopolitical context (Andruske, 2000; Brockett, 2000; Candy, 1991). Regardless of how SDL is defined and contested, scholars in the field of adult education have argued it is the most chosen approach to learning for most adults, closely followed by transformational learning (Caffarella, 1993; Merriam & Brockett, 2007; Merriam et al., 2007).

**Transformational Learning**

**The individual perspective.**

**Foundations.** Transformational, or transformative, learning is another a frequently cited approach in the field of adult education, rivalling SDL for prominence as the major philosophy in adult education (Newman, 2012; Taylor & Cranton, 2012). The literature on transformational
learning has been primarily focused through two lenses: the individual, most often represented by the works of Mezirow, and the sociocultural approach, developed by Freire (Merriam et al., 2007; Merriam & Brockett, 2007). In the individual approach, transformative learning occurs when there is transformation of a person’s beliefs or perspectives (Mezirow, 2000). There are four main components of the transformative learning process: prior experience, critical reflection, validating beliefs through discourse, and taking action on reflective insight (Mezirow, 1997; Merriam, et al., 2007). The process has not only been found to be stable over time, but participants have also shown they continue to add knowledge to existing meaning schemes as well as create new meaning schemes in ways that are not transformational. This opens the path to multiple different ways of learning as a result of perspective change (Courtenay, Merriam, Reeves, & Baumgartner, 2002; Mezirow, 1991). O’Sullivan (2012) argues that transformational learning brings about a shift in the foundations of thought, feelings, and actions that drastically alters a person’s way of being in the world. This involves an understanding of oneself and one’s relationships with others and the natural world, as well as an understanding of power relations and the possibilities for social justice (O’Sullivan, 2012). The individual perspective also focuses on the importance of discourse to build new understandings, particularly as it is applied and experienced in educational settings (Cranton, 2002; Sawyer, 2004).

**Theory to practice.** Principles of transformative learning have been particularly successfully applied in health care training and practice. Kear (2013) investigates transformative experiences of students using narrative analysis methodology to describe the experience of learning during nursing education. To improve student nurses’ abilities to work within interprofessional teams in evolving systems, instructors utilize transformative learning to inform
assignments that would expose students to alternative perspectives and offer repeated opportunities to reflect on and challenge existing beliefs (Fletcher & Meyer, 2016). Barclay-Goddard, King, Dubouloz, and Schwartz (2011) explore transformative learning triggered by the diagnosis of a chronic illness, which has been shown to assist health care providers in understanding the patients’ learning processes and improving their quality of life.

A recent study in the field of mathematics education has focused on personal empowerment as a form of transformative learning. Hassi and Laursen (2015) found that using strategies to contribute to student empowerment, such as active learning, deep engagement, and collaboration, can be transformational for individual students in mathematics classrooms. A study in teacher education explores triggering transformative learning through short-term cultural immersion (Addleman, Nava, Cevallosa, Brazo, & Dixon, 2014). Although the studies apply transformative learning in different disciplines and settings, they share an emphasis on the importance of questioning underlying values to reframe problems rather than just accepting them (Higgins, 2012).

**Areas of critique.** Although the literature has been found to be generally supportive of this learning process, some scholars indicate that the theory relies too much on rationality, and fails to recognize how cognitive development may influence a person’s ability to experience transformation (Erickson, 2007; Merriam, 2004). The theory has been criticized as impractical for the learning we do in real life, and that it is merely a construct used to explain the phenomenon after the event (Newman, 2012). Critics also point out that the concept of transformation may be too overused and too broadly applied, whereby the word has lost its original meaning (Brookfield, 2000; Newman, 2012). “Transformation begins to refer to any
kind of change or process at all” (Kegan, 2000, p. 47). Still others have argued that transformational learning is acontextual, and Mezirow’s orientation toward autonomy has been dismissed as perpetuating the views of the dominant culture (Clark & Wilson, 1991; Taylor, 2000).

**The sociocultural perspective.**

*Foundations.* The sociocultural approach to transformation has emerged from a culture of oppression, and is situated in the larger context of radical social change (Elias & Merriam, 2005; Freire, 2000; Heany, 2005). This perspective on transformation is not as prevalent a stance on adult education in the United States, but it has had a profound influence on adult learning worldwide (Beder, 1989; Merriam & Brockett, 2007). The sociocultural approach positions personal empowerment and social transformation as inseparable, and advocates the process of conscientization, where the learner becomes increasingly aware of oppressive forces and becomes part of the process of social change (Freire, 2000; Heany, 2005; Merriam et al., 2007).

*Theory to practice.* While Freire’s approach to conscientization is viewed primarily as a political act (Elias & Merriam, 2005), when applied to adult learning, it is similar to perspective transformation. Through the process of becoming aware of assumptions and beliefs, people can transform those assumptions into a new perspective, or a new level of consciousness, with awareness leading to action (Merriam, et al, 2007; Mezirow, 1995). Freire’s approach has been applied to nonformal education initiatives, specifically transformative development initiatives, wherein adult learners are engaged in discourse about their problems in an effort to stimulate reflection that leads to action (Finlay & Gough, 2003). Comings (1995) demonstrates how rural adults in Ecuador identified needs and designed educational programs to meet those needs based
on a Freireian problem-solving model, while Vaughan (2016) explores Freire’s philosophy as applied to care work in adult education in South Africa.

Drawing on transformative frameworks of both Freire and Mezirow, Affolter et al., (2009), investigate transformational learning in rural community representatives participating in a community initiative to rehabilitate the country's infrastructure. Nyirenda (1996) advocates the application of Freireian methods to education and development throughout Africa. Moreover, Freireian problem-posing and dialogical methods are also often cited as instructional strategies in collaborative learning (Barr Ebest, Fox & Bleich, 1994; Smith, 1994).

**Areas of critique.** Critics of the approach contend that the theory of conscientization is idealist, leaving little room for opposing viewpoints (Elias & Merriam, 2005), and offering no concrete measures for improvement (Zachariah, 1986). Elias (1994) argues that the approach is imprecise, and lacking in empirical evidence to demonstrate the process can achieve the stated goals. There is also some debate over whether this perspective privileges the teacher’s voice over the learner's voice, prohibiting the students to experience critical insight on their own terms (Caulfield, 1991; Paulston, 1992). In spite of criticism regarding the impracticality of both approaches to real life, transformative models of adult learning highlight the possible role of language and literacy in both personal and social change. Transformative learning emphasizes the importance of a process of reflection that is similar to other models of adult learning, most notably the principles of experiential learning.

**Experiential Learning**

**Foundations.** Learning that occurs as a result of experience is another type of learning highlighted in the literature. Dewey’s (1938) seminal book, *Experience and Education*, made a
number of important connections between a person’s experiences and learning, and thereby laid the groundwork for more recent models of experiential learning (Merriam et al., 2007; Würdinger & Carlson, 2010). While modern scholars agree that people learn from experience (Boud & Walker, 1991; Jarvis, 1987; Kolb, 1984; Bryant, Johnson, & Usher, 2004), perceptions of how learning occurs align with scholars’ theoretical orientations differ. Models by Kolb (1984) and Jarvis (1987) have emerged from a constructivist approach, while Boud and Walker (1991) and Bryant et al. (1997) adhere to a more situated approach. The constructivist approach focuses on the learners’ meaning-making processes after the experiences. Learners have concrete experiences and create new knowledge as a result (Fenwick, 2003; Jarvis, 1987; Merriam et al., 2007).

In contrast, the situated approach emphasizes that knowledge is interrelated with participation (Fenwick, 2003; Merriam et al., 2007). According to Fenwick (2003), the knowledge is derived from the situation itself, not in the mind of the person reflecting on the situation. The situated approach is also more focused on participation in a community of practice, where the outcome of the learning is that the community as a whole perfects its practices, develops or integrates new practices, or ceases to utilize those that have become disadvantageous to the community (Boud, Keogh, & Walker, 1996; Fenwick, 2003).

Additionally, an emotional component is addressed in the literature on situated experiential learning. To learn effectively, learners must be able to interpret experiences positively (Beard & Wilson, 2002; Boud et al., 1996). Positive interpretation comes from confidence in the learner’s abilities, self-esteem, support from others, and trust; however, negative interpretations brought on by fear or failure result in learning that is distressed or...
Theory to practice. Although the experiences of adults have long been considered a crucial component of adult learning processes, the literature emphasizes that efforts are ongoing in determining how these models can be used effectively in both formal and nonformal learning environments (Merriam & Brockett, 2007; Merriam et al., 2007). Recent studies, however, have demonstrated success with the approach in various disciplines. In the field of nursing education, Dickman, Milligan, and Kodadék (2013) utilize the Chronic Care Model framework as a tool for experiential learning to bring the classroom to clinical practice. Gallagher and Stephens (2015) describe the use of Photovoice as a teaching tool to foster experiential learning in clinical courses, while Sakraida (2011) details how two experiential learning activities were designed to allow students to explore scholarship in a master’s-level health promotion course. Related to health care is the field of clinical social work. Friedman and Goldbaum (2016) apply principles of experiential learning to develop role-play exercises so students can gain new insights from their personal experiences with older adults.

In the field of legal education, Lee (2015) advocates experiential learning strategies through technology, suggesting computer games would provide experiential learning to law students in a controlled environment, removing many of the risks of technology use in the classroom. Experiential learning has also been applied to agricultural education. Hansen (2012) has demonstrated how the experiential learning process can be linked to the landscape design process. Morgan and King (2013) incorporate experiential learning methods in higher education courses to expose learners to international agricultural concerns. The literature not only suggests wide applicability across domains, but also emphasizes the importance of relating the work to the
real issues that arise for learners. Thus, educators are reminded that the reflection process is based on an individual’s experiences, and will therefore be unique to each person.

**Areas of critique.** As with any approach, there are critics of experiential learning, regardless of orientation. According to Fenwick (2003), learner context is not often taken into consideration in constructivist approaches, although situated models proposed by Boud and Walker (1991) do recognize how context shapes experience. Issues of power, particularly relevant in the facilitator’s role, are not explicitly addressed in predominant situated models (Beard & Wilson, 2013). The literature also highlights the situated perspective as a double-edged sword, noting that the more experiences a person has, the less likely he or she will learn from them, as a learner tends to gravitate toward the familiar and may reject new learning (Jarvis, 1987). Boud et al. (1996) likewise emphasize that negative experiences also reinforce the learner’s desire to avoid new learning that could be uncomfortable.

**Conclusion**

Learning in adulthood emphasizes a foundation based on assumptions about the characteristics of adult learners that differ from assumptions about children. While empirical evidence demonstrates assumptions underlying andragogy generally hold true, a single model of adult learning cannot be applied as a universal paradigm. Learning in adulthood is considered a personal process, wherein adults accept varying degrees of responsibility for their learning. Whether it be through planning, carrying out, and evaluating their learning, actively seeking understanding of self and relationships with others, reflecting on learning to create new knowledge, or participating in a community of practice, adult learners exercise agency over the learning process in ways that have been distinguished from the agency exercised by children.
Although theories of adult development emphasize an understanding of the learner and an understanding of the environment in which the learning takes place (Magnusson, 1992; Bronfenbrenner, 1979), critics highlight the lack of attention to context in the prevalent models of adult learning. Awareness of the reciprocity of psychological, biological, and behavioral factors of the individual plus the social and cultural aspects of the environment is necessary to effectively support adults in their learning experiences (Elias & Merriam, 2005; Magnusson, 1992; Merriam et al., 2007; Lemme, 2006). This indicates the need for a greater awareness of context in adult learning initiatives. The study will speak to this need through an emphasis on the Ingress affinity space as both the context and a crucial component of adult learning in technologically-mediated spaces.

**Adult Education in Technologically-Mediated Environments**

The impact of technology on learning enterprises cannot be denied. Technological advancements have cultivated new work mechanisms such as job-sharing, telecommuting, and distributed teams. These advancements have also necessitated learning beyond formal schooling to ensure that adults can continue to function in the workplace and in the wider community. Although technology has catalyzed a need for new knowledge, updating of outdated information, and retraining, it has also made it possible for more adults to take advantage of learning opportunities (Merriam et al., 2007). While some of the learning takes place in formal settings, under the aegis of institutions and businesses, other opportunities are nonformal, offered by community-based agencies. Some learning is informal, such as watching an internet cooking program or listening to a podcast. Unfortunately, many adult learning initiatives do not take the particular needs of adult learners into account, nor does the literature foster an understanding of
what adult learners expect from online programs (Yoo & Huang, 2013). According to Fischman (2011), this lack of understanding may underlie issues of motivation and engagement that impact program completion and dropout rates. To ensure strategies to enhance adult learning would meet the needs of adult learners in spaces facilitated by technology, it is necessary to have a thorough grounding in the literature on distance education instructional practices, as well as the role of technology in these spaces.

**Instructional Strategies**

**Constructivist underpinnings.** The literature on adult education in technologically-mediated environments focuses on a constructivist approach to online teaching and learning (Doolittle, 2001; Garrison, 2007; Sims, 2006). The goal of constructivism is to provide instructional approaches that “stimulate thinking in learners that results in meaningful learning, deep understanding, and transfer to real-world contexts” (Brophy, 2002, p. xii). Adults in the online learning environment require concrete experiences where reflection about the experience precipitates the building of new knowledge (Merriam et al., 2007). Online environments are to allow learners to collaborate in contextualized, authentic learning activities (Auyeung, 2004; Martens, Bastiaens & Kirschner, 2007), share course organization and responsibility for learning with the instructor (Diaz and Bontenbal, 2001; Merrill and Young, 2012), and develop a shared vision for the work that would motivate participation (Gilbert & Driscoll, 2002). These types of activities foster sense-making through introspection and collaboration with others in a community, not unlike a community of practice (Fenwick, 2003; Merriam et al., 2007).

**Building community.** Educational settings that privilege constructivism emphasize student discourse (Doolittle, 2001). Designers and instructors are challenged to create learning
environments that demonstrate conditions for productive interactions (Sims, 2006). To counter a teacher-centered view of instruction in online contexts, instructors must aim to optimize interaction through effective communication (McBrien, Jones, & Cheng as cited in Bryant & Bates, 2015). Communication strategies for building strong feelings of community in the online environment may increase learner persistence, as well as increasing the flow of information, the availability of support, commitment to group goals, cooperation among learners, and satisfaction with group efforts (Bruffee, 1993; Dede, 1996; Wellman as cited by Rovai, 2002).

Although the medium is rarely the determining factor in learning effectiveness or the building of community (Russell as cited in Rovai, 2002), one of the most cited dangers of learning in an online environment is the risk of reduced interaction among learners, as well as between the learner and the instructor (Ke & Xie, 2009; Hratiski, 2009; Milheim, 2011). Cutler (1995) and Shin (as cited by Stewart and Waight, 2008), specifically recognize the learner-learner relationship as a source of intellectual and affective support of distance education, indicating the community of learners must be nurtured and provided support in the form of social presence. Increasing both the social presence of the instructor and learner-learner interactions mitigates issues of transactional distance inherent when technology facilitates the primary methods of communication (Farquhar, 2013; Tzoutza, 2010). Continual and diverse interactions between students and instructors, aided by both synchronous and asynchronous tools, offer a collaborative environment with the potential to enhance learning in online settings (Bryant & Bates, 2015).

**Differentiated instruction.** Adult learners also require instruction that matches their current stage of self-direction, and empowers the learner to increase in self-direction (Anderson,
2008; Grow as cited in Rovai, 2002). Online learning environments must lead learners through a logical progression, utilizing a variety of learning activities to accommodate different styles of learning with objectives that support learner-based outcomes (Anderson, 2008; Merrill and Young, 2012). The overall design of the learning events should help learners develop a tolerance for ambiguity to emphasize cognitive flexibility. Instructors should also use scaffolding principles to encourage cognitive reach (Fox and Helford as cited in Caplan & Graham, 2008).

Cheng, Lin, & She (2015) found learners’ long-term knowledge retention in online environments influenced outcomes, indicating information should be organized, or chunked, to facilitate processing at the learner’s pace (Anderson, 2008). Online strategies allowing learners to apply the information in real life should also be included to make the transfer to long-term memory more effective (Anderson, 2008). Additionally, learners need to be able to monitor performance through instructor and peer feedback, as well as through periodic assessments that align with each learner’s goals (Anderson, 2008; Gallien, & Oomen-Early, 2008).

Overcoming barriers to learning. Design instruction should assist adults in overcoming barriers to learning that are specific to each learner (Pratt, 1998). Bronfenbrenner (as cited in Lemme, 2006) identifies home and work as the key arenas in adulthood. Stress at home or work can lead to stress about school, and vice versa, either of which will impact learning (Lemme, 2006; Cercone, 2008). Even short-term stress can impair brain-cell communication in the brain’s learning and memory areas (Qin, Hermans, Van Marle, Hein, Fernandez, 2012). Life events such as marriage, having children, job changes, illness, retirement, the death of a loved one, or a natural disaster leave adults more vulnerable to psychological change, even as they provide opportunities for learning (Bandura, 1977; Lemme, 2006). According to Bandura (1977), the
psychological procedures a learner undergoes as the result of an event, whatever form those procedures happen to take, affect the level and strength of a person’s self-efficacy.

Behavioral and environmental factors also create self-beliefs that, in turn, characterize and alter subsequent behavior and environments (Bandura, 1986; Pajares and Schunk, 2001). Adult learners become more motivated to learn when they have the freedom to work on solving problems without fear of failure (Bandura, 1977; Pratt, 1998). Instruction should include positive vicarious experiences that can generate expectations in the learner that he or she can achieve some success if others have done the same (Bandura, 1977). By the same token, visualizing negative consequences through observation of others will also help learners regulate their behavior to avoid pitfalls (Merriam et al., 2007).

Adult educators must also be aware of “systemic forces, institutionalized oppression, and dominant norms and practices” (Kiely, Sandmann, & Truluck, 2004, p. 20) that could negatively impact adult learners. Instruction should invite learners to use interdisciplinary lenses to unpack power relations and systemic oppression, and develop more equitable conditions and strategies of resistance (Ramdeholl, 2015). Although it may be more difficult to address weighty issues in online spaces, new technologies provide instructors with greater opportunities to ensure the environment is inclusive, and offer a safe place for the voices of marginalized groups to be heard (Hayes & Flannery, 2000; Kiely et al., 2004).

The Role of Technology

The affordances of new media. It is clear from the literature on instructional practices that emerging technologies impact ways of learning and teaching in distance environments. To fully grasp the affordances of technology, its role in facilitating learning must be examined.
Manipulating new media has been shown to allow learners to connect to prior knowledge and personal interests, while emerging technologies offer new solutions for instructors. Technology offers flexibility to implement strategies to promote learner interaction, and facilitates real-life collaboration opportunities (Beldarrain, 2006; Peppler & Kafai, 2007; Olesen-Tracey, 2010).

Tools that foster learner interaction should be intentionally integrated into the design process to ensure application of content and learner interest. Numerous possibilities exist to promote interaction with both content and fellow learners, so utilizing flexible models that anchor the use of technology to collaborative instruction is critical to the process of learner mastery (Beldarrain, 2006; Merrill & Young, 2012). Technology tools may also help tap into learner expertise, and may promote collaboration through mentoring, teamwork, peer-review, and other strategies (Beldarrain, 2006; Churchill, 2009; Wang, 2011). Allowing distributed team members or classmates to simply collaborate on tasks is not enough to produce engagement and learning. Social aspects of asynchronous environments must be created to allow relationships to form which lead to engagement and learning (Leinonen & Bluemink, 2007).

Integrating technology creates a learning environment where higher-level thinking and problem-solving flourish (Groff, 2013). Emerging technologies not only enable customization of content, but also the customization of the level of interaction by allowing the learner to choose when and how to interact (Rooksby & Ikeya, 2012; Reinhart, 2010). Teaching models that integrate web 2.0 technologies are likewise considered to afford more learner agency, and thus are viewed as more effective methods of delivering instruction that would support the construction of knowledge (Beldarrain, 2006; Maloney, 2007).
Web 2.0 tools. Open source technologies and social software can increase real-time collaboration between learners, especially in courses that are otherwise asynchronous (Beldarrain, 2006, Anderson, 2008). This increasing mobility offers more opportunities for active participation, expanded shared experiences, and the development of ideas that are more creative (Akhras & Akhras, 2013; Rooksby & Ikeya, 2012). Social software has been suggested to support instructional issues such as maintaining social presence, building community, providing mentoring, working collaboratively, and supporting complex group functions (Churchill, 2009; Greenhow & Gleason, 2012). Instructors can facilitate building relationships between students and between students and instructors through the use of wikis (Augar, Raitman, & Zhou, 2004; Beldarrain, 2006; Deters, Cuthrell, & Stapleton, 2010). Augar et al. (2004) have demonstrated success with a collaborative icebreaker wiki that was created to promote student interaction and to give students a chance to socialize and get acquainted virtually. Deters et al. (2010) found that learners utilized wikis in the online classroom for personal professional growth, as well as to gain knowledge from assignments and make personal connections to content.

Tools such as blogs and vlogs allow learners the agency to publish their writing, discuss assignments, collaborate on projects, and peer-review the work of others (Churchill, 2009). Kajder and Parkes (2012) advocate blogs and vlogs to expand multimodal composing practices, noting the affordances of these tools as reflective writing spaces that also inform instructional practice. Podcasts assist learners in making sense of course content, and actively participating in the discourse community (Bryant & Bates, 2015). The use of Twitter in learning environments has also been found to support a number of positive educational outcomes, including increased
student engagement, active learning, greater emphasis on reflection, improved relationships between students and instructors, and higher grades (Junco, Heiberger, & Loken as cited by Greenhow & Gleason, 2012). Content sharing media allows distributed teams to collaborate on work projects and subject-matter experts to teach specific content (Guinan, Parise, & Rollag, 2014). This medium provides instructors and learners a way to distribute messages with high media richness to larger audiences (Daft & Lengel, 1986; Young & Hinesly, 2014).

**Challenges.** There are problems inherent in the use of web 2.0 mechanisms, including the practical issues arising from connecting with distributed colleagues (Dohn, 2009), a possible rise in consumerism, the dangers of sharing information publicly, and issues with content management (Greenhow & Gleason, 2012). Mak, Williams, and Mackness (2010) likewise cite issues such as lack of facilitation, unwieldy forums, unacceptable behavior, and an expertise divide as reasons for learner disengagement in the social arena. Moreover, the literature indicates that although social software can enhance interactions, there becomes an increased difficulty in keeping social interactions and course interactions separate (Veletsianos, Kimmons, & French, 2013).

**Conclusion**

Instructional strategies for distance education are compatible with prevalent models of adult learning. Instruction is learner-centered, which is congruent to assumptions of andragogy. Scholars suggest the implementation of strategies that not only empower learners to be self-directed (Merrill & Young, 2012), but also encourage learners to reflect on or make sense of experiences to transform thinking or build new knowledge (Merriam et al., 2007). Researchers advocate authentic experiences that are immediately relevant to the learner (Martens et al.,
2007), and an awareness of systemic forces that plants the seeds of social change (Kiely et al., 2004).

Regardless of practical issues emerging from the use of technology across networks, new technology tools facilitate the implementation of instructional strategies by providing instructors with mechanisms proven to promote interaction (Beldarrain, 2006). Instructional design theories show that the focus of the course design should be on customization, not standardization (Leinonen & Bluemink, 2007). Technology that allows for the customization of content speaks to the needs of each learner, and facilitates real-life learning activities (Anderson, 2008). Moreover, the ever more mobile aspect of social software allows for expanded social presence, community building, and collaboration, all of which have been shown to impact learning in online spaces (Churchill, 2009; Greenhow & Gleason, 2012). This study will explore the potential of the Ingress affinity space as an environment of a specific web 2.0 tool, video games, to increase collaboration and active learning among adults in online learning settings.

**Affinity Spaces**

The literature in this review focuses on participation in online affinity spaces as a specific type of interplay with the surrounding context. Gee’s (2004) groundbreaking paradigm presents affinity spaces as representative of ideal learning environments, wherein participants voluntarily come together to pursue interests shared across a diverse peer network. The conceptualization of the affinity space emphasizes social engagement and principles for good learning found in the meta-game (Gee, 2004). Affinity spaces: share a common primary endeavor, do not segregate by age or ability, facilitate both consumption and production, transform content by social interaction, encourage and value multiple types of knowledge, and allow participation in many
forms and from many routes. The more a space exhibits these attributes, the greater its affordances for learning.

Comparisons have been made to Wenger and Lave’s (1991) communities of practice framework, which describes a community of practice as a “group of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly” (Wenger, 2010 p. 179). While both communities of practice and affinity spaces are populated by people who participate in a process of collective learning in a shared domain (Wenger, 2010; Gee, 2004), the research on affinity spaces expands on the definition, allowing for a more flexible conceptualization of community that instead focuses on the spaces where people interact, as well as the content driving the space. Existing literature speaks to these ideas, primarily focusing on the social role of the metagame, the affordances of affinity spaces for higher order thinking, and implications for literacy.

Social Learning

**The social role of the metagame.** The literature emphasizes the social role of the space, emphasizing such benefits as multiple trajectories of participation, and greater opportunities for co-construction of knowledge as a result of the interaction process (Bommarito, 2014; Squire, 2011). Not only do players have to participate to learn, but they have to participate with others to acquire authentic expertise (Steinkuehler, 2010). Affinity spaces allow learners to collaborate and create content with friends in the same room, as well as players across town or across the globe (Barker, Dozier, Weiss, & Borden, 2015; Meyers, Erickson, & Small, 2013). These collaborative opportunities facilitate the building of relationships with a wide network of peers, and allow learners to experience a sense of belonging in the wider community of practice.
Affinity spaces have the potential to help participants bridge social capital through connections with others, unrelated to close friendship (Barker et al., 2015; Ellison, Steinfield, & Lampe, 2011). Bridging social capital is crucial as it is through such connections that players access new information and advice, and come into contact with players whom they would otherwise be unable to reach (Barker et al., 2015). Players are also socialized into behaviors and ways of understanding the virtual world that are tied to specific values held by the group (Steinkuehler, 2010; Squire, 2006). Participation in affinity spaces therefore equates to participation in social practices that have real consequences (Gee & Levine, 2009; Squire, 2006).

**Identity.** Another aspect of the social role of the metagame revolves around player identity. When approaching a new domain in the online environment, players take on a new identity (Gee & Hayes, 2012; Martin, 2012). The literature suggests that as learners became more proficient in the shared work of the group, they experience feelings of competence, which enables them to develop identities in relation to others in the space (DeVane, 2012; Squire, 2006). “Players become committed to the new virtual world in which they will live, learn, and act through their commitment to their new identity” (Gee, 2005, p. 34). Identity is also something to be recruited, managed, and built over time (Squire, 2006). One of the affordances of affinity spaces involves maneuvering identities in ways that give learners an opportunity to undergo a process of identity development. This offers players the chance to reflect on the relationship between new and old identities taken on by themselves and others (Gee & Hayes, 2012; Squire, 2011). Learners can discover how to analyze the presentations of themselves, as well as the opportunity to attempt to construct how others view them.
choices about their identity, it adds another dimension to how this identity impacts performance, others’ perceptions about the chosen identity, and the social interactions that occur in the space (Martin, 2012).

**Construction of knowledge.** Knowledge is situated within social practice and grows through authentic communication and collaboration with others (Albers et al., 2016; Bommarito, 2014; Marone, 2015). Although the space is structured around an overarching subject, practice is made up of knowledge that participants in the space construct about the subject (Albers et al., 2016). Content changes and evolves as a result of the social interactions between the individuals in the space (Duncan & Hayes, 2012; Gee & Hayes, 2012). Affinity spaces encourage players to initiate interactions where knowledge may be created and shared, through giving and receiving help, negotiating conditions of conduct, practicing argumentation to make decisions, and collaborating to attain common goals (Steinkuehler & Oh, 2012; Voulgari & Komis, 2010).

Knowledge in an affinity space can be both distributed and dispersed. It can either be spread across different members, shared practices, and resources, or networked across sites, respectively (Duncan, 2010; Gee, 2003; Albers et al., 2016). The space promotes and allows participants to gain both individual knowledge and to learn to use and contribute to distributed knowledge (Gee & Hayes, 2012). This knowledge enables participants to know and accomplish more than they would be able to on their own. The space also promotes and allows players to use knowledge that is not within the site, but is contained on other sites or spaces (Duncan, 2012; Gee & Hayes, 2012). In practice, participants may begin in a single location, but will gravitate to satellite locations (Duncan 2013; Lammers et al., 2012). When a space advances this type of dispersed knowledge, it conveys that the distributed knowledge is housed in a much wider and
more extensive network, with no set boundaries around the places from which participants may
draw for information (Albers et al., 2016; Gee & Hayes, 2012).

Participants of the affinity group likewise gain what Gee (2003) refers to as extensive and
intensive knowledge (Albers et al., 2016; Duncan, 2010). Players construct extensive knowledge
by becoming involved in many or all stages of the work, learning numerous, overlapping
functions, and recognizing the undertaking as a whole system, aside from their role in the space
(Gee, 2003; Duncan, 2010). The affinity space encourages and enables participants to obtain
broader, less specialized knowledge about the endeavor, which they share with others who use
the space (Duncan, 2010). Participants bring intensive knowledge to the space, wherein they and
others gain and share specialist knowledge and outside experiences (Hayes & Lee, 2012). People
can easily develop and display specialized knowledge in one or more areas, such as learning how
to change or write code to modify gameplay, and advising others on this subject. When
participants gain and spread both intensive knowledge and extensive knowledge, this creates a
community of people who share a great deal of knowledge, but where each individual has
something special to offer (Duncan, 2010; Gee & Hayes, 2012). Thus, knowledge in the affinity
space is not fixed, but continuously evolves as individuals develop and share experiences
(Bommarito, 2014; Duncan, 2010)

In Support of Higher Order Thinking

**Design thinking.** Two things lead to active and critical learning in playing video games.
First is the internal design of the game, which provides the content that drives the affinity space.
Second is the people around the learner, both players and non-players (Gee, 2003). Learning that
 Reflects on the semiotic domain as a design space perpetuates active and critical learning
If the people around the learner “encourage reflective metatalk, thinking, and actions in regard to the design of the game, of video games more generally, and of other semiotic domains and their complex interrelationships, then this, too can encourage and facilitate active and critical learning and thinking” (Gee, 2003, p. 47). While people can learn actively without gaining a great deal of critical learning, a person cannot learn critically without active learning in a semiotic domain. As part of an online learning community, learners are provided with opportunities for participation in collaborative problem solving as they engage in these kinds of active inquiry (Squire, 2011; Voulgaris Komis, 2010). Likewise, the literature suggests that when learners become producers as well as consumers of media, this trajectory motivates learning and supports the development of higher order thinking (Marone, 2015; Squire, 2011; Gee & Hayes, 2012).

Affinity spaces allow players to embody the role of designer, which is more than merely creating artifacts in conjunction with other players (Gee, 2003; Duncan, 2010; Squire, 2011). This embodiment necessitates reflection on the design processes themselves that are independent from issues individual designers and individual products face (Duncan, 2010). Learning through designing indicates working in an iterative process where participants can take a step back from individual projects and gain perspective significant to design processes in general (Duncan, 2010; Squire, 2011). Marone (2015) also argues that when players create tutorials to help others with their creative endeavors, this is another activity that helps “shape the community as a socially constructed design environment” (p. 101).

**Systems thinking.** DeVane et al. (2010) emphasize situated systems thinking is exceptionally social and organized around opportunities for participants to become experts.
Expert identities are created from relevant information and social knowledge assets, and are acted out in situated social contexts, demonstrating how systemic understandings emerge as a result of participation in affinity spaces (DeVane et al., 2010; Gee, 2003). Previous work by Williamson and Facer (2004) asserts that affinity spaces allow participants to be introduced to systemic ways of thinking about problems, yet this requires “the support of networks of expertise and peers, resources, tools and technologies which they can trust to work in ways they expect, along with access to a variety of media in which they are able to communicate problems they are encountering—and receive solutions to those challenges” (p. 267). As participants engage in collective problem-solving, they are judged based on what they can do, and how the knowledge they hold can be utilized to solve problems for the entire community (Gee & Hayes, 2012).

Affinity spaces inherently encourage a more proactive approach to problem-solving, but it is an approach that is recognized as necessary to ensure continued success (Williamson & Facer, 2004). In this way, learners begin to see how multiple factors, from human capital to technology, come together in an affinity space to produce mastery (DeVane et al., 2010; Gee & Hayes, 2012).

When social interactions take place in a nested affinity space within the game, players are effectively working within the system in which they interact. This embodied empathy offers learners the potential to develop an understanding about how the system operates, thus teaching them to make inferences about the underlying relational forms (Gee, 2003; DeVane et al., 2010). DeVane et al. (2010) argue that this type of systems reasoning is characterized by engagement in a situated activity as learners seek to solve a problem, as well the evaluation of the relative success of the learners’ chosen actions. Learners will be able to draw on experiences in similar
activity domains to approach the task of learning with questions, ideas, and expectations that will serve as a guide when confronted with future systemic problems (DeVane et al., 2010; Voulgari & Komis, 2010).

**Implications for Literacy**

**Traditional literacy.** Affinity spaces invite new ways of looking at literacy practices that transcend text. Despite educator’s worries that games and other technology will eventually replace text (Squire, 2011), the vast majority of studies indicate that participation in affinity spaces is in itself a literacy activity (Lammers, 2013; Steinkuehler, 2010; Squire, 2011). The spaces speak to multimodalities that are less text focused and more user focused, reflecting the ways that users negotiate linguistic and cultural differences to create meaning collaboratively (Gee, 2004; Hayes & Lee, 2012; Knobel & Lankshear, 2008). A growing body of research highlights the affordances of online spaces and multimodalities to take advantage of learner interest and promote critical engagement with text (Curwood, 2013). “Facility with written language is central in the community as players use text to negotiate activities, enact identities, and apprentice others into the community” (Squire, 2006, p. 23). Participation in affinity spaces requires a wide range of literacy practices including reading and writing, research, analysis, and debate (Lammers, 2013). Typical gaming activities may include literacy practices such as writing FAQs and walk-throughs, participating in forums, mentoring, and developing fictional backstories for game characters (Duncan, 2010; Steinkuehler, 2010). As such, these practices are considered to be gateway activities that acclimatize learners to academic practices and their underlying purposes, knowledge of which is necessary for academic success (Aguilar, Holman, & Fishman, 2015). Martin (2012) found participants who struggled in a traditional school setting
were able to situate themselves in “a complex information landscape” (p.384) that allowed them to find success in actual game play. Young men who struggled with reading in school and tested below grade level on academic assessments were found to read above grade level when assessed on gaming-related texts (Curwood, 2013).

At the same time, affinity spaces offer opportunities for players to learn how to articulate their tacit knowledge. Players can participate in discussions about a common problem, contribute to forum threads, or engage in real-time group chats (Albers et al., 2016; Duncan, 2010; Gee, & Hayes, 2012). As affinity spaces often revolve around a shared interest in production, not just consumption, tacit and craft knowledge tends to be highly valued (Gee & Hayes, 2012). Situated discursive functions require specialist, technical language that not only allows learners to participate in the wider community, but also to shape and conform to acceptable writing norms in the online environment (Curwood, 2013; Lammers, 2013; Marone, 2015). Within the space, participants are able to share their expertise, making norms and criteria for success explicit, while actively providing support for players at all skill levels (Curwood, 2013).

Narrative play will also occur in affinity spaces, as gamers explore the narrative content of the game and co-construct story-based textual artifacts (Curwood, 2013; Duncan, 2010; Lammers, 2013). Duncan (2010) describes how in the process of developing the narrative, participants found it necessary to grapple with textual elements from a number of different games. Participants weighed the elements’ relative importance as the community collectively determined which narrative elements were related to which others, and in what manner. In his seminal work on new literacies, Jenkins (2006) discusses this interaction with the narrative content of games, noting, “The power of participation comes not from destroying commercial
culture but from writing over it, modding it, amending it, expanding it, adding greater diversity of perspective, and then recirculating it…” (p. 257). These interactions are relevant not only in regard to traditional literacy practices, but to digital literacy practices as well.

**Digital literacy.** Interactions in affinity spaces can also act as a springboard to digital technology skills and new media literacy (Gee, 2003; Pellicone & Ahn, 2015; King, 2012; Meyers et al., 2013). One frame of reference positions digital literacy as set of distinct competencies evinced by the users of digital media, typically in the process of inquiry (Knobel & Lankshear, 2008). More recent perspectives have framed digital literacy as the ability to create and disseminate information, as well as exchange and negotiate meaning, in a variety of contexts in the online environment (Meyers et al., 2013). The types of interactions that take place in affinity spaces not only allow learners to create and disseminate information, but participation also assists students in acquiring a basic understanding of how to construct and design new media. These experiences enable them to become active participants in today’s media culture (Squire, 2011). Moreover, affinity spaces offer low barriers to engagement and expression, which scholars indicate is a crucial component in a media education curriculum (Kafai & Burke, 2013).

Despite research that suggests digital literacy is primarily a school-based competency, other scholars have highlighted informal learning contexts where digital literacy may be introduced and developed. Meyers et al. (2013) argue that affinity spaces allow for the development of a type of digital literacy largely unprivileged in the classroom. Even informal spaces need structure and common language to sustain the types of meaningful interactions that would allow players to participate in such processes as creating their own systems for regulating
Participation in affinity spaces can be a valuable strategy in the acquisition of digital fluency, as users develop abilities to transfer across and between media (Kafai & Burke, 2013; Voulgari & Komis, 2010). Likewise, Marone (2015) asserts that “multimodality is one of the leading methods to communicate and socially construct knowledge, as participants use combinations of words, pictures, external links, videos, and game tutorials in their interactions” (p. 98). Participants in affinity spaces increase in digital fluency as they become adept at accessing digital archives, negotiating online communication, and recontextualizing narratives across mediums (Curwood, 2013; Knobel & Lankshear, 2008; Lammers, 2013).

**Conclusion**

A review of the literature has shown affinity spaces offer an environment that may foster the learning of skills useful in school environments, as well as skills that could be transferred to wider economic and social communities (Duncan, 2010; Gee & Hayes, 2012; Squire, 2011). Affinity spaces have been shown to support social learning, design thinking, and thinking in terms of complex relations between systems. These types of situated learning require proactive problem-solving and iterative reflection, which can be developed through learner participation in collaboration with others (DeVane et al., 2010; Duncan, 2010; Williamson & Facer, 2004; Zimmerman as cited in Gee & Hayes, 2012).

Findings also indicate engagement with affinity spaces offers participants a variety of ways to critically engage with text in the online environment. Not only does participation support the learner in reframing content and practices between formal and informal learning settings, but
interactions focus on the learner’s active engagement with content, individually and/or collaboratively (Dohn, 2009). The types of interactions that take place in affinity spaces allow learners to both construct and disseminate information, enabling them to become active participants in today’s media culture (Squire, 2011). The literature supports the use of affinity spaces to impact the learning of children, prompting this study to explore possibilities for adult learning through participation in the Ingress affinity space.

**Summary**

Adult learners exercise agency over the learning process in ways that have been distinguished from pedagogical practice. Although the predominant approaches to adult learning are congruent with andragogical assumptions regarding self-directedness, intrinsic motivation, problem-based learning, readiness to learn, and experience, a single model of adult learning cannot be applied as a universal paradigm. Learning in adulthood is a personal process, wherein adults accept varying degrees of responsibility for their own learning through strategies that allow them to exercise agency over the learning activities.

Instructional strategies for distance education are likewise compatible with prevalent models of adult learning, as high-quality instruction alternately encourages self-direction, reflection, and building on experience (Australian Council for Educational Research, 2008; Merrill & Young, 2012). Instruction is learner-centered, and focuses on needs congruent with assumptions of andragogy (Anderson, 2008). New technology tools facilitate the implementation of instructional strategies by providing instructors with mechanisms to customize content and promote interaction between all parties in the learning transaction (Beldarrain, 2006). Moreover, the mobile aspect of social software allows for expanded social presence, community building,
and collaboration, all of which have been shown to facilitate adult learner involvement (Churchill, 2009; Greenhow & Gleason, 2012).

Affinity spaces encourage collaboration and community building similar to other web 2.0 tools. Not only has social learning has been shown to occur as a result of participation (Albers et al, 2016; Gee & Hayes, 2012; Steinkuehler & Oh, 2012), but design thinking and thinking in terms of complex relations between systems can also be developed through participation in affinity spaces (DeVane et al., 2010; Duncan, 2010; Williamson & Facer, 2004). Findings indicate affinity spaces foster fluency with both traditional and digital literacies, demonstrating participant abilities to create and disseminate information across and between many different types of media in the online environment (Curwood, 2013; Gee & Hayes, 2012; Lammers, 2013).

The research demonstrates the efficacy of authentic practice within social context as a model for learning, and has further proven productive learning takes place in online venues (Duncan, 2010; Gee & Hayes, 2012). Social bonding between participants is considered to be a motivating factor in continued participation and learning in distance learning environments, including affinity spaces (Dezuanni, O’Mara, & Beavis, 2015; Pellicone & Ahn, 2015; Merrill & Young, 2012). Findings have shown affinity spaces encourage a view of learning where an individual is intrinsically motivated, participates in the space due to an abiding interest, and takes responsibility for learning within the system (Gee & Hayes, 2012). This suggests affinity spaces offer an environment conducive to adult learning that is congruent with prevalent theories and practices. While the learning described in the literature predominantly takes place in informal environments, scholars note that the need for structure, norms, and a common language indicate
wider relevancy due to inclusion of elements similar to those in more formal learning environments (Lammers, 2013; Myers et al., 2013). Furthermore, the literature has indicated that video game affinity spaces show promise in regard to adult learning both inside and outside of traditional learning processes, as instruction for online learners includes strategies made possible through participation in affinity spaces. Furthermore, it is possible to make connections between formal educational outcomes and the learning that results from involvement in gaming by recognizing the value in players’ experiences, and acknowledging their expertise (Gee & Hayes, 2012; Knowles, 1984; Walsh, 2010).

Although it has been demonstrated that affinity spaces offer potential for adult learning, there are questions that remain unanswered by the literature. Research shows the possibilities of affinity spaces for productive engagement of young learners in formal spaces, as well as the need to address limitations of the predominant K-12 schooling approaches (Duncan, 2010; Squire, 2011; Gee & Hayes, 2012). None of the studies, however, offer empirical evidence of adult learning in spaces around games, nor do researchers examine the spaces as potential mechanisms to address deficiencies in adult learning in online arenas. Upon consideration of the theories and practices of adult learning outlined in the literature, it is crucial to interrogate players’ motivations for participation, their awareness of the learning process, and whether they find value in what is being learned (Candy, 1991; Iacovides, McAndrew, Scanlon, & Aczel, 2014; Knowles, 1984; Merriam et al., 2007). To leverage the potential of affinity spaces to speak to the needs of adult learners, it will likewise necessitate determining whether adult learners’ sense of community is directly related to their engagement, as has been suggested for young people (Pellicone & Ahn, 2015). Discovering how adults experience learning in affinity spaces will
speak to the potential of utilizing games-based learning strategies in other adult learning contexts, thus laying the foundation for future instructional design in technologically-mediated spaces.

**Qualitative Research Methods**

The purpose of this case study is to describe the ways adult participants interact with the Ingress video game affinity space as a type of informal learning. This research allows researchers and practitioners to gauge the potential of spaces around games to optimize adult learning experiences in other contexts. To answer the central question regarding adult learning in the Nashville Ingress affinity space, the study utilizes qualitative case study methods.

**Qualitative Research Design**

Qualitative research is most advantageous when addressing a problem about which the variables are unknown and must be explored (Creswell, 2012). Qualitative research has also proven useful in empowering people to share their stories, making others’ voices heard, and minimizing power relations between the researcher and the participant (Creswell, 2007). In this qualitative exploration, participants hold power by controlling the stories of their learning experiences. Reaching participants’ thoughts requires building a sympathetic relationship and a sense of mutual trust that puts both parties on equal footing (Moustakas, 1994). Qualitative methods privileging the participant-researcher interaction enable researchers to de-emphasize the power relationship through the creation of a collaborative reconstruction from multiple realities (Guba & Lincoln, 1989).

Qualitative research is also undertaken when researchers require a complex, detailed understanding of the phenomenon, the context, or both (Creswell, 2007). This necessitates
studying participants in the natural setting to interpret phenomena in terms of the meanings participants ascribe to them (Denzin & Lincoln, 2011). Due to the importance of context to the exploration, data must be collected at the site where participants’ experiences occur (Creswell, 2007). In other words, what people say cannot be separated from the context in which they say it. Thus, to discover the potential of affinity spaces for adult learning, data about participant experiences was collected in the Nashville Ingress affinity space. In this setting, the researcher was able to observe participants’ behavior within their context (Creswell, 2007).

Additionally, qualitative research emphasizes the importance of allowing participants to tell their stories unimpeded by researcher expectations (Creswell, 2007). Qualitative methods are therefore best suited to a problem where the literature yields little information about the phenomenon, and the researcher must learn more from the participants during the investigation (Creswell, 2012). As demonstrated in the literature review, most of the literature focuses on children’s learning in affinity spaces, requiring a qualitative research study to explore learning in affinity spaces from the perspective of adult participants.

**Epistemology**

In accordance with Stake’s (1995) perspective on case study research, the epistemology orienting this qualitative case study is constructivist-interpretivist. The constructivist-interpretivist approach assumes that reality is subjective and socially constructed, acknowledging multiple, equally valid realities as opposed to the single, objective reality (Ponterotto, 2005). Constructivist-interpretivist research must therefore be relativist, transactional, and subjectivist (Guba & Lincoln, 1998). Realities are constructed in the minds of individuals, and cannot be understood in isolation from their context. The only way for researchers to understand this
phenomenon is to create an impression of what those being studied know (Lincoln & Guba, 1985; Ratner, 2008).

A constructivist-interpretivist worldview does not attempt to judge participants’ competing truth claims, as “there is no objective truth to be known” (Hugly & Sayward, 1987, p. 278). Researchers seek only to accurately document participant life experiences (Butin, 2010; Ponterotto, 2005). Meaning may be hidden, but it can be uncovered through reflection on the researcher-participant dialogue (Ponterotto, 2005). An individual’s truth emerges from such interactions between elements of rhetorical situations (Berlin, 1987).

The study falls within the constructivist-interpretivist paradigm for several reasons. Not only is the case study approach based on a constructivist paradigm (Merriam, 1998; Stake, 1995; Yin, 2003), but the setting, the Nashville Ingress affinity space, is a socially-constructed environment (Gee, 2004). In this environment, participants’ learning experiences may be examined and understood in context (Lincoln & Guba, 1985). Settings that privilege constructivism likewise emphasize discourse between learners (Doolittle, 2001). The content in an affinity space is transformed through participant interactions, indicating discourse is a crucial aspect of participation, with discernible outcomes (Curwood, 2013; Gee & Hayes, 2012).

The constructivist-interpretivist approach also prioritizes the interaction between the researcher and the object of the research (Lincoln, Lynham, & Guba, 2011; Ponterotto, 2005). In this study, the interaction between the investigator and the participants will be paramount, as this dialogue is the only way to reveal the meaning that may be buried in participants’ stories about learning. These interactions will assist in uncovering adults’ learning experiences in affinity spaces, allowing participants and researcher to co-construct findings and share those findings.
with others. “Investigator and the object of investigation are...interactively linked so that the findings are literally created as the investigation proceeds” (Lincoln & Guba, 1985, p. 207).

Furthermore, the study aligns with the constructivist-interpretivist paradigm because the researcher is not attempting to make judgments regarding truth (Butin, 2010). There is no objective truth to be known about adult learning in affinity spaces, because adult learning relies on an individual’s intrinsic motivation to participate, and the value he or she assigns to the learning (Knowles, 1989). Using a qualitative case study design, the goal is to document the multiple realities of the participants by analyzing, and reflecting on, narratives about their experiences in the affinity space (Ponterotto, 2005).

Case Study Design

A case study is appropriate when the focus is on unique, real-life situations (Merriam, 1998). Case studies are also suited to inquiries where the data is subject only to scrutiny on the basis of credibility, not on claims of truth (Kenny & Grotelueschen, 1984). Case studies offer insights on, and bring to light, meanings that can broaden readers' experiences (Merriam, 1998). These insights can be understood as possible hypotheses to structure future research. Thus, case study research plays an important role in advancing the knowledge of the field (Merriam, 1998).

With a firm research subject established, the researcher must then define the case. As the phenomenon being explored is adult learning in the affinity space, the phenomenon is a function. Since it is uncommon in case study research to choose a function as the case, it is necessary to choose cases that are entities (Stake, 2013). The cases, or entities, in this study are individual adult learners. The study employs a multiple case study approach in order to comprehensively explore functioning, using each case as a fulcrum to bring functioning and relationships together
for study (Stake, 2013). Common research questions tie all of the case studies together (Stake, 2013). Looking at a range of cases increases the precision, validity, and the stability of the findings. (Miles & Huberman, 1994). The system must also be intrinsically bounded to be considered a case (Merriam, 1998). A single learner is a bounded system, representative of “an instance drawn from a class” (Adelman, Jenkins, & Kemmis, 1983). Each instance brings to light properties of the class to which the instance belongs, which is the purpose of case study research (Guba & Lincoln, 1981).

**Historical trajectory.** Case study research as a methodological strategy "has been around as long as recorded history" (Flyvbjerg, 2011, p.302). Contemporary case study research is considered to have originated in qualitative approaches in the fields of anthropology, history, psychology, and sociology (Harrison, Birks, Franklin & Mills, 2017). Most scholars attribute the origins of case study research to early twentieth century studies in anthropology and social sciences, when detailed ethnographic studies were conducted using this approach (Harrison et al., 2017). Social scientists investigated people's experiences in the natural setting to gain insight into how they interpreted and attributed meaning to their experiences, and how they constructed their realities (Johansson, 2003; Merriam, 2009).

The evolution of case study research in education has emphasized social and educational change (Harrison et al., 2017). Scholars have focused on evaluating curriculum, determining the impact of educational programs, and providing evidence for decisions about policy and practice (Merriam, 2009; Stake, 2013). There are three key approaches guiding modern case study research in the field of education. Merriam (1998), Stake (1995), and Yin (2002) are considered the three seminal authors who provide procedures for conducting case study research (Creswell,
Hanson, Plano, & Morales, 2007; Yazan, 2015). Yin (2002) focuses on the process of inquiry, arguing for a highly structured design, charted prior to beginning the work. He likewise emphasizes the importance of reviewing the literature to include theoretical propositions before collecting data (Yin, 2002). In contrast, Stake (1998) highlights the unit of study, suggesting a flexible design that allows for adaptations as the study progresses. Building on the ideas of Parlett and Hamilton, Stake’s conceptualization adopts the notion that “the course of the study cannot be charted in advance” (Parlett & Hamilton as cited in Stake, 1998, p. 22).

Merriam’s (1998) approach draws on the work of both Yin (2002) and Stake (1995). Like Stake (1995), Merriam (1998) takes a more flexible approach to design, observed in her more fluid guidelines for sampling (Yazan, 2015). Similar to Yin, (2002), she advocates the use of a theoretical framework, a review of literature, and research questions to guide the study, as well as organized, systematic data collection and analysis to control the process (Harrison et al., 2017).

**Case study characteristics.** Merriam further defines case study research by certain characteristics. Case studies are particularistic, descriptive, and heuristic (Merriam, 1998). The study focuses on the particular phenomenon of adult learning in affinity space, with the importance lying in what research reveals about the phenomenon, and what the research may suggest. The case, or individual learner, examines a specific instance, but may speak to a general issue (Olson as cited in Merriam, 1998).

The end product of the case study is thick description of the phenomenon under study (Merriam, 1998). The study’s aim is to offer a complete, literal description of adults’ learning experiences in the affinity space, intended to illustrate the factors that contribute to adult learning
in that context (Olson as cited in Merriam, 1998). To ensure the description is thick and rich, case studies utilize “prose and literary techniques to describe, elicit images, and analyze situations…They present documentation of events, quotes, samples, and artifacts” (Wilson, 1979, p. 448).

The case study is also heuristic, in its goal of illuminating the reader’s understanding of the phenomenon (Merriam, 1998). Insights into how things become the way they are is the expected result of a case study (Stake, 1981). The purpose of this case study is to explain what happens in the space, and to evaluate the potential of the space for adult learning, thereby increasing the study’s applicability (Olson as cited in Merriam, 1998).

The case study approach requires an overarching research question to guide the inquiry (Merriam, 1998). Both the research question and the interview questions were developed to align with case study methods. Case study research should be considered when the focus of the study is to answer “how” and “why” questions, or when the researcher wants to explore the context relevant to the phenomenon (Yin, 2003). As this exploration seeks to discover how adults experience learning in the specific context of the affinity space, the case study approach is conducive to answering the types of questions posed.

While some relevant definitions of Stake (1995) and Yin (2002) will be utilized, the study predominantly aligns with Merriam’s (1998) guidelines advocating the use of a theoretical framework, a review of literature, and a central research question. The inquiry continues to adhere to Merriam’s (1998) guidelines as the work moves into the data collection, data analysis, and reporting stages.
**Participants**

The aim of sampling in qualitative research is to collect data useful for understanding the complexity and context of the phenomenon, rather than to represent a population (Gentles et al., 2015). The participants in this study were six adults over the age of 25 who participated in the Nashville Ingress affinity space during the period of time from March 31, 2017 to March 31, 2018. Participants consisted of two people who identified as female, and four people who identified as male. Four participants identified as Caucasian. One male participant identified as Native American, and one male participant identified as African-American. The sample size was consistent with the literature on multi-case studies, which has emphasized that the benefits of a multi-case study are limited if fewer than four cases are chosen, or more than 10 are chosen (Gentles, Charles, Ploeg, McKibbon, 2015; Stake, 2013). A smaller number of cases allowed the researcher to maintain the high levels of contact needed to gather ample data regarding participant experiences (Cohen, 2000).

The most appropriate sampling type for the case study is non-probabilistic, purposeful sampling, as it is important to select a sample that will allow maximum learning (Merriam, 1998; Patton, 2015). The inquiry investigated a small number of cases likely to provide the most information and have the biggest influence on the development of knowledge (Patton, 2015). This type of sample necessitates determining selection criteria to “reflect the purpose of the study and guide the identification of information-rich cases” (Merriam, 2009, p. 78). In addition to selecting participants of the requisite age, the inquiry required data from participants who perceived they had experienced learning in the space. The study employed a set of criteria proposed by Miles and Huberman (1994) to guide and assess the sampling
strategy. The strategy was evaluated in terms of six different characteristics, including the relevance to the conceptual framework, the likeliness of generating rich information, the potential to enhance the generalizability of the findings, the ability to produce believable descriptions, ethical issues, and feasibility.

Prior to beginning the data collection process, the inquiry gained approval from the Internal Review Board (IRB). Shortly thereafter, the researcher secured permission from the Nashville Ingress site administrator to access the channels of communication in the space (Robinson, 2014). Participants were sourced by advertising for potential interviewees in the Nashville Ingress affinity space general channel. Those interested were informed of the study’s aims, what participation entailed, the voluntary nature of participation, and the protection of individual anonymity to help them make an informed decision to participate (Robinson, 2014).

Procedures

Data Collection

Rigorous qualitative case studies afford researchers opportunities to explore or describe a phenomenon in context using a variety of data sources. (Baxter and Jack, 2008; Merriam, 1998). Qualitative designs utilize data from interviews, observations, and documents that may be words or images (Schensul & LeCompte, 1999). As the setting was primarily online and networked across mediums, the exploration required data from multiple origins. Once self-selected participants signed the official consent forms, data were collected via in-depth interviews, online and virtual observation, and publicly-shared, user created artifacts (Curwood, 2013; Gee & Hayes, 2012; Lammers et al., 2012). The data were reviewed, interpreted, and analyzed
inductively prior to sorting the information into themes that cut across all forms of data (Creswell, 2007; Merriam, 1998).

**Interviews.** In-depth interviews were necessary to acquire the stories of adults’ learning experiences in the affinity space. All face-to-face researcher-participant interactions were conducted in a public location of the participant’s choosing. The interviews were semi-structured, and were scheduled to last no more than 45 minutes. The interview questions (see Appendix A) were designed to uncover information that would assess whether the assumptions of andragogy hold true for adults in the affinity space. The questions referred to andragogy’s assumptions about the adult learner’s readiness and motivation to learn, the use of his or her experiences as a resource, and the value assigned to the knowledge shared in the space (Knowles, 1980). To determine whether the space would be considered optimal for learning according to AST, the questions were intended to draw out information about interactions with and in the space, specifically those interactions that facilitated mentoring relationships, production activities, accessing resources, and the development of specialist knowledge (Gee & Hayes, 2012).

Photo-elicitation interview data was also collected as part of the participant interviews, as this technique has been shown to sharpen participants’ memories and mitigate areas of misunderstanding (Harper, 2002). Although most elicitation studies utilize photographs, this technique can be done with any other type of visual image (Harper, 2002). The images showed completed fields, static photos of the Ingress intel map, participant accomplishments, tutorials, Portal Recon submissions, and photographs. As the focus of the work was an online community, the visual data was primarily in the form of screenshots taken from the public channel in the
affinity space. Participants were shown printed copies of these screenshots, and their comments and reactions were recorded.

Observations. Observations of participant interactions and publicly shared user content were obtained through public channel posts in the Nashville Ingress affinity space. Public posts were accessed for a period of time spanning 12 months. Data were collected from posts dated no earlier than March 31, 2017 and no later than March 31, 2018. Relevant posts were captured via screenshot for future analysis. To ensure the project maintains the highest ethical standards in online research, only data from those who gave informed consent was utilized.

Observations of participant activity offered insight into how social interactions in the affinity space can transform content (Gee & Hayes, 2012). This also allowed the researcher to discover whether specialist knowledge, distributed knowledge, and dispersed knowledge was developed, encouraged, and articulated in accordance with AST (Gee & Hayes, 2012). Additionally, the data allowed the researcher to determine whether assumptions of andragogy aligned with the interactions that took place in the affinity space. The data indicated the extent to which participants took responsibility for their own learning, whether previous experiences were utilized as a resource, the types of knowledge privileged by participants, and whether that knowledge was valued by the participant and others (Knowles, 1980).

Artifacts. Research into online meaning making often relies on participants’ self-selected data (Gerber, Abrams, Curwood, Magnifico, 2016). To aid in the overarching co-construction of knowledge, data collection of self-selected artifacts aims for a co-constructed understanding of these participant artifacts. Therefore, both self-uploaded visual data and text-based multi-modal data were collected from the channel. These artifacts were captured via screenshot, and included
fielding plans, tutorials, participant accomplishments, mission routes, Portal Recon submissions, and photos of the Ingress intel map. Publicly-available documents and visual imagery for a 12-month period were reviewed for relevant information. Data were collected from posts dated no earlier than March 31, 2017 and no later than March 31, 2018. Only artifacts from participants who gave consent to participate in the study were included.

An examination of self-uploaded visual and text-based documents aided the researcher’s understanding of how visual data supports the generation of reflection and feedback (Barton, 2011). Feedback is not only an integral part of affinity space participation (Gee & Hayes, 2012), but it also speaks to the adult learner’s need to be valued for his or her knowledge (Knowles, 1980; Fidishun, 2000).

Data Analysis

Data analysis in qualitative studies is inductive, intended to establish patterns and themes (Creswell, 2009). Although case study research does not claim any specific methods for data analysis, some techniques are used more than others (Merriam, 1998). Analysis in case study design is, at its most basic, the process of making sense out of the data. Making sense out of data involves “consolidating, reducing, and interpreting what people have said and what the researcher has seen and read – it is the process of making meaning” (Merriam, 1998, p. 178). This process of consolidation, reduction, and interpretation is a concrete application of constructivism (Yazan, 2015). The following process was instituted for each case in the study. As the analysis of each case was completed, a case record, or overview, was constructed (Patton, 2015).
**Organizing the data.** There were multiple steps involved in analyzing the data using an inductive approach. Pages of raw data were funneled down into a small number of themes that made up the major ideas of the database. The first step was to explore the data to consider how to organize it, and to determine during future iterations if more data was needed. Text-based multi-modal data were transcribed verbatim and placed into a Microsoft Word document for uploading into NVivo11 Pro. Interviews were recorded using the mobile app Rev, but they were transcribed by the researcher. Both the channel posting transcripts and the interview transcripts were then carefully read to allow the researcher to get a sense of the documents as a whole.

Visual documents and artifacts were saved as .jpeg files and moved to a document folder for uploading into NVivo11 Pro. Before coding the data, it was necessary to reflect on the underlying meaning of these documents. This enhanced researcher awareness of what the participants were trying to convey through textual and visual elements. (Creswell, 2012).

**Analog coding.** To further explore the data, procedures for segmenting and labelling text-based documents were initiated. The process of coding the text was initially started by hand. Viewing the screen-captures and noting relevant details functioned as a “noticing device” (ten Have, 2007, p. 95). This allowed the researcher to identify interesting information, effectively serving as the first stage of analysis (Edwards, 2003). Beginning with printed copies of the transcripts, names were first hidden to prevent possible gender bias. Ideas and notes were written in the margins, then text sections were bracketed and marked using different colored highlighters. The accompanying codes were inserted in the left margin using the same colored marker to provide a visual overview of emerging ideas (Creswell, 2012). While this process was aesthetically and tactually appealing, digital coding aligns with the nature of the project. A
second process of coding was therefore instituted with the assistance of NVivo11 Pro data analysis software.

**Digital coding.** NVivo 11 Pro allowed the researcher to create a database for different types of sources, including text, audio, video, and images; however, the coding frames for visual and textual data were first developed separately. Using the interview transcripts as the source documents, a read-through identified important text sections, which were highlighted, dragged to each node, and subsequently assigned a code to describe the meaning of that section. The process adhered to a system of open coding. The codes were stated in the participant’s own words to maintain as close a connection to the original data as possible. Some sections of text yielded multiple codes, which the software accounted for under the different nodes in the hierarchy of the source document. Utilizing the idea of lean coding (Creswell, 2012), only a few codes were assigned at first analysis to enable reducing the codes to broad categories without being overwhelmed by an excessive number of codes. Working from this list, similar codes were then grouped together, and the redundant codes were eliminated, leaving the final set of codes. The data were then re-examined to ensure nothing was missed in the initial coding process, and quotes to support these codes were highlighted by color. To ensure accuracy, data from both analog and digital coding processes were reviewed for similarities and differences. Visual data, in the form of jpeg screenshots, were likewise be uploaded into NVivo 11 Pro. Sections of each image were highlighted and assigned a descriptive node in the same way as the written data. As with the textual information, a process of open coding was used to establish the initial coding frame. Once all images were coded, the researcher then coded textual and visual data in the same
frame. Nodes for separate textual and visual data were compared to one another, and the final group of codes was grouped into thematic categories for review and future development.

**Building themes.** To develop the themes, it was necessary to aggregate similar codes from both the textual and visual data. These themes served as the major ideas in the research. Once the final list of codes was determined from the aggregated data, themes emerged based on the codes which had the most evidence to support them. The researcher was careful to ensure the final codes and potential themes were consistent with the information conveyed in the participant interviews and self-uploaded artifacts. The final list of codes was then reduced to no more than five overarching themes, renamed to express the broader concepts. As the themes continued to develop throughout the analysis, specific examples and additional quotes were added to illustrate these themes. When no new information emerged on a theme, that theme was considered saturated. To ensure accuracy and validity, a check with the participant confirmed he or she did specify these themes. Confirmation triggered a second thematic analysis to determine points of comparison between the themes of each case and the theoretical frameworks (Wilson & Stacey, 2004). As part of this process, the researcher compared each source document with the theoretical frameworks to determine specific points of congruence. Evidence was charted accordingly, and may be viewed in Appendix C. As each case was analyzed, the researcher created a case record (Patton, 2015). The case record was comprised of broad details organized under headings drawn from the interview data, refraining from including details that would be discussed later in the cross-case thematic analysis (Patton, 2015; Wilson & Stacey, 2004).

**Cross-case analysis.**

Data were reviewed, interpreted, and analyzed inductively prior to being sorted into
themes that cut across all forms of data, as well as all cases (Merriam, 1998). Like the earlier process, once the final list of cross-case codes was determined, ideas emerged based on topics discussed most often, as well as codes with the most evidence to support them. The results of the cross-case analysis revealed overarching themes relating to participants’ learning experiences in the space. Following the previous inductive pattern, these themes were renamed to express broader concepts uncovered during analysis.

**Criteria for Rigorous Qualitative Research**

**Ethical Considerations**

A primary concern in case study research is the "unusual problems of ethics. An unethical case writer could so select from among available data that virtually anything he wished could be illustrated" (Guba & Lincoln, 1981, p. 378). To mitigate this bias, both the researcher and the readers of case studies must be aware of possible biases that may impact the final product (Guba & Lincoln, 1981).

There are ethical concerns inherent in the sampling process as well. Issues may arise when pre-specified criteria inform the selection of human participants if data for applying selection criteria is deficient (Morse, 1991). By including adults 25 or older who perceive they have experienced learning in the space, the selection criteria were specific enough to answer the research question, yet broad enough to allow for the self-selection of participants. Additionally, ethics requires that the method of selection should permit informed consent, and that the benefits or risks associated with selection and participation are disclosed (Miles & Huberman, 1994). The preliminary interview protocol was clear about the aims of the study, as well as the risks of participation, and participants’ privacy and anonymity. Participants were required to sign a form giving consent prior to any data being collected.
Specific ethical issues may also emerge when the setting is an online environment. Internet communities are rich sources of qualitative data, yet participants in these spaces do not expect to be research subjects (Eysenbach & Till, 2001). Therefore, observation in the space raises ethical concerns pertaining to informed consent and privacy. As a member of the Nashville Ingress affinity space, the researcher is familiar with group norms and the perceived privacy of the different channels in the space. Although users of the Nashville Ingress affinity space must be members, the general channel is considered the “public” space for all members. There are other channels that players can choose to join, but some require an invitation, and thus were considered “private.” During these procedures there was no inconvenience to the participants in the general channel, and the topic of adult learning was not a sensitive one. All members in the space were informed that the researcher was interested in historical data accessible to all members, pertaining to participants who gave informed consent. Additionally, to ensure the researcher was neither intruding in the space nor influencing the outcomes, the researcher was only observing, not interacting, with participants in the online venue (Eysenbach & Till, 2001). Finally, the anonymity of participants was closely guarded, and verbatim quotes were only utilized for participants who consented to participate.

**Credibility**

It is critical to ensure that the researcher’s analysis does not in any way skew the meaning the participant assigned to the words. Not only does this call the accuracy and validity of the work into question, but it can also damage researcher and participant relationships (Creswell & Miller, 2000). The participants and the researcher are co-producers of knowledge, sharing roles in negotiating outcomes. This necessitates member checking throughout the process so
participants can see exactly how their words are being used. Member checks are “the most crucial technique for establishing credibility” (Guba & Lincoln, 1985, p. 314) in a qualitative study. During the study, participants were asked to read over his or her transcript to make sure it was accurate. Participants were also invited to view the findings to ensure those findings were congruent with that which the participants wished to convey (Creswell, 2012). This confirmed the credibility of both the information and the narrative account (Creswell & Miller, 2000).

A specific concern is that the researcher’s experiences as an adult learner in the affinity space could influence the findings. To mitigate the potential issue, another researcher interviewed this investigator using the same questions asked of the participants. The data from investigator and participant interviews were then compared and reviewed for potential bias.

The addition of artifact and photo-elicitation data aided in establishing trustworthiness and rigor in a primarily word-based project, as the data assisted the researcher in tracing and corroborating the learning that took place across modes and networked spaces (Gerber et al., 2016; Harper, 2002). The collection of multiple forms of data also suggested triangulation would be another powerful strategy to demonstrate credibility. The process of data source triangulation involved searching for convergence among multiple and different sources of information (Creswell, 2007; Denzin, 1978). This technique was particularly suited to affinity space research, as scholars in the field advocate for the collection and analysis of interview, observation, and artifact data (Curwood, 2013; Gee & Hayes, 2012; Lammers et al., 2012).

**Transferability**

The qualitative emphasis on the natural setting suggests conventional transferability is impossible (Erlandson, Harris, Skipper, & Allen, 1993). In a natural setting, observations are
defined by the specific contexts in which they occur (Erlandson et al., 1993; Lincoln & Guba, 1985). Interpretive case studies utilize thick, rich description to illustrate, support, or challenge assumptions, thus enabling readers to determine the applicability of the findings to other contexts (Creswell & Miller, 2007; Lincoln & Guba, 1985; Merriam, 1998). Thick description leads to thick interpretation and thick meaning of the findings for the researcher, participants, and the readers (Ponterotto, 2006).

The process of writing using thick description was found to include a snapshot of participants’ interactions. This situated the participants in specific circumstances, portrayed relationships between participants, and illustrated how participants felt (Denzin, 1989). The language not only dealt with the meaning and interpretations of people in a specific context, but also with their intentions (Holloway, 1997). By describing the setting, participants, and themes in vivid detail, readers of the narrative account may feel as if they experience what the participants do (Creswell & Miller, 2007). “If practitioners believe their situations to be similar to that described in the study, they may relate the findings to their own positions” (Shenton, 2004, p. 69). The readers, not the researcher, determine what can apply to their situations. The researcher will pass on his or her personal meanings while withholding others. The reader will likewise add and subtract, reconstructing the knowledge in ways that make the findings more personally useful (Stake, 2005).

**Self-Reflexivity and Transparency**

As the researcher is the primary data collection instrument in a qualitative study (Guba & Lincoln, 1998), it is necessary for me to acknowledge areas of potential weaknesses to ensure the integrity of the human instrument. I am also prepared to present an evidence trail open to
scrutiny. This will demonstrate the wealth of evidence, with examples and quotations to make claims transparent (Smith, Flowers, & Larkin, 2009).

Self-reflexivity and transparency requires acknowledging, describing, and bracketing my own values, with the understanding that my lived experiences cannot, and should not be, eliminated from the research (Ponterotto, 2005). Positionality is the multiple, unique experiences that situate me in the world (Takacs, 2003). It is my responsibility to undertake inquiries with an appreciation of my situatedness (Franklin, 2014), recognizing that in attempting to know myself, I can learn to know others.

As a woman, I occupy multiple positionalities (Kezar & Lester, 2010), and it is crucial that I reflect on how these identities relate to others as my identity as a researcher is still developing. I consider my identity as a woman to be the defining factor in my establishing specific ways of approaching concepts of power, which is a critical aspect to consider in research relationships (Marshall & Batten, 2004). Although my perceptions of masculinity and male power have shifted due to my experiences as a married woman raising two sons, damaging childhood experiences left me resentful and suspicious of male authority. I am therefore conscious of the responsibility to be on guard for gender bias. Attempts by popular media to essentialize gamers indicates gender is likely to be relevant in my exploration of video games, as recent studies indicate men and women play games in almost equal numbers, regardless of assumptions that most gamers are men (Pew Research, 2015).

Although I was brought up prior to the widespread use of technology, I have been an early adopter of technology from a young age, as were my parents. I have been playing video games as long as I can remember, beginning with Pong in the 1970s through the augmented-
reality games of the 2010s. My family owns, or has owned, every mass-produced video game console ever made. It must also be recognized that my love of games was the impetus behind my initial interest in games-based learning, and has since become the driving force behind my choice of research topic.

My experiences lead me to identify as a gamer, and I am also an adult who participates in affinity spaces. Consequently, those whose perspectives I sought to uncover and understand are not the “other” (Briscoe, 2005). This being the case, I have been mindful to ensure the objective interpretation of data, as I could have been tempted to “represent the group in a way that constructs a social identity that protects and serves the interest of the group” (Briscoe, 2005, p. 28). Another consideration is as an insider, my privilege is primarily derived from my position as a researcher. In this instance, it was important to examine power relations to ensure that my positionality as a researcher did not lead me to abuse my power as I explicated the experiences of my peers (Takacs, 2003).

In previous educational and career experiences, I focused on the field of Adult Education. I believe there is a growing need for teachers who are specifically trained in theories and practices of adult learning. As I began my research with adult participants, I found it imperative to temper my preconceptions regarding adult learning via affinity spaces. The literature demonstrates adults and children do not experience learning in exactly the same ways. While I believe video games can be efficacious for adult learning, it would be a mistake to assume that adults will learn from video games in the same way that children do.

I consider myself to have an eclectic philosophy of education, choosing certain elements and values from different theories and operating according to those principles (Elias & Merriam,
2005). I am, however, predisposed toward some philosophies. My research approach focuses on
the collaborative and participatory nature of new literacies, and as a primarily
humanistic/progressive educator, these views have precipitated my belief that affinity spaces can
provide optimal conditions to promote personal growth and development. Therefore, I have
remained mindful of these inclinations as I interrogated preconceptions about what my research
has uncovered.

**Limitations**

Despite strategies to ensure the work maintains a high level of integrity, there are
limitations to any approach. One danger in qualitative studies is that researchers, as the primary
instruments, can become embedded in the experiences of their participants. This may increase
the opportunity for bias to enter into the data collection and analysis process (Denzin & Lincoln,
2011). Other limitations focus on the sampling process. Sampling from a small number of critical
cases may not yield findings with broad generalizability; however, it does allow researchers to
develop logical generalizations from comprehensive evidence produced by in-depth investigation
(Denzin & Lincoln, 2011; Patton, 2015). Interview-based research must also contend with the
limitations imposed by the self-selection bias. As voluntary participation is crucial to ethical
practice, the researcher can only recognize the potential for bias and consider the impact of
findings and generalizability (Robinson, 2014).

**Findings and Analysis**

The purpose of this case study is to describe the ways adult participants interact with the
Ingress video game affinity space as a type of informal learning. The data were reviewed,
interpreted, and analyzed inductively prior to sorting the information into themes that cut across
all forms of data (Creswell, 2007; Merriam, 1998). After the analysis of individual cases was completed, a case record was created for each participant (Patton, 2015). The case records are third person accounts, comprised of broad details organized under headings drawn from the interview data (Wilson & Stacey, 2004). The records are intended to give a brief overview of the case and have omitted specific details that will be discussed later in the cross-case thematic analysis (Patton, 2015; Wilson & Stacey, 2004). To ensure accuracy and validity, a check with the participant confirmed he or she did specify these themes. Confirmation triggered a second thematic analysis to determine points of comparison between the themes of each case and the theoretical frameworks (Wilson & Stacey, 2004). As part of this process, the researcher compared each source document with the theoretical frameworks to determine specific points of congruence. Evidence was charted accordingly, and may be viewed in Appendix C.

A cross-case analysis following the same inductive process was then instituted to determine themes common throughout all cases in the study. Once the final list of cross-case codes was determined, ideas began to emerge based on topics discussed most often, as well as codes which had the most evidence to support them. The results of the cross-case analysis revealed four overarching themes relating to participants’ learning experiences in the space. These themes were renamed to express broader concepts uncovered during analysis: intentional learning, collaboration, mentorship, and higher order thinking. To ensure the reader is able to follow the chain of evidence leading to the final report, subsequent paragraphs will present the case records, thematic analysis charts, and the findings of the cross-case analysis in accordance with the specified themes. Findings are predominantly presented in the participant’s own words to maintain as close a connection to the original data as possible.
Case Records

Naming Conventions

Each participant has been given a pseudonym to keep his or her identity from becoming known. Likewise, to protect the anonymity of players who did not give consent, all other players mentioned by study participants will be referred to as “Player 1.” When participants refer to more than one player in the same narrative, subsequent players will be named “Player 2” and “Player 3” to indicate the speaker is referring to different people.

Case Record 1 – Matt

Background. Matt is a 35-year-old male who identifies as white. He has a bachelor’s degree in programming, and he has been working in the field for over ten years. He has been playing the game for about three years, and in that time, he has reached level 15 of 16. Matt first found the game online at Reddit.com. What he read intrigued him, so he researched the local Ingress community on Google Plus to see what it was like. When he found that both the RES and the ENL were about equal in numbers, he downloaded the game, and randomly chose the ENL when prompted to choose a side.

Joining the space. Matt became involved in the space through other affinity spaces online. He read about communities who did gear farms, dinners, and other social activities, which motivated him to get connected to other players. Matt took the initiative to seek out to other players in-game. He reached out to another player because he saw her reaching out to others. He began to message this player, and she helped him get plugged in to the online space specifically for Nashville.
**Connecting with other players.** To find the information he needed, Matt went searching for expert help. He wanted to connect with more experienced players, because he recognized he was doing things in the game that could cause issues for others in his play area. He wanted to understand the endgame, and what the team’s objectives were for Nashville. When he came into the space, he didn’t know anything about fielding. He needed to learn how to do the noding and draws, and he knew he could learn that in the space. Other benefits of connecting with experienced players revolved around the social aspects of the game. Another of his goals was to meet people. Even though it is primarily an online space, there were also opportunities for one-on-one meetings and group activities, due to the nature of gameplay. He says the social interactions are very important to him as an introvert. He believes participation has not only helped him in his relationships with friends and family, but it has also helped him in his work. Matt describes himself as very shy and quiet, but he reports being able to communicate in meetings because participation has brought him out of his shell. Meeting new people and seeing different areas has also helped him reach out to others.

**Mentoring opportunities.** Matt is not only a member of the space, but he has also been instrumental in creating a subsidiary space for players all over the state to connect to Nashville. He wanted to create smaller spaces to foster tight-knit groups who play together in a specific area. Matt also spoke about mentoring in the space. Now that he is an experienced player, when new people have questions, he feels confident in his ability to teach them the dynamics of the game. Moreover, he believes it is important to model the behavior the team wants new people to have. In Nashville, the focus is on fielding, so he encourages new players in their fielding efforts.
Learning to play. When asked about the benefits of participation, Matt explained that one of his goals was learning to play the game better. When he first joined the space, he learned by observing more experienced players. As other players would field and post in the community, he would watch to see how the actions they described correlated to what was happening on the scanner. Then he would go out and imitate the other players, trying to see what worked for him and what did not. In addition to reading others’ posts, he also described looking at documents, screenshots, and how-to videos posted by other players. When he found things he did not understand, he asked others in the space to explain, or to show him how to do specific things he was struggling with.

Collaboration within the social structure. Matt referred to a schism between groups of players, indicating this affinity space was contested among its participants within the last year. This, in turn, impacted social interactions in the space. He believed that various cliques within the group became secretive, and thus competitive with one another, instead of with the opposite faction. That became a hindrance to him for a time, as it made the group less collaborative and cohesive overall. Matt stressed that the nature of the game requires players to work together to succeed, so team gameplay suffered for a period while players’ roles were in flux. Despite these issues, he feels the social structure typically lends itself to collaborative relationships. He described several instances where players collaborated during special events, using the space to learn from experienced players and collaboratively plan strategy.
<table>
<thead>
<tr>
<th>Themes from Case 1 - Matt</th>
<th>Principles of Andragogy</th>
<th>Principles of Affinity Space Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecting with other players</td>
<td>Learning is motivated by internal factors Learning takes place when information is required</td>
<td>The content is transformed by social interaction</td>
</tr>
<tr>
<td>Mentorship opportunities</td>
<td>Experience used as a resource</td>
<td>Participants can be producers, not just consumers Tacit knowledge is valued and explicit knowledge encouraged</td>
</tr>
<tr>
<td>Learning to play</td>
<td>Self-directed learning Learning is relevant to current experiences</td>
<td>Learning is proactive The development of both intensive and extensive knowledge is encouraged Both individual and distributed knowledge are encouraged</td>
</tr>
<tr>
<td>Collaboration within the social structure</td>
<td>Learning is problem-centered Learning takes place when information is required Experience used as a resource Learning is relevant to current experiences</td>
<td>Leadership is flexible Roles are reciprocal Participants can be producers, not just consumers The content is transformed by social interaction Both individual and distributed knowledge are encouraged</td>
</tr>
</tbody>
</table>

**Case Record 2 – Sean**

**Background.** Sean is a 42-year-old male who identifies as Native American. He currently works in the corporate offices of an automotive manufacturer. He attended a technical college, and he has a number of professional development certifications. Furthermore, he is in the final year of courses for a Bachelor’s degree in business. Sean has been playing the game for
two years, and he has reached level 16, the highest level in the game. He was introduced to the
game by his sibling, and he chose his faction so he and his sibling could collaborate with one
another, and with others he knew on the team.

**Joining the space.** Sean joined the space at the invitation of another player. He had
started playing daily in the area near his office, capturing portals and making simple fields.
Another player in that area sent Sean an in-game message and asked him to join the space so
they could work together. Sean did not know there was a space prior to his contact with this
player, but he was excited to join so he could play with other locals. He also wanted to join so he
could ask questions of the more experienced players, as he was only level 5 or 6 at the time.

**Learning to play intentionally.** Upon joining, Sean says he was on a mission to play the
game to the best of his ability. He therefore asked questions about everything he could think of
and researched specific topics of interest in the space. He was unaware that his in-game actions
could significantly impact the plans of others, and the points awarded to the team. It took
communicating with others to learn more about how to play more effectively, with an actual
plan, rather than the random way he had been playing. Likewise, when he began fielding, he
found working with another player in the space taught him different ways to field that resulted in
more points. This gave him new strategies to use, several of which were more efficient when
fielding alone.

**Finding success in fielding.** Fielding is the area Sean is most excited about, and what he
is known for in both the space and in the game. Early on he did not know how to stack fields on
top of fields, so he was confused about why others’ fields looked more opaque on the intel map.
Reaching out to another player who fielded the area allowed him to learn how to use the portals
in his neighborhood to layer the fields and get the maximum amount of points. He also learned to
maximize individual points by mastering fan fielding. Another player posted a video from
demonstrating how to connect the portals to get a great deal of points out of a small area. Sean
watched the video, drew up a plan according to the demonstration, then replicated it in one of his
normal play areas. His successes gave him the confidence and the desire to begin designing more
of his own fields.

**Designing fields for himself and others.** Sean regularly draws fielding plans throughout
the week. He has different types of fielding plans, depending on portal density and the purpose of
the field. For smaller areas intended to maximize points for the individual, he draws fan fields.
For larger areas intended to maximize points for the team, he designs multi-layered fields. He is
often asked for advice, because he has a reputation for designing successful large fields that yield
a significant amount of points for the local team. Sean draws plans not only for his own area, but
he also works with others to design plans for others’ home areas as well. He puts all of his plans
on spreadsheets to share with others via Google docs, and he shares screenshots of his designs in
the space. He shares his designs in the space for many reasons, including recruiting assistance to
throw the field, ensuring his plans will not hinder the plans of others and vice versa, and to teach
others how to design and throw their own fields.

**Teaching others to play efficiently.** Sean regularly teaches others how to set up and
field their home areas. He is very detailed in his explanations, and if others do not understand, he
is willing to walk them through it so they can see how the process works. It is not unusual for
him to meet with other players to show them how his explanations translate to real life gameplay.
Sean also makes tutorials to post in the space, including tutorials for drawing and throwing
fields, setting up portals, submitting new portals, and reviewing portals that others have submitted.

| Table 2 |
|----------------------------------|----------------------------------|----------------------------------|
| **Themes from Case 2 - Sean** | **Principles of Andragogy** | **Principles of Affinity Space Theory** |
| Learning to play intentionally | Self-directed learning | Learning is proactive |
|                              | Learning is motivated by internal factors |  |
| Finding success in fielding  | Learning takes place when information is required | Both individual and distributed knowledge are encouraged |
|                              | Learning is motivated by internal factors |  |
| Designing fields             | Experience used as a resource | Participants can be producers, not just consumers |
|                              | Learning is relevant to current experiences | The development of both intensive and extensive knowledge is encouraged |
|                              | Tacit knowledge is valued and explicit knowledge encouraged |  |
| Teaching others to play efficiently | Experience used as a resource | Participants can be producers, not just consumers |
|                              | Tacit knowledge is valued and explicit knowledge encouraged | Roles are reciprocal |

**Case Record 3 – Susan**

**Background.** Susan is a 67-year-old female who identifies as white. She is currently retired. Susan has a Bachelor’s degree in Nursing and worked for over 40 years as an LPN or RN. She began playing the game because her children and their spouses play and convinced her
to try it. She has been playing for a year, and at the time of the interview, she was level 11 of 16.

**Joining the space.** Susan’s sons told her about the space and advised her to join if she planned to be active in the area. She recognized the potential of the space for communication with other players, so she agreed to participate. Susan was particularly interested in portal submissions in her area. She initially joined so she could ask other players whether a portal she discovered had already been submitted, but quickly found more experienced players were willing to mentor her and help her grow in skill.

**Asking others for help and offering help.** Although she was originally interested in portal submission protocol and capturing portals, Susan recently began to try to field. She knows that other players in the area draw and post fielding plans, so she regularly logs in to look at the plans and determine what is needed to replicate it. She is not confident in her skills, so she frequently asks others for help. When she has an idea she is not certain she can implement, she asks her sons to draw up plans based on her suggestions. During fielding operations, she is secure in her ability to follow directions when given specific tasks. She claims as long as she has a workable plan, she is successful. She also reports asking her others in the group for assistance while she is out playing, especially if she knows they are stationary and can look at the map to give her advice. Although she frequently asks others for help, she is just as likely to offer. If she reads others talking about destroying the other team’s fields, she offers to help kill portals, or scan the map for blockers in the area she frequents.

**Learning through iteration.** When Susan first learned to fully resonate portals she captured, she would link to any other portals listed when the “link” button was tapped. People in the space were unhappy with this behavior, as she sometimes blocked others from implementing
their own plans in the area. Others in the space explained that she needed to make triangles, or fields, not just links. This caused her to look at the intel map more closely, and to try to figure out where she could have linked to create fields. Then she would drive to the portals and try to make a field using the links she had previously thrown. She also describes an iterative process when she finds submitted portals have been rejected. Susan goes to the space to ask others what they think she should do differently for a better chance of acceptance. When people offer their suggestions, she changes the information on the portal candidates and resubmits. Susan recounts testing and re-testing different strategies to figure out the mechanics of gameplay. When she is successful, she shares her experiences with others in the space.

**Sharing her progress.** Susan feels that she contributes to others’ knowledge when she asks questions in the space and reports on her own progress. When she tries a new strategy, or when she implements the suggestions of others in the group, she will post whether her attempt was successful or not. If her attempt fails, she will explain the steps of her plan, asking others to comment on where she may have gone wrong. She asks for feedback not only to help her change behaviors that are not working, but also to help new players learn from her mistakes. She perceives her age makes her less likely to be reticent about admitting to failure, so she readily opens up to encourage others to take the same risks.
Table 3

<table>
<thead>
<tr>
<th>Themes from Case 3 - Susan</th>
<th>Principles of Andragogy</th>
<th>Principles of Affinity Space Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asking for help and offering help</td>
<td>Self-directed learning Experience used as a resource Learning is motivated by internal factors</td>
<td>Learning is proactive</td>
</tr>
<tr>
<td>Learning through iteration</td>
<td>Self-directed learning Learning takes place when information is required Learning is problem-centered</td>
<td>Both individual and distributed knowledge are encouraged The development of both intensive and extensive knowledge is encouraged</td>
</tr>
<tr>
<td>Sharing progress</td>
<td>Experience used as a resource Learning is relevant to current experiences</td>
<td>Participants can be producers, not just consumers Tacit knowledge is valued and explicit knowledge encouraged</td>
</tr>
</tbody>
</table>

Case Record 4 – Brad

**Background.** Brad is a 32-year-old male who identifies as white. He has a Bachelor’s degree in liberal arts, and he has been employed as a department manager of a manufacturing plant for over five years. Brad has been playing for over two years, and he is currently Level 11 of 16. He was introduced to the game by a close friend. He became interested in playing the game himself when his friend began to explain how to play. Brad says he chose ENL so he and his friend could work together.

**Joining the space.** Brad was unaware that there were communities of players in his area until he was researching the game online. He joined several faction-based groups on Google
Plus, but these were not local groups. He eventually joined the local space because other players in the area reached out to his friend, who shared this information with Brad. Brad said his friend encouraged him to join the space. The other players in the area explained that Brad could connect with them more easily by maintaining a presence in the group. The first Nashville group Brad joined was Hangouts, then he moved to Slack and Telegram as he became more embedded in the community.

**Learning through observation.** Brad says he primarily learns through observation, without asking direct questions. When he first began playing, he would watch to see how other players’ plans translated into gameplay. Players communicated their fielding plans in the group, then he would watch the intel map to see their plans unfold. Recognizing the correlation between the posted plan in the space and the completed field on the map helped him determine what he needed to do to get the same results. Brad also regularly views documents and videos posted in the group when he has questions about different aspects of gameplay. While he avoids asking others for help, he feels it is important to learn to play the game properly. If necessary, he will reach out to seasoned players, but he would rather watch tutorials and figure out new strategies for himself.

**Collaborating with others.** Although Brad shies away from asking questions when it comes to learning gameplay, he welcomes collaboration on fielding operations or farm-building. For smaller operations he prefers to plan and implement fields on his own, or with one or two others, as he feels an increase in the number of variables decreases the chance of success. Despite his reservations, he still stresses the need for courtesy in cooperative gameplay. Even if he is planning to solo field, he will let others in the group know beforehand to ensure their plans
and his plans do not conflict. Brad is adamant that if a single player fields an area shared by many and does not let it be known to the larger group, this can keep others from implementing their own plans.

Another benefit of connecting to the larger group is the ability to participate in large-scale fielding operations. Since each cell may be hundreds of miles across, working with others allows players to ask for assistance from players further afield. Brad regularly experiences issues with links blocking his fields which originate 50+ miles away. The space allows him to reach out to someone closer to the problem portal, which keeps him from having to drive hundreds of miles to take care of the problem. He also helps others with their plans, using the space to connect with the directors of the operations. The directors upload files to the space to let players know their assigned jobs. Those throwing the field can view the docs to see which portals they will be using, and how many keys will be needed.

**Role as peacemaker.** Brad indicated there are sometimes conflicts of interest regarding what should be happening in the region. As a more casual player, he often finds his role is to offer an objective opinion, or act as an intermediary. He says he is slow to anger, and that he has discovered that it is beneficial to the team at large to have cooler heads willing to diffuse tensions. He has no desire to be a leader in the group, but does enjoy being known as a peacemaker.
Table 4

<table>
<thead>
<tr>
<th>Themes from Case 4 - Brad</th>
<th>Principles of Andragogy</th>
<th>Principles of Affinity Space Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning through observation</td>
<td>Learning is proactive</td>
<td>Learning is proactive</td>
</tr>
<tr>
<td>Learning is motivated by internal factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaborating with others</td>
<td>Learning takes place when information is required</td>
<td>Participants can be producers, not just consumers</td>
</tr>
<tr>
<td>Experience used as a resource</td>
<td>The content is transformed by social interaction</td>
<td></td>
</tr>
<tr>
<td>Learning is relevant to current experiences</td>
<td>Both individual and distributed knowledge are encouraged</td>
<td></td>
</tr>
<tr>
<td>Role as peacemaker</td>
<td>Learning is problem-centered</td>
<td>Leadership is flexible</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Roles are reciprocal</td>
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</tbody>
</table>

Case Record 5 – Adam

Background. Adam is a 47-year-old man who identifies as African-American. He studied communications and intelligence research in the military, prior to receiving his degree in general education. He has worked in telecommunications and computer networking for over 25 years, and he currently owns his own technology consulting company. He has been playing the game since it was in beta-testing in 2012. Adam is presently level 15 of 16. He began playing over five years ago when he received an invitation regarding a new experience from Google’s Niantic division. Since Adam was accustomed to doing software testing for his job, he agreed to download and test the software. He said the way the game was first designed, players were specifically led to the RES through game’s narrative. He chose ENL because he wanted to play for the other team.
Joining the space. As one of the first players in the area, Adam was one of the founding members of the space on which this study focuses. When he first started playing, the local community was using Reddit as a form of bulletin board. He, and others, would go online to ask and answer questions. From there, they moved to Google Plus so they could make communities and bring people in. As time went on, they moved to Google Hangouts, and finally to Slack because of the technology tools available to them in that space.

The affordances of the space. In the beginning, the space was completely asynchronous. While this allowed players to connect when and where they were able, Adam did not find it conducive to productive collaboration. Players would have to leave messages in the forum or in someone’s inbox, and then wait for others to view and respond to their posts. The space in its present incarnation is more synchronous and fosters collaboration in real-time. Today, Adam uses tools such as document sharing, instant and direct messaging, videoconferencing, and bots that pull information from the Cloud. Instead of trying to spread the work across many sites, most of the planning and structuring can be done in one place, which Adam perceives gives the space more power.

Connecting socially with other players. Adam uses the space to connect socially with others on the team. When he first began to interact with other players in the greater Nashville area, he realized he had grown up with one of them. This prompted him to reach out to the other person, and as a result, they began to build a relationship both in and out of the space. Over time, as new players started coming in, Adam started making more friends. He met others through a friend who played in the neighborhood, and he began to interact with more people socially. Adam struggles with the size of the current space, as he believes it used to be easier to go and
make friends or reason with people who were causing strife. Once it became thousands of people, it became more difficult to manage, or weed out bad elements. With greater numbers, there has been more in-fighting, and the various roles in the space are often contested.

**Mentorship.** Adam has been both a mentor and a mentee in the space. When he was a new player, he learned about strategy and tactics from a player who introduced him to *The Art of War* by Sun Tsu. He was intrigued by the idea of bringing literature, as well as real-world solutions into the game. Adam also wanted to develop connections to other cities in order to connect Nashville to the global Ingress community. From her, he learned how to reach out to other local communities, not just in this country, but across Europe and Australia. He described working with her as best practices for networking in the game.

Due to positive experiences learning from others in the game, Adam believes in the importance of sharing what he knows. He wants to ensure new players do not have to make the same mistakes he did. Beginners can start where he is, and move forward, which he views as a game changer. As a veteran of long standing, Adam makes a point to reach out to new people so he can pass on what he has learned about gameplay strategies, the code of conduct, organizing cells of players for maximum efficiency at neighborhood and state levels.

**Collaborating locally and globally.** Adam has used the group not only to collaborate with local players, but also to work with players all over the world. When planning local fielding operations, he uses the space primarily for communication, which may include recruiting, discussing fielding plans, uploading documents before the throw, and posting situation reports after the operation. When anomalies came into being, Adam went looking for people who could make the local team’s game better. It was important to him to find real world applications and
apply them to the game. He recalls locating a mapmaker in Europe who was willing to come into the space to work with the local team. This allowed local players to figure out zones in the play area, distances and travel times between portals, and how to use the map to plan an effective city-wide strategy. Adam also collaborated with others during the first shard campaign. Prior to the standard practice of having operators coordinating large fielding operations, players would talk to people online and then direct them the right place to go. He credits the team’s cooperative spirit with their success in getting to know people in other places who were willing to share their knowledge.

Table 5

<table>
<thead>
<tr>
<th>Themes from Case 5 - Adam</th>
<th>Principles of Andragogy</th>
<th>Principles of Affinity Space Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>The affordances of the space</td>
<td>Learning is problem-centered</td>
<td>Learning is proactive</td>
</tr>
<tr>
<td>Connecting socially with other players</td>
<td>Learning is motivated by internal factors</td>
<td>Participation comes in many forms and from many routes</td>
</tr>
<tr>
<td>Mentorship</td>
<td>Experience used as a resource</td>
<td>Participants can be producers, not just consumers</td>
</tr>
<tr>
<td>Collaborating locally and globally</td>
<td>Learning takes place when information is required</td>
<td>Tacit knowledge is valued and explicit knowledge encouraged</td>
</tr>
<tr>
<td></td>
<td>Experience used as a resource</td>
<td>Roles are reciprocal</td>
</tr>
<tr>
<td></td>
<td>Learning is relevant to current experiences</td>
<td>Participants can be producers, not just consumers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The content is transformed by social interaction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Both individual and distributed knowledge are encouraged</td>
</tr>
</tbody>
</table>
Case Record 6 – Erin

Background. Erin is a 36-year-old woman who identifies as white. She has both undergraduate and graduate degrees in psychology, and she is currently employed as a teacher. Erin has been playing for four years, and she has reached level 16 of 16. She began playing because the man she was dating at the time was an active player on the team. As the game did not support iPhone in the beginning, she ordered an Android tablet and tethered off her boyfriend’s phone so they could play together.

Joining the space. Erin says she also joined the space because of the man she used to date encouraged her to connect with others. He used to take her to gear farms, where she met other people in person. When Erin first began to go to the farms, there was a big push to get her to level 8, and then get her added to the space. Others would give her gear to help her get levelled up, so she was able to get to 8 more quickly. Once she reached that level, she felt compelled to join the community. Although she does not remember who else initially invited her, she recalls that she finally joined when another player reached out to invite her.

Power relations. Erin has struggled with issues of power in the space. The group was primarily free of strife for the first few years; however, during the last year, it seemed as if the space became less of a democracy and more of a dictatorship. Decisions about practice were being made and disseminated without the discussion that would previously have taken place. She believes this has divided the team and has strained relationships in the space. Some players were content to have a leader, while others believed leadership roles should be more fluid. When Erin saw how this was impacting the community, she spoke up, but it was not well-received. As a result, she finds she does not participate in the larger group the way she once did. Instead, she
reaches out to specific players with whom she has collaborated in the past.

**Connecting and helping others connect.** Although Ingress is a video game, for Erin, it became much more than that. The social interactions she enjoys in the space are what have kept her playing. All her current friends are those she has met as a result of her participation. She says it is not as if she does not relate to others outside of the space, but that the game takes up a lot of her life, which prompts her to have certain expectations about what others do and do not know. Recognizing this tendency in herself, she was prompted to create a Google document of all of the specialized language used by the group. Erin’s motivation was not only to make it easier for new members to understand what experienced players were talking about, but also to empower new members to make themselves heard and understood by others.

**Fielding and organizing.** Erin is an active player who regularly participates in fielding operations. She uses the space to help plan fields, as well as to organize the operation as it is occurring. She may not always discuss these operations in the group at large, as her fields are local to her neighborhood. Erin likes to work with smaller groups of people familiar with her primary play area, so she plans most of her fields in a more private channel.

When Erin needs to ask for assistance, she will go to the larger group to recruit. She posts to plan fields, organize gear farms, to make sure she is not blocking anyone, and to tell others she sees an open lane where the other team may be planning an operation. If she sees someone on the other team appears to be fielding, she may ask the group is someone can capture a portal, kill a portal, or throw a link to block the other team. Erin feels it is important to have channels in the space that are limited to a certain topic, such as random channels, and area-specific fielding channels. Erin appreciates keeping the work more organized, as it allows the space to be tailored
to each player’s interests.

Mentoring. Although Erin has predominantly moved into a teacher’s role, she has experienced being mentored as well. The man who brought her into the game was initially the person who taught her how to play. When she joined the space, she started branching out and connecting with other people. Erin learned nearly everything about the game from listening to others, as opposed to reading or watching tutorials. When she found something she did not know, she asked how to do it, and several experienced players took her under their wings and showed her more efficient ways to play.

While she is the first to admit she does not know much about regional or global play, when it comes to local play, she likes to mentor others and share what she has learned. She also stresses the importance of teaching others, not dictating to others. Erin has found people do not learn best when they are confronted with this situation, and they end up ignoring the dictator. For her, teaching is a combination of telling people different ways to do things, listening to them, knowing when to let them figure it out for themselves, and realizing that the teacher is not infallible.

Learning through testing and feedback. Erin is not shy about asking other players for their opinions on her ideas. She recognizes some people in the space are more knowledgeable in specific content areas, and that others have more expertise in certain aspects of gameplay. These are the people she will seek out to ask for feedback on her plans. Despite her willingness to request and act on suggestions, Erin realized in her early days of the game that some things people accept as a constant do not hold true in every situation. This understanding prompts her to continually search for different ways to complete the various actions in the game. She takes the
information she has gained from others, then tests for herself to determine how much of what she was told is true. Thus, Erin has learned through testing her original, as well as modified, ideas in the game. More specifically, Erin has made thousands of missions, primarily learning through trial and error. After initially learning how to build a mission, she tried to construct her own. If she did not like what she had created, she tried a different arrangement of portals, or she posted her first iteration in the space for feedback. She then implemented improvements and re-tested, continuing the cycle until she was pleased with the results.
Table 6

<table>
<thead>
<tr>
<th>Themes from Case 6 - Erin</th>
<th>Principles of Andragogy</th>
<th>Principles of Affinity Space Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power relations</td>
<td>Learning is problem-centered</td>
<td>Leadership is flexible</td>
</tr>
<tr>
<td>Connecting and Helping Others Connect</td>
<td>Experience used as a resource Learning is motivated by internal factors</td>
<td>Participation comes in many forms and from many routes The development of both intensive and extensive knowledge is encouraged</td>
</tr>
<tr>
<td>Fielding and organizing</td>
<td>Experience used as a resource Learning is relevant to current experiences</td>
<td>Participants can be producers, not just consumers Tacit knowledge is valued and explicit knowledge encouraged Roles are reciprocal</td>
</tr>
<tr>
<td>Mentoring</td>
<td>Experience used as a resource</td>
<td>Participants can be producers, not just consumers Tacit knowledge is valued and explicit knowledge encouraged</td>
</tr>
<tr>
<td>Learning through testing and feedback</td>
<td>Self-directed learning Learning takes place when information is required Learning is problem-centered</td>
<td>Both individual and distributed knowledge are encouraged The development of both intensive and extensive knowledge is encouraged People get encouragement from peer feedback</td>
</tr>
</tbody>
</table>

Findings of Multi-Case Analysis

The data were once more reviewed, interpreted, and analyzed inductively prior to being sorted into themes that cut across all forms of data, as well as all cases (Merriam, 1998). Once the final list of cross-case codes was determined, ideas emerged based upon the most frequently
discussed topics, and codes with the most evidence to support them. The results of the cross-case analysis revealed four overarching themes relating to participants’ learning experiences in the space. These themes were renamed to express broader concepts uncovered during analysis: intentional learning, collaboration, mentorship, and systems and design thinking. Table 7 provides an overview of the results of the cross-case thematic analysis, displaying how themes are distributed across participant narratives.

<table>
<thead>
<tr>
<th>Table 7</th>
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<tbody>
<tr>
<td><strong>Cross-Case Themes Distributed by Participant</strong></td>
</tr>
<tr>
<td><strong>Themes</strong></td>
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<td>-----------------</td>
</tr>
<tr>
<td>Intentional Learning</td>
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<tr>
<td>Collaboration</td>
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<tr>
<td>Mentoring</td>
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<tr>
<td>Higher Order Thinking</td>
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**Intentional Learning**

Bereiter and Scardamalia (1989) define intentional learning as "cognitive processes that have learning as a goal rather than an incidental outcome" (p. 363). In this context, intentional learning occurred when people set out to learn something specific about playing Ingress. Intentional learners organized around a clear purpose, such as learning how to draw fields, and they monitored their progress toward the goals they had set. Participants in this study have
likewise demonstrated they recognized the ways they learned best, and that they actively sought those conditions. The strategies for intentional learning most frequently discussed by participants were asking questions and observing and imitating.

**Asking Questions**

All six study participants described a willingness to ask questions and engage in discussions when seeking information. Each participant spoke about the benefits of learning to play better as a result of these types of interactions; however, two players of long-standing indicated they are more frequently in the role of those being questioned. Although Adam and Brad recalled asking questions, particularly when they were new players, Matt, Sean, Erin, and Susan specifically described instances when they reached out to more experienced players for information. Participants recounted seeking out players who were known as experts in the aspect of gameplay about which each was interested. Brad noted, “It can help you learn more about how to play the game properly instead of just stumbling through it. You can ask questions to more seasoned players.” Matt found this out firsthand when he joined the space. As a new player, he wanted to learn how to draw impressive fielding plans like those used on large operations. He described his realization that there was one player who consistently drew the plans, and recalled how he made a concentrated effort to connect with her:

> It was reaching out to [Player 1] and saying, I noticed you can draw really well, do you mind showing me? And her teaching and showing me that. Some of [the answers] are not very evident in the game, the way the game’s made…

Matt further explained that the game itself encourages players to seek information, and fosters asking questions in the community.
For the last two years, Sean said has also been primarily interested in fielding, both the design aspect and the implementation. He said one of his goals was to become known for his fielding. Although he had some experience drawing plans and organizing operations, he recounted instances of learning better ways to execute his plans through questioning others in the space:

You can talk to people and you can learn more about how you could do this rather than the way you did it. Like, I’ve always thrown my fields from the anchors, but then I was speaking with [Player 1] about that and she said you can throw from the nodes as well. I didn’t know that, but by talking to her and asking how she did things, I figured out you don’t always have to throw from the anchors…She is a very successful fielder, so I started designing and throwing my bigger fields that way, especially if I’m doing it by myself, like she usually does.

Sean also noted that asking questions, elaborating on the topic, and participating in critical discussions had increased his ability to recall that information later. “I have really bad short-term memory, even about things I really want to remember. I feel like talking about my plans, the throw order, the nodes I’m using…asking people about that helps me keep things straight in my mind.”

Erin explained that she often asks others for information, highlighting that she’s learned more by asking questions than any other learning strategy. Erin credited her success not only with her readiness to ask questions, but also with her willingness to listen to the answers. “I was willing to listen to people, especially early on, and that's how I learned everything. I didn't learn it from reading…I don't necessarily find that to be all that useful. I would ask somebody.” Like
Erin, Susan said that questioning others has been the most successful learning strategy for her. She believes this is because it makes her more proactive about her learning, instead of passively being fed information.

![Image](72x516 to 323x610)

There’s another one up there, but I don’t think there’s anywhere to spread. The blue dot that shows up is where I’m standing, right?

*Figure 1. Blue dot. Screenshot of post written by Susan.*

Susan described how asking questions of experienced players has improved her gameplay:

If I have a question, I can go [to the space]. If I need to ask someone a question about anything, taking down or putting up a field, a link, or destroying a portal, I can get on there and ask. Like the [portals] that I’ve submitted that have been rejected, and I didn’t understand why. I can go on there and ask someone if I need to do something different…sometimes I’ve been told to resubmit, but to be careful about where the location is, or something like that.

Susan pointed out that her strategy has been successful, as her new portal candidates are often accepted after resubmission.

In each of the six cases, the participant described asking questions as part of an approach to improving gameplay. Although questioning was mentioned most often, other strategies for learning, such as observation and imitation, emerged. Experienced players were effectively modeling skills that new players wanted to develop, as described in the upcoming section.
Observing and Imitating

In response to questions regarding participants’ learning processes, learning by observing and copying others was the second most frequently mentioned strategy. “I was learning by observing them doing it was the biggest thing,” explained Matt. “There wasn’t like a ‘here’s how to do it,’ it was watching the experienced players do it, and saying, I wonder if I can do that?”

Brad described how he would read what others’ posted plans were and watch to see how that translated into actual gameplay. He explained how he learned to field by comparing the map to text-based plans players posted in the space:

People would communicate what their plans were, and if you paid attention to the intel, even without asking them direct questions, you could look at what they said they were going to do, then monitor intel and learn from that how to better plan fielding…

Brad said that he would ask questions when he needed to, but “it was more learning by observation.”

When he was describing his experiences learning to glyph hack, Sean explained how he used his badges and his score as evidence of progress toward reaching certain milestones. He related that his previous strategy was not allowing him to advance as quickly as he wanted to, so he sought ways to be more efficient. Sean learned to glyph hack properly from a document he read in the space, and the follow up posts of the player who originally posted:

I read that from [Player 1] actually. He had posted something about how he was trying to explain the whole thing behind the different names and how the phrases go together. Which, at the time I didn’t think anything about it. I’d say ok, here’s a kite, there’s a kite, there’s a box, there’s an A, there’s a V. There are three glyphs that go together, there’s
mind, body, and soul, and if you put it all together it equals human. I didn’t even think anything about that until he had said hey, have you ever thought about this? There’s mind, soul, body, human, it’s all right there. There’s past, present, future. There’s all kinds of things like that, that once I learned all the names of them, I tried it, I got really good at it.

Sean stated that he only learned about glyph names because another player posted the information. His desire to progress more quickly prompted him to learn the correct names, as well as memorize the sentences certain glyph patterns made.

Not only have participants acquired knowledge from text-based posts in the space, but they have also learned from screenshots, fielding draws, videos, and other documents. Sean explained that a video a player posted in the space inspired him to learn to fan field. This learning has had a profound impact on his gameplay, and has influenced the way he fields:

He had talked about doing this fan field and I thought what is that? I’m thinking well, I’m a fan of fields, so I can do this. Ended up that he posted a video...He was showing how to connect [the portals] in a certain order to where you can layer them and… Let’s say you have six portals. You throw from one portal to all the other portals, and you connect, say portal two to portal one, then portal three to portal one then to portal two and you get four fields out of that as opposed to getting two fields out of it by just connecting and making little triangles. You multiply the amount of fields, and of course you maximize the amount of points you get out of doing this.

Sean described how [Player 1] had a screenshot showing where [Player 1] had done the fan field.
He said viewing that image was the inspiration he needed to draw and post his own fields (Figure 2).

*Figure 2. Fan Field Design. Screenshot of completed design uploaded by Sean.*

Brad learned how big operations work by studying documents in the space, and then practicing what he learned. “The directors would upload files to let the players who would be throwing the field know which portals they would be using and how many keys would be needed and what your particular job would be in the operation.” Brad downloaded the files and copied the screenshots so he could study them. Then he tried to replicate the draw on his own map so he could better understand how the operation was supposed to work. Gaining an understanding of the artifacts others uploaded, and their purpose in the operation, allowed him to throw the multi-state field where he acquired his Onyx Illuminator badge. Susan recounted a similar experience,
where she used a plan for a field one of her sons had recently thrown. Using the documents and screenshots of her son’s completed field as a guide, Susan tried to deconstruct the operation to determine what to do to throw the same field (Figure 3). Although she was not successful, she said using the documents and trying to copy something that has already been done is easier than trying to field “from scratch.” Susan stated, “it’s easier for them to draw and figure out a plan maybe. Or they like it better, maybe, and I can follow directions.”

![Figure 3. Ingress intel map showing completed fields. Screenshot uploaded by Susan.](image)

**Conclusion**

In six out of six cases, participants found asking questions to be a successful strategy for learning. Four of the six learners additionally found observing and imitating other players was a profitable strategy in an approach to achieving mastery. In all six cases, the participants described instances of self-motivated, intentional learning designed to meet a goal they had set for themselves. Each of the players described how he or she acquired a variety of different skills to improve gameplay, such as designing, organizing, and executing fields, in addition to glyph
hacking, proper portal submission, and dismantling the other team’s fields. Although this type of independent learning is often more solitary, the following paragraphs show learners can still work with, and be supported by, other learners in collaborative endeavors.

**Collaboration**

Knowledge is situated within social practice and increases through communication and collaboration with others (Albers et al., 2016; Bommarito, 2014; Marone, 2015). Collaboration brings two or more players together in pursuit of a common purpose. In the Nashville Ingress affinity space, players may come together for a variety of reasons, including anomaly or mission day planning, fielding operations, and gear farms. While a single player can influence the team’s cell score, groups of players working together allow for larger, more impactful operations. All of the players taking part in the study described learning experiences that arose through collaboration with other players. Participants not only focused on short-term efforts with a specific objective, but they also explained the benefits of long-term collaborative relationships with dynamic goals.

**Short-Term Collaboration Efforts**

Each of the six participants recounted at least one instance where they collaborated with others in the space short-term. While Sean, Brad, Susan, and Erin concentrated on working with others during fielding operations, Matt and Adam emphasized partnering with other players during special events such as anomalies or global shards. In all cases, the participants indicated their learning, or the learning of others, had been impacted by working collaboratively.

Sean focused on the importance of collaborating with others in a single fielding effort. He explained how he uses the space to bring players together:
You can communicate as to “hey, this is a draw I have. I plan on doing it at 8:00 checkpoint on Friday. Anybody want to help? Can anyone take down these blockers?” [I] can post that link and people can click on the link and it will pull up what it’s supposed to look like on the Intel map. Then you can ask for volunteers. Hey, I need this taken down, can you come help me with this? Then basically, you get everybody together, and you just throw it.

Figure 4. Asking for volunteers with link to plan. Screenshot of post written by Sean.

He was quick to point out that these short-term collaborative efforts can benefit both the team and individual players. Not only will the team’s score be influenced by the operation, but an individual player can increase his mind unit count or obtain a badge. He describes going into the space and asking, “You guys want to throw this? You can get your Illuminator badge, build up your mu count. I’m here to help out, I’ve already got mine, but we’re looking to throw this…looking at a million and a half mu.” Sean will often go into the space and ask if anyone needs help getting badges, especially badges players can achieve for fielding.

![Figure 5. Throwing for Illuminator. Screenshot of post written by Sean.](image-url)
Brad also stressed the importance of short-term collaboration regarding badge work, specifically badges that are typically gained as part of larger operations crossing state lines:

When I obtained my Onyx Illuminator badge, the directors of the op would upload files to let the players who would be throwing the field know which portals they would be using and how many keys would be needed and what your particular job would be in the operation.

Brad explained that they would use hangouts or another space to gather information for the operation as well.

Susan and Erin similarly discussed how they learned through fielding with others. Although this aspect of gameplay takes place in the real world, as Sean and Brad have described, the preliminary planning and coordination must take place in the online space. When asked how other players in the space affected her learning, Susan explained how she would work with others on fielding operations to become a more effective player. “I can see the questions that people ask or they’re talking about a certain field, and if I’m in that area then I can maybe help kill a portal and help them out.” She suggested these experiences have taught her more about organizing and throwing larger fields with multiple participants. Erin also explained how she has used the space to improve fielding efforts. She noted, “I sometimes organize things…I definitely am active in terms of trying to talk about fielding.” She went on to describe how she, and others, learned how to layer fields by working together:

I started playing initially…just joining together with a couple people and fielding with them… I remember when we figured out we could layer fields. We never knew that.

And then I guess [Player 2] and [Player 3] on the south side. [Player 2] was always the
everywhere pretty much. We would throw from [The first portal] over to [The second portal], and [A third portal] in the middle and then up to like something north. So we would just make it make one field and then connect them in the middle, but we didn’t know we could go larger than that. We didn’t know about layering and then one day we tried it out, and like, oh my God, we can layer.

Since fielding is such an integral part of Erin’s gameplay, this discovery had a major impact on how she approached her role as part of the team. Her learning likewise influenced her priorities in the space and directed her topics of discussion with others.

Figure 6. I can layer. Screenshot of post written by Erin.

While some special events may include fielding as a component, Matt and Adam focused on collaborating on aspects of gameplay that occur during Niantic-sponsored events. The team recently participated in Dark XM events, which necessitated not only working with regular members of the space, but also with members who joined to assist the team in their efforts. Matt described some of the things he experienced during this operation:
We created a very specific channel for the event, that way those that were interested in it could join just that channel and not, and people that weren’t interested in it didn’t have to see the flood of texts about it. And so, we basically posted everything in there that was important for the event: the time we were meeting, where we were meeting, where the portal was gonna be, yeah, everything about it went there. And then we also used Telegram for more of the global stats, but we had our local Slack channel, but we also had people from global come in and help…

Matt explained that they welcomed assistance from those who had done similar events. Players with experience in previous Starbursts and the Dark XM events came into the space to offer pointers on situations they saw in other cities. Figure 3, shown below, portrays the AR view of Nashville on the Ingress intel map during the Dark XM event.

![Figure 3](image.png)

*Figure 7. Starburst thrown during Dark XM event. Screenshot of intel map uploaded by Matt.*
Adam likewise gave an example of how local team members collaborated to achieve a common goal during a special event. He described participating with local and global members during a shard battle, and explained how this brought about learning:

I remember sitting in my office at the time and I was doing some programming and keeping the map open because I was watching people punt this shard around in upstate New York. And so I was curious, and all of a sudden we helped coordinate, and this was really before we started having operators, is basically what we did. So we would talk to people online via their scanners from the web portal itself and then direct them to the right place to go. So, that ended up getting us to know people in other places that would share their knowledge.

Adam also emphasized the importance of learning specialized knowledge from others during these events. Although some of his experiences were of short duration, he indicated they had lasting effects. He recalled meeting and working with a cartographer who not only assisted them with anomaly planning, but whose involvement was also instrumental to both Adam’s and the team’s growth:

[Player 1] is the coolest guy, and when anomalies came to be a thing, we were looking for people who could make our game better. So, we took real world applications and applied it to the game. He made most of our maps that we’ve used for years. Now, he doesn’t play anymore, so he’s not the guy, but being able to find him, from a global resource was a really, really sweet thing because the game went, of course, from being your local neighborhood to the people in your city to other cities across the state, and then going “oh, these are all the people in America that are playing”. Then we started
talking, these are all the people that are playing in other countries, and then we started meeting each other. So, it instituted travel to go and hangout with somebody you’d only played with online, but that was a huge, huge, thing.

Adam said he believes these experiences have improved his ability to talk to people virtually. He remarked that building these relationships online has not only helped him in business, but also in his personal life.

**Long-Term Collaborative Relationships**

In addition to short-term, goal specific efforts, three of six participants discussed the importance of long-term collaborative relationships. Sean, Erin, and Brad all touched on the necessity of building ongoing working relationships with other players. In contrast to short-term efforts, where the goals are fixed and the relationships are of short duration, long-term collaborative relationships are more established, with changing goals. While the benefits to learning are not as immediately apparent, participants indicated that by working together, they were more willing to listen to others’ ideas, and they were able to jointly solve problems.

Sean suggested that long-term relationships have been crucial to his gameplay, as the area he considers his home base is the most populated in the city, and thus the most desirable area for fielding. Currently, the active fielders on the team are all located close to one another geographically, which he said makes it imperative to establish good working relationships with others in the area. When preparing to field, Sean said that he checked with other fielders in the area. He indicated it was of paramount important to “make sure that we aren’t going to conflict…because our areas are really close together. So, we’ll go back and forth saying hey, here’s an idea I have, what do you guys think?” Without this kind of cooperation and
collaboration among players, he believes it would be difficult, if not impossible, for anyone to field in such a contested area. Moreover, Sean recognized that without a core group of players building strong relationships with one another, the team could not gather for weekly gear farms. Eight players are needed to set the farm up for maximum effectiveness. Both he and Erin agree that these farms serve as a way to meet new players in real life, as well as strengthen ties in and outside of the space.

Like Sean, Erin has also found it helpful to build tight-knit collaborative relationships with others in the space. “You find people that complement your area geographically…You find people that play similarly to you, and your areas complement each other and you work together and you keep working together. You find your teams that just do well together.” She explained that working with a small group of like-minded players has allowed her to field more persistently.

![Screenshot of posts written by Erin, Matt, and Sean.](image)

*Figure 8. Fielding with friends. Screenshot of posts written by Erin, Matt, and Sean.*

Likewise, having a smaller group of players cognizant of fielding plans makes it less likely that those plans will be leaked. Erin jokes, “I’d say the thing you learn the most in this
game is paranoia.” Erin’s experiences have also taught her what she should and should not to do in her relationships with local players, underscoring the need to build solid partnerships with others in the space:

[Player 1] would purposely block because she wanted to play in the area, and she didn’t care about the team. So you have some people like that, that don't care about local stuff at all, they just want to be able to play. All I want to do is to play, and I don’t care about being part of the team. The person that gave me a problem was [Player 2]. So much so that during the anomaly, she started purposely blocking us. So, I inevitably, the way that I kind of learned how to fix things with her was I gave her the keys to my field and said, “Here throw this”, and she stopped doing it as much. The yelling and being like “What are you doing?” does not work, which is why I always tell people just don't, don't say that.

Erin warned that some people may listen, but most either shut down and quit playing, or get angry and randomly link across the team’s play area. She emphasized this type of behavior sabotages relationships and hinders opportunities for working together as a team.

Brad’s remarks echoed Sean and Erin, as he, too focused on the importance of building a strong network of collaborators in the local area. He noted that on a daily basis, it was necessary for players in close proximity to work together so each person has the opportunity to play and add to the cell score. A single person who was not a “team player” could keep many others from playing in the area. “If there’s a single player planning to do some fielding, they don’t necessarily let it be known, and it could kind of screw with other players trying to do stuff.” He pointed out that if the field covers a large area, anything on the map that is under that field is
virtually unusable by others. The mechanics of the game, therefore, make it critical for players in the area to be able work together long-term. Brad said he believes forming these partnerships allows players to react to problems in the area more quickly and decisively.

**Conclusion**

Participants in the study described how they learned from collaborative relationships with others, whether short-term or long-term. Six of six participants utilized short-term collaborative strategies to achieve goals such as implementing a fielding plan, obtaining or helping others obtain badges, and participating in various aspects of gameplay through special events. Three of six players also indicated that long-term collaborative relationships have continued to impact gameplay as they evolve over time. These relationships not only allow them to work together to solve problems in contested areas, but they also encourage players to listen to the ideas of those with whom they work closely.

**Mentoring**

In an affinity space, players of all skill levels contribute to the collective knowledge available in the space, and those with greater expertise mentor new players (Gee & Hayes, 2012). In the Nashville Ingress affinity space, experienced players assisted in the growth and development of new players by teaching them how to achieve through various aspects of gameplay. These included linking, fielding, attacking the other team’s holdings, capturing and modding portals, and glyph hacking, among others. Mentoring relationships were also instrumental in teaching rules and social norms, both explicit and implicit, for both the game and the space. Each of the players described participating in mentoring relationships, as either the mentor, the mentee, or both.
Mentoring Others

Mentoring new players came naturally to most participants in the study. Matt, Brad, Adam, Sean, and Erin illustrated a variety of different situations where they had opportunities to mentor new players. Matt, who has recently played more of a leadership role in the space, remarked on the value of experienced players teaching newcomers how to play the game, as well as encouraging them in the behaviors the group expects to see. He explained, “One thing that I’ve noticed is the importance of highlighting things you want people to replicate in general. In Nashville, it’s focusing on people who field really well, and highlighting that, and giving kudos, and that kind of stuff.” According to Matt, when you are running the space, it is important to focus on the behaviors that you want other people to replicate.

Although Brad considers himself a casual player, he indicated that he has acted in the role of mentor to new players. “I got one guy started, and he’s kind of a fiend. I’ve gotten a few people started in the game who have done a fair amount of work for the team.” Brad showed he is also willing to reach out to others when they are struggling with issues he has mastered, seen in his response to a teammate’s question about Portal Recon (Figure 9).

Figure 9. Location edits. Screenshot of post written by Brad.
Adam, as an early participant in the space, has also given a number of people their start in the game. He explained how mentorship impacted the way the game was played in the local area in the early days of the space:

Mentorship. That was a really big thing. Being able to share what you know with someone, so they don’t have to make the same mistakes you did. They can start where you already are and then move forward, and that was a huge game changer when we kind of instituted that. Like, well, I’ll go out and say hey to these new people and I will teach them how to do things, and being able to use it in different online spaces made a huge difference. You could walk them through those practices.

More recently, Adam has shown members of the space how to plan special events. As event planning used to be one of his primary roles, he is one of the most informed players in this facet of gameplay. He explained, “I taught [Player 1] things we used to do…through the [Regional] organization. It covered the east coast and the south. That’s what green parties are, and he’s starting to figure them out. It’s how you meet people, and make contacts.” Adam said he feels this is one way he is passing on the torch to the next generation of players interested in event planning.

In a like manner, Sean indicated that he considers his identity as a fielder gives him a certain responsibility in the space. Having expertise in this area, he suggested he feels obliged to share his specialized knowledge with new players who are interested in becoming successful fielders:

I’ve taught people how to better field. I’m good at explaining, like ok, this is the way you do a fan field. I can walk you through it, and you can see how it works. Sometimes even
meet up with people and run them through the whole process. I can teach them the best way to lay out their mods for defense or offence. How to level a portal for the maximum amount of resonators you can deploy on one…

In addition to his text posts in the space, Sean has also designed tutorials with screenshots to help new players learn other specialized skills, such as Portal Recon (Figure 4):

I’ve been doing a lot of Portal Recon. I’ve probably reviewed close to 15,000 portals, and the biggest problem is that people don’t put them in the correct location. You go to look for it, and it’s not there. They’ve put it in the middle of a field somewhere, because they don’t know how to do it. So I came up with screenshots showing hey, this is where you touch your screen, that’s where Ingress is going to put the portal. You don’t want the portal there, so you have to move it, and edit it, and then send it.

Sean recounted how he posted his tutorial on his Google Plus page, the faction’s global Google Plus page, and in multiple Slack channels. “I’ve gotten a lot of good feedback off of it,” he noted.

![Figure 10. Portal Recon portal location tutorial. Screenshot of tutorial uploaded by Sean.](image)
Unlike other participants, Erin communicated her feelings about mentorship in the space. She described how she enjoyed her role as a mentor, and that she felt good about her contribution teaching others. She explained, “So, I like teaching people things as well, not just learning. I like to then give my knowledge…” As a long-time player of the game, Erin said, “I’ve kind of switched roles to more of a teacher in this game than anything.” In this role, Erin said it is vital to figure out what players’ needs are, as their priorities dictate what she teaches them:

Your learning depends on your game. If you're looking for AP, it’s a totally different learning experience… it's all dependent on what you what you're going for. So if someone wants AP, I’m gonna teach them, the first three levels capture everything you can, link it up in a small area with this much portal density as possible…You have to learn how to maintain your gear. You have to learn how many keys you need. That's something else too. If you're not a fielder you're not gonna keep a bunch of keys. But if you are… Teaching persistence. That's probably my biggest thing. Teaching people how to properly annoy the other team, and not just in a shallow way.

Erin also shared her experiences making diagrams and other documents intended to assist new players. She described how she made tutorials about mission building so new players could benefit from her learning.

To Erin, how she teaches is as important as what she teaches. She emphasized that the one in the teacher role must try to build rapport and cultivate a relationship with the one in the student role. She revealed how her participation in the space taught her there is a right way and a wrong way to go about mentoring new players:
There's some people who try to teach but try to dictate instead of teach. We’ve got our main ones. We’ve got our [Player 1] and those sorts of people. You don't learn from that. People end up just ignoring them. It’s a combination of telling people ways to do things, listening, you know…sometimes you're right, sometimes wrong, sometimes you have to let them figure it out for themselves, and sometimes they never will.

She was adamant that chastising others did not work. Erin said, “I always tell people just don't, don't say that.” She stated that this kind of behavior drives people away or angers them enough to retaliate and make situations worse. Erin recalled that she was “one of these people…that would be like ‘hey don't throw links through there, I’m trying to make a field.’ I stepped back from doing that as much, it’s like look, this person doesn't know how to play.” These days, Erin said she tries to remember that everyone was new once.

**Experiences as a Mentee**

In five out of six cases, the participants shared occurrences where they were mentored by someone in the space. Susan, Matt, Erin, Sean, and Adam described these relationships taking place when they were new to both the game and the space. Likewise, as new players, their mentoring experiences primarily focused on the mechanics of gameplay. Adam was one of the first players in the area, and thus taught himself much of the mechanics of play. However, participating in the space brought him into contact with those who had specialized knowledge, allowing him to improve his game, even as an experienced player.

Susan emphasized that her sons, son-in-law, and daughter-in-law also play, giving them all different roles in guiding her. Susan joked, “My little granddaughter says, ‘Auntie taught you how to play.’” Although some of Susan’s learning naturally took place outside of the space, she
noted that members of her family taught her in the space as well. Susan pointed out that her son originally brought her into the space so she could get assistance when they were not in the same physical location. “We needed to communicate about different things in Slack… sometimes I am out, and [my sons] may be home. It’s easier for them to look up something for me, or I can ask about something I’ve looked up on the map,” Susan explained. Although she learned a great deal from her family, she said she also learns from others in the space every time she asks a question.

Although Matt made the initial contact with his mentor, he detailed how his involvement with this particular player impacted his participation and learning in the space. He said she not only facilitated his connection to others, but she also taught him how to design fields. “I started messaging [Player 1] because I saw her messaging other people… so I had originally gotten involved with Nashville that way.” The next time he needed assistance, he sought the player who had eased his transition into the space. “I didn’t know anything about fielding. Learning how to do the noding, and draws… [I] [reached] out to [Player 1] again… saying ‘I noticed you can draw really well, do you mind showing me?’ And her teaching and showing me that,” Matt recalled.

Erin’s experiences as a mentee were similar to Matt’s, in that the person who brought her into the space was the person who first mentored her. “Typically, how this starts is that whoever brought you into the game is the person that initially teaches you everything.” She explained that when new players begin to participate with others in the space, “somebody takes you under their wing…” Erin said she feels learning fielding has been the result of working with “specific people, and less the group as a whole. So, like [Player 1] or [Player 2]. It’s almost like there [are] particular people that are in a way, kind of like mentors to you…” Erin explained how she came
to understand not only the mathematics behind calculating checkpoint and cycle scores, but also how these scores corresponded to her own fielding:

[Player 1] I’ve learned a shit-ton from. I mean, he figured out all the math on the cycle early on, and we had documents, and we had spreadsheets and we had like, we could input data. He made all these spreadsheets we could input data and make predictions about ‘if they throw this much, this is what the score will be.’

Erin described how each time there was a spike in the score, she would make a note of it. She indicated that by determining what had happened, she was able to learn better strategies for scoring.

Sean, too, found that the person who introduced him to the space also helped mentor him in the intricacies of the game. “Whenever you first start, trying to figure out what if I do this, what if I do that, and then you talk to somebody and you get into the hangouts and the Slacks…,” he explains. “I got into Slack from [Player 1],” he adds. Sean described how he began learning from Player 1 due to an early attempt at fielding:

He had killed a couple of my portals, and I thought what the heck is this all about? He’s on the same team as me, why would somebody do that? Come to find out it was so he could throw bigger fields, cover up the area, and get us more points for the team. At the time I didn’t actually know that…and he explained everything to me. That was pretty influential in my learning experience.

Sean acknowledged that he also learned some of the nuances of large-scale fielding due to the mentoring he received from [Player 1]:
Early on I didn’t know how you could stack fields on top of fields. I just knew you could make a triangle here, a triangle here, and connect them, but I didn’t know you could actually have portals in a row and throw and throw and throw and throw and throw and stack them on top of each other. I actually learned about that from [Player 1] as well…

Sean remarked that if it had not been for [Player 1], he would not have learned to field so efficiently early on. He claimed this would have had a major impact on the team’s average over the last year, as players in his area contributed significantly to the cell score.

Adam made it clear that as one of the earliest adopters of the game in his local area, there were few others who could have been considered his mentors in the mechanics of gameplay. In his case, instead of learning the mechanics of gameplay from others, mentoring brought him to understand how real-life applications could be utilized in the game:

There is a woman that I met…working with her was a best practices really. Well, this is what happens when I hit an area that is completely covered by these many agents, and…this is how I remember her specifically explaining how she would psyche out other players, and that took us back to discussing The Art of War. Figuring out how to make people think you were going to do something, but then you were going to do something different, like you would attack a city, then turn the whole thing green…

He credits her tutelage with changing his perceptions about strategizing for anomalies and other major operations. As a former member of the armed forces, Adam says he was intrigued by her use of the ancient Chinese treatise on warfare and competition. He explains, “It was really cool to have someone bring that part into the gameplay itself. It made it smarter.”
Conclusion

Participants in the space indicated they had taken part in the reciprocal roles of mentorship. Five of six participants described either teaching the mechanics of the game, or guiding new players in understanding the rules and social norms. Five of six participants additionally discussed their experiences being mentored in the space, specifically in the areas of fielding and strategizing. While the majority of participants found influential mentoring took place early on, mentorship was shown to take place at any point during the players’ participation in the space.

Higher Order Thinking

Higher order thinking in the affinity space is supported by both the content of the space and the social interactions around the content (Duncan, 2010; DeVane et al., 2010). In the Nashville Ingress affinity space, systems and design thinking manifested in game mechanics that included, but were not limited to, Portal Recon, field design, and mission building. Systems thinking focused on the ways different players, who saw different parts of the system, came together and collectively began to see solutions that individuals could not. Design thinking necessitated working in an iterative cycle, as in field designing and mission building, and reflecting on those processes. Of the four primary cross-case themes, systems and design thinking had the least supportive evidence; however, the majority of cases demonstrated how systemic understandings and iterative reflection emerged as a result of participation in the space.

Systems Thinking

Adam and Sean opened up about their unique experiences with collective problem-solving in the space. In each of these cases, the participants explained how people with different
skills and different points of view found new ways of doing things. Adam detailed how systemic thinking served to help the team during special events like anomalies and city flips. Bringing people together to work on problems inherent in planning and orchestrating large scale operations gave the team an edge that would have been impossible without these different perspectives. Adam proclaimed that during city flips, it was necessary to “have all of those people coming together with all [their] points of contact, and figure out how we’re gonna hit Chicago…” He also expressed how important it was to take advantage of the space’s collective knowledge, gathering people to strategize and plan the various stages of the work during anomalies:

When anomalies came to be a thing, we were looking for people who could make our game better. So, we took real world applications and applied it to the game…being able to figure out zones, and best ideas, and how long it will take to get from point A to point B, and scheming and planning in the background…

When he reflected on how different people made up different parts of the whole, Adam explained how each person had a specific role that was important on its own, yet he realized there were no isolated elements in such a complex arrangement:

[Player 1] was really great at doing planning and motivating people to do things, and [Player 2], his thing was actually game design and figuring out how this is how we’re going to map out the actual thing, and how we’re gonna go do this. What I did was I made sure everybody got along.

He stressed that they all did important, but different, things, which allowed them to balance one another.
The space also introduced Sean to systemic ways of thinking about problems, offering him, and others, opportunities to collectively increase the knowledge base of the space. Sean described how players experienced interdependence, and learned to work as a part of the system, during field preparation:

The first thing we’ll do is pick two anchors, then pick the portals that line up and use those as nodes. Then [one of us] uses Intel to draw all this up, and then you can click Link, and it will create this really huge, long link and you can post that link and people can click on the link and it will pull up what it’s supposed to look like on the Intel map. Then you can ask for volunteers. Hey, I need this taken down, can you come help me with this?…I can check with another fielder in the area…and make sure that we aren’t going to conflict, have a conflict of interests, because our areas are really close together. So, we’ll go back and forth saying hey, here’s an idea I have, what do you guys think about this?

As each person who was necessary to throw the field weighed in, and options were discussed, they collectively began to see what must be done to accomplish the goal. Sean, as the field’s designer, pointed out that these discussions were helpful in leading the players to see the different roles and actions that make up the process of fielding. Likewise, the players’ conversations helped them all understand how their individual roles and actions worked together to implement field designs in the real world. “I have all kinds of fielding plans and I draw plans all the time. I’ve drawn plans for people up around [the east side], and people will ask me, hey, how can I field this? They ask me for advice, because they know that’s what I do…” However, he cannot, and does not want to, do it alone. He said he believes it is important to hear other
perspectives, and be willing to admit others have valuable insight, as this makes him a better
designer as well.

**Design Thinking**

Design thinking was demonstrated by the participants whose primary interests in the
game were moderate and large-scale local fielding, mission building, and Portal Recon. Sean,
Erin, and Susan touched on their design processes, as well as their reflections on those processes.
Since he began playing, Sean has been heavily involved in the fielding aspect of the game.
Although he said he has always had his own methodology for designing and implementing
fields, he admitted that participating in the space has helped him test and refine his processes:

…whenever you first start [fielding], trying to figure out what if I do this, what if I do
that, and then you talk to somebody and you get into the hangouts and the Slacks, you
can talk to people and you can learn more about how you could do this rather than the
way you did it. Like, I’ve always thrown my fields from the anchors, but then I was
speaking with [Player 1] about that and she said you can throw from the nodes as well. I
didn’t know that, I figured you had to throw from the anchors. As long as you have the
two anchors connected, you can throw from the nodes, you just have to start at the one
closest to the baseline and work your way up through there.

Sean further spoke about how he started designing and throwing his bigger fields that way, as it
was an easier method to use in his area, especially if fielding alone.
Sean also demonstrated how he evaluated his process of prepping each node for the field. He explained in the space how he tested his theory about the resources necessary to take down one of his own fields. He said he tested it to ensure that each portal would be as difficult to take down as possible.

Figure 12. Testing a theory. Screenshot of post written by Sean.
Susan’s design processes typically focused on Portal Recon. She described the iterative cycle she goes through to submit a new portal. She indicated that she begins by planning the location and narrative for portal she wants to submit. Then she travels to the location and tests her proposal by submitting the required information through the scanner. If her submission is rejected (Figure 6), Susan moves on to the evaluation stage. She said this is the phase when she takes her portal proposal to the space to request feedback from other players. She stated, “I’ve submitted [portals] that have been rejected, and I didn’t understand why. I can go [to the space] and ask someone if I need to do something different…”

We’ve reviewed your Portal submission and given the information you’ve provided in your submission, we have decided not to accept this candidate.

At this time, we’re not able to provide specific rejection reasons for each submission we review; however, the following are common reasons for rejection:

- The candidate is on our **PLEASE DON’T SUBMIT** list
- We couldn’t find evidence that the candidate meets any of our **ACCEPTANCE CRITERIA**
- The candidate was submitted in an incorrect location, and we weren’t able to find the right location

-NianticOps

*Figure 13. Portal submission rejection. Screenshot of email uploaded by Susan.*
When others offer feedback on her proposal, she said she thinks about the information and makes changes to her proposal based on others’ suggestions. She then travels to the location and re-tests her proposal, continuing this process until her proposal is deemed acceptable. She remarked, “sometimes I’ve been told to resubmit, and be careful about where it is or something like that. And then sometimes they’ve been accepted.”

Figure 14. Negotiating Portal Recon. Screenshot of posts written by Susan and Sean.

Like Sean and Susan, Erin described utilizing iterative cycles to improve both her processes and her final product, specifically in the areas of fielding and mission building. When she was first learning the different aspects of fielding, she was still a new player, inclined to take the advice of those more experienced. As her knowledge increased, she reflected on earlier processes she’d been taught, and recognized it was up to her to figure out her own ways of doing things. She recalled:

I started learning other things. Like I learned, well okay what [Player 1] said about this mod is not entirely true in this situation. So I started learning different ways to do things,
and kind of taking all that knowledge, putting it together, and saying well there’s a bit of truth in here, and just taking it all together and then testing it for myself.

Erin noted that she originally designed her fields based on information learned from one of her mentors in the game. As she tested her designs, she found discrepancies that caused her to change her initial design prior to implementation. She continued to re-test and refine her processes before settling on the measures she currently employs. She referred to the iterative process itself, sharing how she would also elicit feedback on her plans during the design phase:

It’s just like I'm going “hey, bub, over there in the corner, what did you think about that? Is that the right strategy?” I ask people's opinions on things. If I come up with an idea, I want people's opinions on it. Specific people that might be more knowledgeable in that area that than others.

Although the iteration cycle was somewhat different for mission building, she sid, “You learn from making mistakes, most of the time.” As she detailed how she designed her missions, Erin focused primarily on her thinking about the process, and how she recognized and rectified mistakes to improve outcomes. When she reflected on her strategy toward building missions, Erin said she “learned through trial and error that [what I was doing] doesn’t work. And that’s a lot of your learning after the initial stuff. It’s like you try it out, and then you’re like, I didn’t like this, and if I don't enjoy it then nobody else is going to enjoy it….”

Regardless of the type of project she described, Erin explained how she leveraged her mistakes for use as a learning tool. “We would make notes on it and every time there is a spike in the score would make a note on that and say what happened? Let’s not do this anymore.” The space allowed her to take a step back from her different projects, and gain some perspective on
the actual processes in which she was engaged.

**Conclusion**

Players participated in collective problem solving as they engaged in active inquiry during production and design processes. During anomaly planning and other large-scale operations, players demonstrated systems thinking by identifying underlying structures that drove events. Likewise, participants recounted engaging in reflective thinking and actions during design mechanisms of gameplay, such as fielding, building missions, and Portal Recon. Thus, in four of six cases, participants described instances where their activities in the space supported higher level thinking. Although higher order thinking skills were not explicitly discussed in the two remaining cases, this does not necessarily indicate that it is not present in some other form. This merely indicates there is currently not enough information to make a determination for or against.

**Conclusion**

The central question guiding the study is: *How do adults experience learning and engagement in the Nashville Ingress affinity space?* When describing their experiences in the space, participants most often spoke in terms of the social interactions that have impacted their learning. Participants focused primarily on conversations with others about their shared interests, indicating a focused type of social interaction where players have “a mutual focus of attention and engage in conversation” (Hall, 2018, p. 164). The analysis has revealed that through these interactions, participants have experienced instances of self-motivated, intentional learning designed to meet a goal they set for themselves. Additionally, participants in the study have described how they co-created knowledge through both short-term and long-term collaborative
relationships with others. Adult learners have also been shown to participate in knowledge sharing through mentorship. Finally, players have been found to engage in collective problem solving and the establishment of iterative cycles, both of which indicate the presence of higher order thinking.

**Trustworthiness of Findings**

The presentation of findings demonstrates rigor and trustworthiness by providing examples and quotations from the data. This is done to illustrate specific points, with the intent to bring the readers closer to the phenomenon (Halling, 2002; Moustakas, 1994). Similarly, the evidence trail is open to scrutiny to demonstrate the wealth of evidence, with verbatim excerpts to make findings transparent. (Smith et. al. 2009).

Results have likewise been validated by checking the themes against the complete textual record of the participant’s experience. This ensures results are explicitly expressed and/or compatible (Van Kamm, 1966). Additionally, each participant has been asked to review his or her transcript to check for accuracy. Participants have also vetted the findings to ensure those findings are congruent with that which the participant wished to convey (Creswell, 2012). Member checking has thus confirmed the credibility of both the collected data and the narrative account (Creswell & Miller, 2000).

Furthermore, the presence of artifact and photo-elicitation data aid in establishing trustworthiness and rigor in a primarily word-based project, as the data assist the researcher in tracing and corroborating the learning that takes place across modes and networked spaces (Gerber et al., 2016; Harper, 2002). The visual data presented in the findings substantiates the narrative data and proves there is convergence among multiple and different sources of
information (Creswell, 2007; Denzin, 1978). These validated findings serve to both clarify and support previous research, as detailed in Chapter 5 of the study.

**Discussion and Implications for Practice**

The purpose of this case study was to describe the ways adult participants interact with the Ingress video game affinity space as a type of informal learning. The research is therefore framed by both andragogy and Affinity Space Theory (AST). Not only was it imperative to demonstrate adult learning occurred in the affinity space, but it was also necessary to describe the acquisition of specific competencies relevant to participation in the affinity space (Gee, 2013; Curwood et al., 2013).

Case study methods were chosen because the focus of the work was on unique, real-life situations involving adult learners (Merriam, 1998). The study employed a multiple case study approach to comprehensively explore adult learning in a natural setting, with each case bringing learning and relationships together for study (Stake, 2013). A single learner was considered a bound unit, representative of “an instance drawn from a class” (Adelman et al., 1983). Each instance brought to light properties of the class to which the instance belonged, which speaks to the purpose behind case study research (Guba & Lincoln, 1981). Cross-case analysis allowed the researcher to examine common themes between cases. The analysis yielded four principal findings about learning in the space: players were intentional about learning, learners co-created knowledge with others through collaborative partnerships, members participated in mentoring relationships, and participation supported the development of higher order thinking skills. The following pages demonstrate how findings are situated within the literature of andragogy, including specific adult learning models and strategies. Findings will likewise be situated in the literature of AST to help the reader understand how findings clarify or problematize research in
the fields of andragogy and AST. Subsequent paragraphs will discuss the implications of the findings for practice, concluding with recommendations for future research suggested by the study.

**Intentional Learning**

Adult learners demonstrated they are intentional about learning in the space. Participants indicated that by both asking questions and observing and imitating other players, they could meet learning goals they had set for themselves. Players described how they acquired a variety of different skills to improve gameplay, each according to his or her interests and desires.

**Situated Within Adult Learning Theories**

Participants’ willingness to seek out knowledge in the Nashville Ingress affinity space is congruent to Knowles’ (1980) view of the adult learner as an independent, self-directed personality. Data suggest players in the space view learning as an activity that they can do for themselves, rather than something that happens to them in a formal environment (Zimmerman, 2001). The literature suggests adult learners typically know what they need and want to learn (Knowles, 1989), which has been supported by participant narratives. Statements such as, “I wanted to learn to play better…to connect with more experienced players,” and “I needed to learn to draw fields,” indicate players’ activities in the space are organized toward their personal goals.

Participant narratives likewise speak to adult learning principles regarding internal motivation (Knowles et al., 2005; Merriam & Caffarella, 1999). Research indicates the adult learner’s inherent desire to succeed is more motivating than other factors requiring the acquisition of knowledge (Aderinto, 2007). This holds true in the Nashville Ingress affinity
space, as participation is catalyzed solely by learner motivation. In each case, joining the space was shown to occur due to players’ wishes to become more invested in the game.

Findings are also consistent with the literature on self-directed learning models, wherein adults plan, carry out, and evaluate their own learning experiences (Merriam, 2002; Merriam et al., 2007). Recent research on the impact of computers on self-directed learning has indicated that the incorporation of technology may enhance learners’ self-directedness, performance, and engagement (Rashid & Ashgar, 2016; Kim et al., 2014). Study data concur, as players in the space described how they utilized the affordances of technology to engage with both the content and with colleagues. Participants specifically discussed document sharing, instant messaging, video conferencing, bots, and cloud storage in planning and conducting independent research relevant to their interests.

Additional research in the field of adult learning has also emphasized the impact of technology on cognitive aspects of SDL. The literature has shown SDL allows individuals to focus effort on useful information they need to acquire, uncover information otherwise inaccessible through observation, and may enhance the encoding and retention of content (Gurekis & Markant, 2012). Findings of this study revealed multiple instances of participants utilizing technology to uncover specific information they want to acquire, and at least one instance where retention of content was enhanced by participation. As Sean explains, “I feel like talking about my plans [in the space], the throw order, the nodes I’m using…asking people about that helps me keep things straight in my mind.”

In keeping with previous research on SDL, learners demonstrated how they evaluated their learning during iterative processes. When confronted with problems, participants assessed
what they learned by testing during gameplay to determine where inconsistencies might lie. There is also evidence indicating players in the space evaluate their progress through badge work, which makes learning visible and validates accomplishments as players level up.

Some critics of andragogy have suggested not all adults are self-directed, and that adults with little knowledge about a topic will naturally be more dependent upon the instructor for knowledge (Cercone, 2008). Findings of the study indicate that although adults in the space will request information of others, they are not dependent on formal teacher-learner transactions for knowledge. Each of the participants described how he or she has learned specific skills as a result of watching video tutorials, reading documents, studying the intel map, and deconstructing others’ plans. Critics have also argued that SDL research fails to take context into account (Brookfield, 1985; Kasworm as cited in Merriam & Brockett, 2007). Findings add to the literature on SDL, as case study methods have allowed the researcher an opportunity to explore and describe learner self-directedness in the context of the Nashville Ingress affinity space.

**Situated Within Affinity Space Theory**

Findings that underscore the independent learning activities of adults support the view of affinity spaces as places where participants voluntarily come together to engage in purposeful activities around their interests (Gee & Hayes, 2012). Affinity spaces encourage a view of learning where individuals are proactive learners. While asking for help from the community is welcome, it does not replace a person’s responsibility for his or her own learning (Gee & Hayes, 2012). Accordingly, adults in the space sought information to assist them in developing specific skills and abilities necessary for success in the game. While participants have shown they will ask questions of others when they deem it necessary, the activities described in all cases suggest
players are in control of their learning in the space.

Findings likewise corroborate the literature on just in time learning, whereby participants seek knowledge from the group about a specific problem that has occurred during gameplay (Gee, 2003). For instance, Susan’s declaration, “well, I need to know how to do this field, and I know somebody has drawn a plan up, so I’m gonna go here and look at the plan and see what I need to do…,” is an example that serves to clarify what “just in time” learning looks like in the space.

Participant narratives are also consistent with affinity space literature speaking to the use of dispersed knowledge. Participants are encouraged to independently search for information about the topic at other sites and other spaces (Duncan, 2012; Duncan, 2013). Players are directed to books, movies, and other sites of interest through recommendations from others in the space (Gee & Levine, 2009). In practice, participants began in a single location, the Nashville Ingress affinity space, and gravitated to satellite locations, such as YouTube, Fev Games, Reddit, Telegram, and Google Plus, in order to research topics not included in the affinity space.

The literature has also shown affinity spaces encourage participants to become less dependent on others in the space as they move along the trajectory from consumers of knowledge to producers or designers (Gee & Hayes, 2012). Narrative data and screenshots of player created artifacts have shown participants in the space are producers of knowledge. Players also regularly upload fielding and missions plans to the space, indicating they embody the role of designer, which will be discussed in greater detail in relation to higher order thinking.

Conclusion

Findings have been shown to be consistent with principles of andragogy concerning self-
directedness and internal motivation. Evidence from the narrative also supports previous research on self-directed learning that speaks to adults’ responsibilities in planning, carrying out, and evaluating their learning. Moreover, the study adds to the literature on SDL due to its emphasis on self-directedness in the context of the affinity space. Findings are likewise congruent to literature on AST, which suggests individuals are proactive learners who become less dependent on others as they move along the trajectory from consumers of knowledge to producers or designers. Narratives also agree with the position that adult learners independently search for knowledge on dispersed sites, and seek knowledge from the group about specific problems that occur during gameplay. Although findings indicate adult learners act independently, this does not preclude working with others to achieve mutual objectives, as discussed in the following paragraphs.

**Collaboration**

Learners have been found to co-create knowledge with others through collaborative partnerships. Participants described the benefits of both short-term collaborative strategies and long-term collaborative partnerships in the achievement of mutual goals. These relationships assisted players in creating a sense of community, maximizing resources, lowering energy expenditure, and responding to problems more quickly and efficiently.

**Situated Within Adult Learning Theories**

Findings detailing collaborative relationships align with andragogical principles regarding learner motivation. As noted above, adult learning is motivated by internal factors, one of which is the drive to succeed (Aderinto, 2007). In collaborating with others, players have stated they can accomplish more than they could have accomplished alone, particularly when it
comes to large scale operations. Descriptions like the following make it clear participants understand they must work with others to succeed: “You can ask for volunteers. ‘Hey, I need this taken down, can you come help me with this?’ Then basically, you get everybody together, and you just throw it…”

The literature likewise suggests instruction should support the intrinsic motivation to learn by providing an environment that encourages learners to be active participants (Aragon, 2003). Consequently, when the learning environment is collaborative, respectful, and informal, adults will respond more positively, and will be more motivated to attempt learning tasks (Cercone, 2008; Lieb, 1991). Study findings demonstrate that the Nashville Ingress affinity space is an environment that is conducive to informal, collaborative relationships. All participants offered ample evidence of their experiences collaborating with others on fielding operations, missions, Portal Recon, and special events like anomalies. Although half of the participants noted the space had been contested in the recent past, none of this number described the current environment as detrimental to their learning.

Additionally, study findings on collaboration in the space reinforce the literature on adult learning in technologically mediated spaces. Research has shown online spaces allow learners to collaborate in contextualized, authentic learning activities (Auyeung, 2004; Martens et al., 2007), share organization and responsibility for learning with others (Diaz & Bontenbal, 2001; Merrill & Young, 2012), and develop a shared vision for the work that would motivate participation (Gilbert & Driscoll, 2002). In the Nashville Ingress affinity space, players collaborated to improve gameplay during special events, and share the organization and responsibility for planning and implementing large scale operations. Participants also described how the team
fosters a shared vision for team strategy. This is a tactic intended to motivate others to participate in anomalies, as preparation makes up the bulk of the work during these events.

It is important to note that previous studies suggest collaboration may not be enough to catalyze learning. Research indicates that allowing distributed team members or classmates to simply collaborate on tasks is not enough to produce engagement and learning, and that social aspects of asynchronous environments must be created to allow relationships to form (Leinonen & Bluemink, 2007). In contrast, study findings demonstrate that players perceive that they learned through short term collaboration efforts with colleagues of differing abilities. In the space, players privileged specialized knowledge and demonstrated ability, while relationships are backgrounded. In only half of cases were collaborative relationships found to evolve into long term partnerships.

When compared to existing studies, another noticeable difference in the results of this study is the emphasis on off-line collaboration as a crucial component of the overarching work of the space. While some offline affinity spaces were discussed in the literature, previous research has focused on games that are played strictly online. As Ingress is an augmented reality game, there is a real-world environment in gameplay that must be taken into account. Participant narratives demonstrated learning occurred as a result of online collaboration, yet it must be understood that the culmination of online collaborations take place in a type of dispersed satellite space.

**Situated Within Affinity Space Theory**

Principles of AST likewise indicate knowledge is situated within social practice and grows through authentic communication and collaboration with others (Albers et al., 2016;
Bommarito, 2014; Marone, 2015). Not only do players have to participate to learn, but they have to participate with others to acquire authentic expertise (Steinkuehler, 2010). Findings demonstrate players learned a variety of skills relating to various aspects of fielding, defensive modding, competitive strategy, and cartography as a result of critical discussions and collaboration with others. In all cases, collaborative relationships originated in the local space; however, players from across the US, Europe, and Australia were welcomed into the space to share knowledge with players at the state and local levels. These accounts are compatible with the literature on affinity spaces demonstrating learners collaborate and create content with friends in the same room, as well as players across town or across the globe (Barker et al., 2015; Meyers et al., 2013). The literature also stated these collaborative opportunities facilitate the building of relationships with a wide network of peers, and allow learners to experience a sense of belonging in the wider community of practice (Lammers, Curwood, & Magnifico, 2012). As the literature suggested, players in the Nashville Ingress affinity space were found to build long term relationships with others as a result of collaborative opportunities.

Additionally, the findings speak to literature suggesting affinity spaces have the potential to help participants bridge social capital through connections with others (Barker et al., 2015, Ellison et al., 2011). Participants discussed how joining the space has fostered networking, and “finding more people that had similar interests.” This suggests making connections in the space allows players to not only access new information and advice, but also to come into contact with players whom they would otherwise be unable to reach (Barker et al., 2015).

Furthermore, the research on AST indicates the space allows participants to gain individual knowledge and to use and contribute to distributed knowledge (Gee & Hayes, 2012).
Findings of the study demonstrate players have learned individual knowledge about the mechanics of gameplay, such as how to stack fields, mod portals, or map routes. Players explained they also learned design-related tasks, like how to draw different types of fields and how to create missions. Participants offered their knowledge to the team’s collective knowledge during collaborative efforts including local and state-wide fielding, building new missions, and anomalies and other special events. During these experiences, players of differing abilities were shown to “act with others and with various mediating devices…in such a way that their partial knowledge and skills become part of a bigger and smarter network of people, information, and mediating devices” (Gee, 2003, p. 23).

**Conclusion**

Findings corroborate adult education literature on both adults’ internal motivation for learning, and optimal environments for promoting active participation. Data also support research on adult learning in technologically mediated spaces through an emphasis on contextualized, authentic learning and shared responsibility. In contrast to previous studies, findings show learning can take place as a result of collaborative efforts when specialist knowledge is privileged, and relationships are backgrounded. Another difference in this study lies in the evidence demonstrating off-line collaboration as a crucial component of the work when the space surrounds the topic of AR games. Findings are also consistent with AST research indicating increases in knowledge and social capital occur through authentic communication and collaboration with others. Participant narratives are likewise in agreement with literature suggesting players gain individual knowledge and contribute to distributed knowledge by acting
with others. Subsequent paragraphs will discuss additional ways findings emphasize creating and sharing knowledge with others.

**Mentoring**

Adults participate in mentoring relationships in the space, undertaking reciprocal roles at different points in their learning trajectory. Players have described their experiences teaching the mechanics of the game, as well guiding new players in understanding the rules and social norms. Learners act in the role of mentee in the space, acquiring specialized knowledge from those more experienced in the area of interest.

**Situated Within Adult Learning Theories**

Although findings are generally consistent with principles of andragogy, they also add to the literature stream on adult learning, demonstrating the affordances of adult peer mentorship in informal, online environments. Adults define themselves in terms of their unique experiences, suggesting they have a significant investment in the value of those experiences (Knowles, 1980). Declarations such as, “I like teaching people things as well, not just learning. I like to then give my knowledge…,” and “People ask me for advice…it’s what I’m known for, my fielding in the area…I’ve taught people how to better field. I’m good at explaining, like ok, this is the way you do a fan field…” offer support for the literature’s position that adults want to use what they know, and they want to be valued for that knowledge (Fidishun, 2000).

Furthermore, in andragogical practice, teachers and learners are viewed primarily as peers, with the teaching-learning transaction being the responsibility of both the teacher and the learner (Knowles, 1980). This practice holds true in the Nashville Ingress affinity space, albeit informally. Findings offer evidence of participants teaching new players the basic mechanics of
the game, yet new players are also expected to know what they want to learn. The following statement illuminates one aspect of the shared responsibility in action, “[The learning experience] is all dependent on what [the player in the learner role] is going for. If someone wants AP, I’m gonna teach them, the first three levels capture everything you can link it up in a small area with this much portal density as possible...” Likewise, participants with greater expertise in certain areas guided new players who expressed an interest in the participant’s areas of specialization. This was most evident in the process of field design, which requires mathematical, as well as technical, skill.

Concerning their roles as mentees, participants described an environment where they could work closely with another player in the space to acquire the information they desired. As one player explained, “someone takes you under their wing...” Players positively described their experiences as mentees, indicating significant investment in the both the learning and the mentoring relationship itself. These findings suggest that peer instruction supports motivation by providing an environment that encourages learners to be active participants (Aragon, 2003). In accordance with the literature, participants demonstrated that a collaborative, respectful, and informal climate yields more positive responses from players attempting to learn specific tasks (Cercone, 2008; Lieb, 1991). Findings detailing how players learn how to field are also consistent with the view that adults prefer hands-on, interactive instruction where they can apply new learning to issues that are of personal and professional significance (Robles, 1998).

**Situated Within Affinity Space Theory**

Findings indicate participants act as both mentors and mentees in the space, which agrees with affinity space literature regarding reciprocal roles. AST research has shown that at times
participants may be teachers, and at other times learners. Participants may support others, or be the ones receiving support. Likewise, experts have a desire to “pay it forward” in the space, helping others to achieve the same success they have found (Gee & Hayes, 2012). This is also true of the participants in this study, demonstrated in such declarations as, “Mentorship. That was a really big thing. Being able to share what you know with someone, so they don’t have to make the same mistakes you did. They can start where you already are and then move forward…”

AST research has also shown participants bring intensive knowledge to the space, wherein they and others gain and share specialist knowledge and outside experiences (Hayes & Lee, 2012). Players in the space have been found to develop and display specialized knowledge in one or more areas, such as learning cartography and using the maps to plan anomaly strategies, discovering how to utilize military tactics, and building apps to assist in organization. Participants describe learning these advanced skills through mentoring relationships, and sharing their new knowledge through peer mentoring as well. Findings thus conform to research demonstrating that affinity spaces allow participants to share their expertise, while providing support for players at all skill levels (Curwood, 2013).

Mentoring relationships in the Nashville Ingress affinity space occurred between expert and novice, regardless of the ages of the players. Participants in the study ranged from 32-67 years of age, and in each case, the players revealed teaching, and learning from, people both older and younger. These findings corroborate the position that affinity spaces have the potential to level the playing field, making it possible for younger people with more experience to provide support to older beginners (Gallagher et al., 2006). Furthermore, AST literature has shown there
is flexibility in leadership roles, where leadership is more of a teaching role with a focus on providing resources and mentoring, and fostering apprenticeship relationships (Albers et al., 2016; Bommarito, 2014; Gee & Hayes, 2012). Participants embodied the role of teacher in the space, providing resources and partnership to peers, as indicated. Although there is little evidence to support research that players equate mentorship with leadership, there is some indication that players regard those with advanced skills as de facto leaders in the space.

Conclusion

Findings align with principles of andragogy indicating experience is a resource for which adults wish to be valued. Data also support the andragogical view that teachers and learners are viewed primarily as peers, with the teaching-learning transaction being the responsibility of both. Additionally, findings agree with research demonstrating peer instruction supports motivation by providing an environment that encourages learners to be active participants. Data correspond to AST literature as well, specifically in areas of reciprocal roles, mutual support, and sharing specialized knowledge with players of all ages and skill levels. Finally, findings differ somewhat from previous research on the relationship between leadership and mentorship in the space, as there is little evidence to support research that players equate mentorship with leadership.

Higher Order Thinking

Participation in the space has been found to support the development of higher order thinking skills, specifically systems thinking and design thinking. Players demonstrated that they recognize underlying structures and patterns of events, as well as participate in collective problem-solving during production and design processes. Likewise, participants engaged in
reflective thinking and actions during mechanisms of gameplay that privilege the creation of content.

**Situated Within Adult Learning Theory**

Findings indicate systemic understandings and iterative reflection emerge as a result of participation in the space. Players described how people with different skills and points of view came together to develop new ways to solve the problems of planning and orchestrating large scale operations. Findings are in line with research that has suggested adults are more problem-centered than subject-centered in their approach to learning (Merriam & Caffarella, 1999). When participants discussed how they planned and strategized together, they indicated that players who were part of the work were more focused on immediacy of application. As in adult learning literature, the learning process in the space emphasized improving learners’ abilities to deal with problems in their current situations.

Players have likewise shown how iterative processes allowed them to capitalize on prior experiences. Previous experiences have been shown to allow adult learners to build on earlier knowledge by relating new concepts to past events (Cercone, 2008). This indicates learning is a continuous process, based on experience (Kolb, 1984). As research suggests, participants who focused on designing fielding plans, missions, or Portal Recon submissions demonstrated learning with each iteration of the project. Furthermore, scholars have indicated best practices involve the implementation of problem-solving activities that not only empower learners to be self-directed (Merrill & Young, 2012), but also encourage learners to reflect on experiences to build new knowledge (Merriam et al., 2007). Findings are consistent with the literature, in that it has been found as players gained new knowledge through feedback, their learning was
incorporated into the design of the preceding version. This process resulted in a new iteration that was also tested. Participants in the study explained how reflecting on feedback from peers not only helped them to name the problems they were experiencing, but also to solve the problems. Iterative cycles in the space have likewise been linked to self-directedness, as players utilized the processes of feedback and reflection to evaluate previous learning.

**Situated Within Affinity Space Theory**

Participants of the affinity space gain what Gee (2003) refers to as extensive knowledge. Players construct extensive knowledge by becoming involved in many or all stages of the work, learning numerous, overlapping functions, and recognizing the undertaking as a whole system, aside from their role in it (Gee, 2003; Duncan, 2010). Participants involved themselves in multiple phases of the work, particularly when learning fielding operations. Players indicated these operations nearly always required more than one player to find success. Therefore, it was not unusual for players to participate in operations as designers, key collectors, and operators. Players were also required to take down blockers or throw links that create the field in real life. In this way, learners began to see how multiple factors could come together in an affinity space to produce mastery (DeVane et al., 2010; Gee & Hayes, 2012).

Findings also demonstrated learners were provided with opportunities to work together to solve problems inherent in planning large scale operations and anomalies. Issues included but were not limited to devising tactics, allocating human capital, and determining how to maximize in-game resources. This supports the position that active inquiry offers opportunities for participation in collaborative problem solving (Squire, 2011; Voulgari & Komis, 2010). Likewise, research has found as participants engage in collective problem-solving, they are
judged based on what they can do, and how the knowledge they hold can be utilized to solve problems for the entire community (Gee & Hayes, 2012). This was especially true for participants whose interests lay in fielding, as fielding has the greatest potential to gain points for the team. Narrative data have shown players skilled in this area were often called upon to leverage their abilities for the good of the team, underscoring the view that situated systems thinking is organized around opportunities for participants to become experts (DeVane et al., 2010).

Additionally, affinity space literature has suggested that the space allows players to embody the role of designer (Gee, 2003; Duncan, 2010; Squire, 2011). Research has also shown that this embodiment necessitates reflection on the design processes themselves (Duncan, 2010). Moreover, learning through designing indicates working in an iterative process where participants can take a step back from their individual projects and gain perspective significant to design processes in general (Duncan, 2010; Squire, 2011). Findings of the study agree with previous research, as it has not only been shown that participants assumed the role of designer in the space, but also that they reflected on their processes. In pursuit of mastery, players designed fielding plans, tutorials, missions, or Portal Recon submissions that encouraged the use of iterative processes. Participants explained that requesting peer feedback was one of the ways they stepped back from the project to seek perspective. Player narratives also demonstrated learners reflected on that feedback as part of the process, subsequently incorporating new insight into the project.

Finally, findings demonstrate social interactions influence design processes in the space. Players recounted numerous instances where social interactions with their peers not only
changed the content of the space, but also changed the way that they viewed the design processes of gameplay. As one participant noted, “You can talk to people and you can learn more about how you could do this rather than the way you did it.” Findings agree with Gee’s (2003) assertion that if the people around the learner “encourage reflective metatalk, thinking, and actions in regard to the design of the game, of video games more generally, and of other semiotic domains and their complex interrelationships, then this, too can encourage and facilitate active and critical learning and thinking” (Gee, 2003, p. 47).

**Conclusion**

Findings coincide with adult education research indicating adults are more problem-centered than subject-centered in their approach to learning. Narratives also support the view of experience as a resource, whereby adult learners to build on earlier knowledge by relating new concepts to past events. Data likewise corroborate research on adult learning in online spaces, which suggests learners must reflect on experiences to build new knowledge. Additionally, study findings are closely related to previous findings in AST literature focusing on the acquisition of extensive knowledge, collective problem solving, and systems thinking. Moreover, results agree with previous literature emphasizing affinity spaces foster situated embodiment, the implementation of iterative cycles, and reflection on design processes. Finally, findings offer support for previous research demonstrating social interactions can encourage and facilitate active and critical learning and thinking.

**Summary**

The andragogical model presents assumptions that define characteristics of adult learners. Each of these assumptions was justified by study data. Adults in the Nashville Ingress affinity
space have been shown to: exhibit self-directedness, value experience as a resource, seek to learn things to deal with current situations, emphasize problem-centered rather than subject-centered learning, act due to intrinsic motivation, and recognize what they need to learn. The results of the study indicate that players in the Nashville Ingress affinity space experience learning in accordance with the methods and practices of adult learning theory.

As noted previously, the more evidence to demonstrate the Ingress affinity space meets the criteria outlined in Affinity Space Theory, the stronger the argument for the space as efficacious for learning. Findings demonstrate that the Nashville Ingress affinity space: shares a common primary endeavor, does not segregate by age or ability, facilitates both consumption and production, transforms content by social interaction, encourages and values multiple types of knowledge, fosters reciprocal roles, and allows participation in many forms and from many routes. Multiple forms of data therefore establish that the Nashville Ingress affinity space has the hallmarks of an environment conducive to learning.

Findings therefore lead to the conclusion spaces like the Nashville Ingress affinity space may offer practitioners a way to: capitalize on learner interests, increase collaboration and active learning among adults in online learning settings, integrate technology into the adult curriculum, and foster critical engagement with media paratexts. Narratives demonstrate that the Nashville Ingress affinity space makes many different learning paths available, suggesting that bringing affinity space culture into adult learning environments could open the door for fundamental change in formal adult learning,
Recommendations for Practice

Recommendations for Practitioners

Data show the potential of video game affinity spaces for adult learning, but it is crucial to understand how these spaces may be leveraged for intentional use. There are a number of affordable sandbox and building games for PC, console, or mobile that can be appropriated for educational use, while encouraging the type of cooperative gameplay found in Ingress. As the attributes of affinity spaces have proven effective for adult learning, the online learning climate around these games must be designed to emphasize social learning aspects, and increase opportunities for co-construction of meaning and knowledge through a similar interaction process.

It is also important to note that teacher knowledge and ability has been shown to be a barrier to technology use in the classroom (Hew & Brush, 2007). Therefore, teacher training programs must first ensure future instructors are taught how to use the technology necessary to create and facilitate affinity spaces. As specialized knowledge may be needed to utilize web 2.0 tools in educational settings, teachers must be led not only to understand the impact of specific technology on student learning, but also to master the skills needed to successfully integrate this technology into their classrooms. The following paragraphs offer concrete examples for utilizing affinity spaces around games in adult learning settings.

Optimized for formal education. Just as Ingress could be utilized in mathematics and design courses, Minecraft could be used to teach history. For example, the instructor could require learners to work in teams to build accurate models of structures with historical significance. The online classroom serves as the affinity space, providing learners with a place to
collaborate and take part in discussions about relevant issues. Learners should be encouraged to contribute to forum threads and participate in real-time group chats, not only about the tools of the game, but also about course content important to the design and planning process.

Collaboration in the Nashville Ingress video game affinity space has been shown to both aid individuals in the acquisition of authentic expertise, and increase the collective knowledge of the group. Collaboration in the space has also been shown to facilitate learning by fostering a culture that values experience and multiple types of knowledge. Additionally, active participation with others encourages involvement in many or all stages of the work, which findings show fosters systems thinking skills in players. Results have likewise indicated the space encourages reflective metatalk, thinking, and actions in regard to the design of the game, which catalyzed critical thinking processes in study participants.

Business courses could use a game such as Roller Coaster Tycoon, which is a simulation game requiring the learner to build and manage an amusement park. The shared online space could again function as the affinity space, facilitating the types of social interactions around the game that have been shown to bring about learning in study participants. As learners discover how to build and manage a successful business, they are not only engaging in authentic activities that are immediately relevant, but they are also both consuming and producing content. Practices must encourage giving and receiving constructive feedback as part of an iterative creation process, proven to be fruitful for participant learning. Engaging in the shared course space provides opportunities for mentorship relationships with those both more and less skilled, which has likewise fostered learning in study participants.
Moreover, video games could be reimagined for English courses, allowing learners to critically engage with game narratives. For instance, games from The Legend of Zelda franchise could be reimagined as films, or Final Fantasy games could serve as novels. Learners could work toward these goals collaboratively, harnessing wikis as a type of affinity space. This process affords learners with opportunities to articulate knowledge and act with others and with various mediating devices, such as fan fiction or walk-throughs. Posting common problems or brainstorming in class wikis engages participants in collective problem-solving, as well as the feedback process, both of which have been found to foster higher order thinking in study participants. To aid in the acquisition of dispersed knowledge, learners should be required to access information about the topic at other sites, or other spaces, through recommendations and links from colleagues in the space. Study participants have found searching dispersed sites has afforded them greater knowledge than the space alone. As narrative content on the games is not typically housed in the course affinity space, learners will be encouraged to undertake independent research, which has proven indicative of self-direction in study participants.

**Optimized for nonformal education.** In other learning spaces, virtual world games along the order of Second Life may provide greater scope for learning, as these simulated environments can be utilized regardless of subject. Instructors can build virtual workplaces or professional development centers where participants’ avatars can interact and engage in real world scenarios. In accordance with principles of andragogy, open world spaces privilege the immediacy of application of knowledge, and can offer a more relevant learning experience for adult participants. Some recommendations for educational use include orientations and onboarding, workplace training, and simulated emergency protocol.
Although most virtual world games have messaging capabilities, the affinity space must be able to provide real-time collaboration. To maximize learning, the space should encourage short-term and long-term collaboration, both of which were shown to be beneficial in the learning processes of study participants. Instructors should therefore employ communication software such as Slack, Fleep, or Ryver, as the platforms allow real-time chatting and content sharing. Users would have the ability to both consume and produce content, and participate in mentoring relationships. These activities have been found to encourage higher order thinking skills in study participants as the players perform the reciprocal roles. Content sharing likewise fosters self-direction, as players in the study have been shown to independently seek information shared by others.

**Recommendations for Instructional Designers**

Although the applicability of a video game affinity space may be limited due to course topic, it should be noted that any online space where people come together in pursuit of a common endeavor has potential for adult learning. Findings show that adults who are interested in the content of the space will voluntarily join the space to pursue knowledge. Study findings also demonstrate that social interactions in the space increase cognitive engagement, suggesting a need for spaces where learners wish to gather. Online schools should therefore ensure learners have designated spaces where they can come together over shared interests. To increase collaboration and active learning among adults in online learning settings, the affinity space should be utilized as another web 2.0 tool. As part of an instructional strategy, its use provides instructors with a tested method to facilitate adult interaction in online classrooms. More specifically, instructional designers must build and deploy courses with embedded affinity
spaces. This would allow learners to share information about course topics, as well as build relationships with colleagues, in a less formal environment than the traditional online course forums.

To further benefit learners in online environments, designers should create multiple spaces in the learning management system itself. These spaces should not be tied to a specific course, but rather they should be defined by topic. Study findings demonstrate that adults willingly seek out knowledge when they are intrigued by the subject. Multiple spaces would allow learners greater agency to choose content relevant to their needs, thus speaking to the adult learner’s intrinsic motivation to learn, demonstrated by participants in this study.

**Recommendations for Future Research**

Upon consideration of these findings, it will be crucial for future scholars to further interrogate players’ perceptions of the value of the learning they acquire in the space. While players recognized the benefits of participation, the research questions only scratched the surface of players’ perceptions of the value of what they had learned. Players’ ideas about value will not only speak to their personal goals, but also to their need to know how something will benefit them (Knowles, 1989; Lieb 1991). To leverage the potential of video game affinity spaces to meet the adult learner’s need for a collaborative, respectful environment (Cercone, 2008; Lieb, 1991), it is also important to determine whether adult learners’ sense of community is directly related to their engagement, as has been suggested for young people (Pellicone & Ahn, 2015). Researchers must likewise interrogate whether community is also related to performance in the space, and whether peer mentoring influences relatedness and perceptions of community.

Moreover, research on the effects of online social interactions on adults’ face-to-face interactions
would provide greater insight on an underexplored benefit of participation.

Additionally, if scholar-practitioners are to explicate the affordances of affinity spaces for use in formal learning environments, it is necessary to link specific learning outcomes to the experiences of the participants and establish empirically derived design standards to guide the implementation. Furthermore, it is critical for researchers and scholars to develop instruments to assess the types of learning advanced by these spaces. Researchers must also investigate adult learners’ critical engagement with text in the space. Findings indicate that participants articulate tacit knowledge and create and disseminate information, yet it remains unclear to what extent participation might support the adult learner in acquiring specific competencies related to both traditional and digital literacies.

Study findings show that players take on a new identity when approaching a new area of expertise in the online environment. Findings likewise point to previous literature suggesting that as learners became more proficient in the shared work, they experience feelings of competence, enabling them to develop identities in relation to others in the space (DeVane, 2012). It cannot, however, be assumed that the process will be the same as it is for young players. Therefore, further research on player identity development is necessary to uncover how adult players make choices about their identities, and how those choices impact adults’ perceptions of performance. More importantly, it is imperative to understand how choices about identity influence adults’ social interactions, which were definitively shown to catalyze learning and engagement in the space. In light of these findings, further study is necessary to understand how privileging the types of social interactions inherent in affinity space participation could impact performance, involvement, and retention in higher education and professional development programs.
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Appendix A

Interview Protocol

Introductory protocol

Interview protocols are not only a set of questions, but also a procedural guide to the interview process (Jacob & Furgerson, 2012). To ensure the work adheres to ethical standards, potential interviewees must be made aware of the study’s aims, what their participation entails, that their participation is voluntary, and that their anonymity will be protected (Robinson, 2014). The following information will be shared with potential interviewees to allow them to make an informed choice about participation:

You have been selected because you have been identified as someone who has experienced learning in Ingress fan sites, which may also be referred to as affinity spaces. My research project focuses on the learning experiences of adults who participate in these types of online spaces. Through this study, I hope to gain more insight into adult learning in informal environments. Hopefully this will allow us to identify ways in which games-based learning can be utilized for adult learning in other settings. I would like to speak with you specifically about your learning experiences in the Nashville Ingress affinity space, which is networked across different mediums including but not limited to Slack, Google Hangouts, Zello, and Telegram.

Because your responses are important I want to make sure to capture everything you say. With your permission, I will record the interview and take brief notes. Do I have your permission? All responses will be confidential and only a pseudonym will be used when quoting from the transcripts. The transcription service and I will be the only ones privy to the tapes which will eventually be destroyed after transcription. To meet our human subjects requirements at the
university, you must sign the form I have with me. Essentially, this document states that: (1) all information will be held confidential, (2) your participation is voluntary and you may stop at any time if you feel uncomfortable, and (3) we do not intend to inflict any harm. Do you have any questions about the interview process or how your data will be used?

The interview should last no more than 45 minutes. During this time, I have several questions that I would like to cover. If time begins to run short, it may be necessary to interrupt you in order to push ahead and complete this line of questioning. Do you have any questions at this time?

**Interviewee Background**

Researchers should ask interviewees basic background data as a way of breaking the ice and easing into the interview (Jacob & Furgerson, 2012). These initial conversations can begin building a sense of trust between the researcher and interviewees (Creswell, 2012; Jacob & Furgerson, 2012). By arranging questions in order from the least difficult to those that are most complex, the researcher can slowly foster confidence and trust with the participant (Jacob & Furgerson, 2012). The interview will begin with these general questions before moving to topic specific questions.

1. What is your name and your age?
2. Tell me about your background.
3. How long have you been playing Ingress?
4. How did you start playing the game?
Interview Questions

In accordance with the literature on qualitative interviewing techniques, the interview should be semi-structured, and questions should be open-ended and expansive (Jacob & Furgerson, 2012; Kvale, 1996). This will allow participants to not only take the questions in different directions, but it will also allow the interview to flow more freely (Jacob & Furgerson, 2012). The following script will be used as a guide during the interview process:

I am particularly interested in the types of learning experiences that take place in the Ingress online fan sites/affinity spaces. I would like to hear about your participation on these sites in your own words. I am going to ask you some questions about your experiences. If you mention other players, please do not mention their real names, but say that you are giving the person a pseudonym.

1. Tell me about the Nashville Ingress fan sites/affinity space(s) you participate in.
   - Which site(s) do you participate in the most? Why?
   - To what extent do you consider yourself active on these site(s)?

2. How did you come to join the Nashville Ingress affinity space?

3. What are some of the benefits of participation in the space?

4. Tell me about a situation when you used the resources of the affinity space to learn something you wanted to know.
   - Walk me through your learning process.

5. Tell me about other learning experiences you’ve had in the space.
   - Describe how this experience came about.

6. What impact have other players in the space had on your learning?
• How have other players helped/hindered you?

7. What do you feel you contribute to the space?

8. How has participation in these fan sites influenced your gameplay and/or your life outside of the game?

9. Do you have any questions for me? If not, thank you for your participation. I appreciate your time.
Appendix B

Participant Interview Transcripts

Pseudonym: Matt
Date: 3/25/2018

[Begin Audio]

Interviewer: If you don’t mind, I would like to get a bit of background information first.

Matt: No problem.

Interviewer: How old are you?

Matt: 35

Interviewer: What do you do for work?

Matt: I’m a programmer. Primarily deal in software development.

Interviewer: Ok, what’s your educational background?

Matt: I have a Bachelor’s degree in programming.

Interviewer: I’m particularly interested in the different types of learning in affinity spaces. How did you start playing the game?

Matt: I had found it online at Reddit.com, and from there I had looked at what the local community looked like on Google+ and found that both the RES and the ENL were both about equal, so I downloaded the game, installed it, and chose the ENL.

Interviewer: How long have you been playing?

Matt: I guess about three years. I’m level 15 now.

Interviewer: So, tell me about some of the sites you participate in. Think about any place where people in the Nashville area congregate, such as Hangouts, JGG, Slack.

Matt: So, Hangouts is huge, we also collaborate on G+, Telegram, Slack is probably our number one for Nashville and the state.

Interviewer: Out of all of these, which one would you say that you participate in the most?

Matt: The most would be the state Slack.
**Interviewer:** Although you’re in the state Slack, do you also participate in the greater Nashville area Slack?

**Matt:** Yes. Mostly local in Nashville.

**Interviewer:** To what extent would you consider yourself active?

**Matt:** Very, extremely active. Obsessed.

**Interviewer:** So what does that mean? You log in multiple times a day?

**Matt:** Yes. Multiple times a day for hours at a time. Probably need to find an AA group for this game.

**Interviewer:** How did come to join Slack? I know you started and own the JGG Slack, but how did you get started?

**Matt:** For me, the reason I started the state Slack was just for the outreach opportunity, and to bring people together in just one platform. Like you were saying, we have different platforms, Telegram, Hangouts, Google +, Slack. It was about consolidating everyone so that we could communicate a little easier.

**Interviewer:** That definitely makes sense with everyone so spread out.

**Matt:** They’re so spread out, and anytime you need something done in Knoxville, somebody has to find somebody that knows somebody in that area, and it’s a headache.

**Interviewer:** So I guess you didn’t really join it, you really built it. Let’s think about other groups. How did you end up joining those?

**Matt:** So, the Nashville one was just about, I got really interested in the game and I had read online that there were communities. They did farms, and dinners, and so I actually reached out to other players because the way the game is, you can see them playing, and so I would just message. Actually I started messaging [Player 1] because I saw her messaging other people, trying to set up the dinners and stuff, so I had originally gotten involved with Nashville that way.

**Interviewer:** So you reached out originally to them?

**Matt:** Yes

**Interviewer:** So, what do you think, what are some of the benefits? You did name communication with other parts of the state. What are some of the benefits for participation in this space, like for you personally?
**Matt:** I think just the social aspect of it. Meeting different people, and seeing different areas.

**Interviewer:** What about when you first started?

**Matt:** Same thing, just meeting people. Even though it’s an online space, there’s also the one-on-one and group activities as well.

**Interviewer:** When you originally started, you reached out to [Player 1]. Was there a goal like “oh I want to learn how to play the game better?”

**Matt:** Yeah. I wanted to learn to play better. Tried to connect with more experienced players, because I was just, you know, derping…and still do, I should say.

**Interviewer:** So there can be all sorts of resources in the space. People can be resources, documents. So, tell me about maybe a situation when you used the resources of this space to learn something that you wanted to know. If you can think of anything specific, or anything general.

**Matt:** Probably just learning more about the game, and kind of the endgame of what it is that we’re trying to do. With building fields, because when I came into the space, I didn’t know anything about fielding. Learning how to do the noding, and draws, and they would teach draws. That’s probably the biggest thing.

**Interviewer:** So, when you went on there and you learned how to field, maybe you can think about it and walk me through your learning process. Like did you go on there and look at documents, did you ask questions?

**Matt:** I was learning by observing them doing it was the biggest thing. There wasn’t like a “here’s how to do it”, it was watching the experienced players do it, and saying “I wonder if I can do that?” and then reaching out to [Player 1] again and saying “I noticed you can draw really well, do you mind showing me?” And her teaching and showing me that.

**Interviewer:** So, what are maybe some other learning experiences that you’ve had in this space? It doesn’t have to be in any one particular space, but if there’s anything you learned how to do?

**Matt:** Yeah, fan fielding. Learning about the Ultra Strikes, like when you stay on the portal, like on top. I didn’t know that. Putting the resonators close, if you campfire one, you get the alert before they can destroy it. Even stuff that’s not really related to the game, just because of the way that Ingress works, it’s the real world, and learning about different areas. Learning some of the history and cultural stuff, that’s really interesting. Even stuff, you know, you’ve lived here your whole life, and it wasn’t until this game, like, wow, there was these Indian mounds in Brentwood.
Interviewer: So that stuff came about because you were interested in it, and so you did your own research, and you asked questions?

Matt: Yeah, absolutely. Especially in an area that I wasn’t familiar with. That kind of fostered that. Reaching out to someone and saying “hey, tell me more about this”, and they know a lot more about their local areas.

Interviewer: What impact would you say that other players have had on your learning? As you mentioned, you observed people, and you’ve asked questions. How have other people, maybe contributed to that, or how people may have helped or also hindered you?

Matt: Yeah…no, not our team. [laughs] I don’t know how much this pertains to the research, but hindered… There’s been a big hinderance in the state group because the groups become very, I don’t know a better word to say, “clique-ish?” And then when I brought in the state group, it became kinda competitive almost, even though we’re the same team, they competed with each other. So, that was a bit of a hinderance in trying to make it more collaborative with that certain group, that made it less collaborative, trying to pull people away from it.

Interviewer: Would you say, you mentioned [Player 1]. So who else would you say you’ve learned from?

Matt: [Player 2] would be a big one, because she fields so consistently. She probably fields, the most and has fielded the most of anybody. Every single day. She’s maybe the only other player that is more obsessed than me, on a daily basis. So, just watching her, and learning from example from her posting stuff in the community, and then watching how she observes, even in the game. She observes the RES players, and just taking cues from that and learning. Like if you see these players over here and they’re out of their area, that kind of mindset.

Interviewer: What do you feel like you personally contribute to the space? Other than having started the space, what about gameplay and things like that?

Matt: I try to do, there’s a larger space where you have like General where everyone is, and there’s something about creating smaller spaces that create a very tight group of people to play with each other. So what I’ve done is, in Chattanooga, and Nashville, and Memphis, is create smaller areas and kind of break them up to foster playing together.

Interviewer: I know you field also, so would you say you field pretty often?

Matt: Off and on, yeah. You get burned out.

Interviewer: So, how would you say participating in these spaces has maybe affected your gameplay or your life outside the game? You mentioned some of the social interacts and touched on that.
**Matt:** This has been a huge thing for me, because I’m an introvert, and so having this space and then doing the social stuff has actually helped with that. It’s helped in my job, actually. In being able to communicate in meetings because usually I’m the type that is very shy and quiet and not going to say anything. But being out and social has actually helped that part of my life and I’ve come out of my shell.

**Interviewer:** Has it impacted the way you play the game at all?

**Matt:** Yeah. Yes, because you start to consider other people. People have areas in this game, and territories. So trying to think about, if I play in here, I don’t want to mess up anything they’re doing. So checking with them, it just makes you more aware of other people I guess.

**Interviewer:** So, yesterday you guys did the Dark XM deal. Did you participate in this and tell me about did you use the resources of the space to bring that about? Tell me about that, and how did that happen?

**Matt:** So, just about how we collaborated?

**Interviewer:** Yeah, how you guys maybe used the space to collaborate, or if you did, or any space.

**Matt:** So, we created a very specific channel for the event, that way those that were interested in it could join just that channel and not, and people that weren’t interested in it didn’t have to see the flood of texts about it. And so, we basically posted everything in there that was important for the event: the time we were meeting, where we were meeting, where the portal was gonna be, yeah, everything about it went there. And then we also used Telegram for more of the global stats, but we had our local Slack channel, but we also had people from global come in and help who have done other events who’ve had experience with Starbursts and the Dark XM events already who could come in and kind of give us pointers on what they saw in other cities. So we had a little bit of both.

**Interviewer:** There’s something else happening next weekend, so tell me about that.

**Matt:** So, that one is OpSec, but it’s Knoxville and it’s basically the same thing we did in Nashville. There’s a portal that’s been selected by Niantic and we’ll all try to link into it. So, right now what we’re trying to do is use the spaces to gather as many people to go to those events. Like figuring out who can do ride sharing, who wants to go but doesn’t want to drive, and then just collaborating on it.

**Interviewer:** Is there anything else you have to tell me? Have you mentored anybody in the game?

**Matt:** So, I kind of like scour the whole map. We have 14 different cells over Tennessee, and I look for new ENL players to pop up, and I try to build some rapport because there’s the whole
OpSec thing with the game. So I try to build some rapport and also use the local communities to kind of say “hey, can you meet this person?” Once they’ve been vetted by someone that we personally know and trust, we trust that person, then they trust that person, then we bring them into the community. So there’s some mentoring, even locally, that I’ll do when they come in. People have questions, and this game, there’s so many aspects of this game, so yeah, I do that.

**Interviewer:** What do the new people usually ask?

**Matt:** It’s usually the same stuff. Like why can’t I throw this link? Learning about blocks and should I throw this? It’s not fully deployed and I’m trying to link, you know, just the dynamics of the game, and just learning that. Some of them are not very evident in the game, the way the game’s made and it does kind of foster people asking questions in the community. I mean, there are still things that I learn. One thing that I’ve noticed is highlighting the things you want people to replicate in general. In Nashville and in Jolly Green Giants it’s focusing on people who field really well, and highlighting, and kudos, and that kind of stuff. When you’re running the space, focusing on the behaviors that you want other people to replicate.

**Interviewer:** Well our time is almost up. Did you have any questions you wanted to ask me before we close?

**Matt:** No, I think we covered it all.

**Interviewer:** Great. Thanks so much for coming today. I really appreciate it.

**Matt:** You’re welcome. It was really interesting looking at the game from this perspective.

[End audio]

**Pseudonym:** Sean

**Date:** 3/10/2018

[Begin Audio]

**Interviewer:** I just want to collect a bit of background information from you if I may.

**Sean:** Sure. [inhales then exhales vapor]

**Interviewer:** How old are you?

**Sean:** 42

**Interviewer:** Tell me about your background. What do you do for work?

**Sean:** I’m a claims adjuster for [an automotive company].
Interviewer: Ok, what’s your educational background?

Sean: Well, I have a degree from [A technical college] and I have my ASE, Nissan and Infinity Master. Right now I am going to [university] to get my Bachelor’s in business.

Interviewer: How long have you been playing Ingress?

Sean: It will be 2 years in May. I’m level 16.

Interviewer: How did you start playing the game?

Sean: My brother introduced me to it when we were in [another city] for my niece’s birthday party. I joined the Enlightened so I could work with my brother and my brother-in-law. And some other guys we know from my hometown.

Interviewer: So tell me about the Nashville ENL Ingress fansites or any of the fansites that are for the greater Nashville area. What are these sites that you participate in?

Sean: I use Hangouts quite often. I use Slack just about as often, and pretty much check them about every day. I’m in multiple channels in Slack. Some of them are closed channels, specifically for areas I play in, like Antioch. We have our own channel that is locked and you have to be invited into it. I helped start the channel, actually, with [Player 1] and [Player 2]

Interviewer: Where do you participate the most and why?

Sean: Mostly in Slack. Hangouts is good, but there’s not as much communication. There’s not any specific hangouts for the great Nashville, or surrounding areas. There are odds and ends hangouts, like Rutherford county, but they’re not very active in there. We have all these channels, but mostly they use Slack as well.

Interviewer: To what extent would you say that you’re active? Like how often do you log on?

Sean: I log in just about every day.

Interviewer: Would you say you’re on there a lot? Do you spend a lot of time on there?

Sean: Yeah, I’m on there quite often. I’ll go through and see if there are any messages, especially if they send out a message for the entire channel. It’s usually something of at least some importance, and those alerts always pop up. Or if I’m tagged in a message, those always pop up so I instantly check those.

Interviewer: So how did you come to join Slack? You can tell me about Hangouts too. How did you get into any of the spaces, or all of them?
Sean: The very first Hangout I got into was the Tadpole room. I was invited by [Player 1] back whenever I was maybe level 5 or 6 and had started playing out in Smyrna pretty much on a daily basis. He sent me a message and I thought “huh. I never thought anybody would actually ever communicate with me, you know?” I ended up getting in there and could ask all kinds of questions, and at the time you couldn’t get into Slack unless you were at least a level 8 player, which I was later told wasn’t true, you just had to go through vetting and people had to meet you and say you were a real person or whatever. Anything like that but I got into Slack from [Player 2] got me the invitation to get into Slack, with [Player 3]. I ended up meeting [Player 3] and he sent me the invite. That’s how I got into Slack. [inhales then exhales vapor]

Interviewer: What are some of the benefits of participating in Slack?

Sean: With the different channels, it varies. Like in the general channel, it’s usually people just b.s.’ing, talking back and forth to each other, whereas you get into a specific channel like [a local channel], it’s made for fielding. You can communicate as to “hey, this is a draw I have. I plan on doing it at 8:00 checkpoint on Friday. Anybody want to help? Can anyone take down these blockers?” Anything like that. There’s a lot going on in different channels.

Interviewer: So, what I hear you saying is General is communication, like social type stuff?

Sean: In the General, it’s usually, usually social. People saying things like, hey, what are you guys doing today, or does anybody want to go out for dinner tonight? Or I’m gonna go to Cookeville in a few weeks, does anybody want to join me and do this mission that’s going on down there? Or say things like hey, can somebody upgrade these portals or charge this stuff, it’s dying. Stuff like that.

Interviewer: In other channels, maybe things are a little more specific?

Sean: Right. Especially in the fielding channels. I’m in the [local] fielding channel, the [2nd local] fielding channel, and I think the other one is a [3rd local] fielding channel, and it’s all related to that specific region.

Interviewer: So, when you’re going to field, how does something like this go down?

Sean: Ok, well in order to do a field of, well, I wouldn’t say that magnitude, but considering the amount of mind units captured, it concludes that it is pretty substantial. The first thing we’ll do is pick two anchors, then pick the portals that line up and use those as nodes. Then you use Intel to draw all this up, and then you can click Link, and it will create this really huge, long link and you can post that link and people can click on the link and it will pull up what it’s supposed to look like on the Intel map. Then you can ask for volunteers. Hey, I need this taken down, can you come help me with this? Then basically, you get everybody together, and you just throw it.

Interviewer: So how does working with people in those channels help facilitate something like that? How does being in slack help that happen?
Sean: Getting other agents that are available to come out and say hey, do you guys want to throw this, you can get your Illuminator badge, build up your mu count. I’m here to help out, I’ve already got mine, but we’re looking to throw this and we’re looking at a million and a half mu. Anybody that wants to do it, come on out, give me a shout. I can check with another fielder in the area, [Player 1] and make sure that we aren’t going to conflict, have a conflict of interests, because our areas are really close together. So, we’ll go back and forth saying hey, here’s an idea I have, what do you guys think about this?

Interviewer: Ok, so those big long hyperlinks that you post, what are those?

Sean: Anyone that clicks on that hyperlink, it will take them to the Intel map and they can see what the design is. So they can see the design and what might be in the way already. It draws yellow lines to show you what you’re connecting, and anything that’s in the way, it will highlight it in red, showing you that, hey, this has to be out of the way or you can’t do this.

Interviewer: You’re telling me about a situation where you’re using the resources of the space to learn something that you wanted to know, like other people’s thoughts are on the field, or what bigger plans are or whenever you were new.

Sean: Whenever I was new, I asked everything I possibly could to learn. I had no idea that you could do something besides just throw a random link. I remember early on I just had a portal key and I hit link, and it was right in the middle of a whole bunch of crap. What did you just do? I had a key so I threw it, so I learned that that’s not cool. [laughs] You could be blocking somebody, not on purpose. Like, in our area here, we used to go around and make little single layer fields all the time. I remember we were at the library, and we had thrown a field. Next thing I know, I get a message in COMMs saying “hey, wait right there.” [Player 1] shows up and says hey man, do you think you could kill this in a little while because we have a big field planned. This was before I was in Slack or Hangouts, so I had no idea, but I was able to take care of it. So, he was able to get in touch with me and we took care of that.

Interviewer: Once you joined the space, thinking about other people as resources, you mentioned that you asked a lot of questions. What was your learning process like? Maybe walk me through something you learned by being in the space with other people, and using resources in there.

Sean: Early on I didn’t know how you could stack fields on top of fields. I just knew you could make a triangle here, a triangle here, and connect them, but I didn’t know you could actually have portals in a row and throw and throw and throw and throw and stack them on top of each other. I actually learned about that from [Player 1] as well. Since then, that is what I plan. Fields where I can layer them and get the maximum amount of mu out of everything. The same goes for a thing called fan fielding, where you can connect portals in a certain order and get more fields out of it than if you just made, you get more than even if you just layered fields. You can get upwards of 2-3 times what you would just regularly fielding. [Inhales and exhales vapor]
**Interviewer:** Assume I’m showing you a picture of a fan field you’ve posted. How did you learn about how to do that?

**Sean:** I actually heard about that from [Player 1] in one of the Slack channels when we still had the Nashville ENL Slack that we were all active in, before JGG started. He had talked about doing this fan field and I thought what is that? I’m thinking well, I’m a fan of fields, so I can do this. Ended up that he posted a video from YouTube of this guy, from England I think he is. He was showing how to connect them in a certain order to where you can layer them and… Let’s say you have six portals. You throw from one portal to all the other portals, and you connect, say portal 2 to portal 1, then portal 3 to portal 1 then to portal 2 and you get 4 fields out of that as opposed to getting 2 fields out of it by just connecting and making little triangles. You multiply the amount of fields you get out of doing this. I mean, I do it at the battlefield weekly. [Player 1] had a screenshot from where he had done the fan field out there, and it was his first one. You can tell the difference of the single layer fields versus layered fields or fan fields by how much darker, well not exactly darker the green gets, but how if it’s a single, you can see through it, and the more layers you put on top of it the more dense it becomes. It gets more opaque.

**Interviewer:** What are some more learning experiences you’ve had in the space? Maybe describe how something came about. It doesn’t have to be something now, but maybe something when you first started. What’s something else that you’ve learned through participating with other people?

**Sean:** I learned that with every portal, there are different mods you can use to modify the portal. For instance, there’s a link amp which doubles the length of the link you can throw. Then there’s the SoftBank Ultra Link which increases the amount of links you can throw off the portal by 8. I didn’t know that, and actually I think I learned about it from [Player 1] in one of the Slack channels early on. I was asking her about how to use that because she was always using that at the park. She fields it up all the time and there’s always a SoftBank on one portal and I didn’t know why. It’s description says, adds, you know, adds up to however many link per portal, plus it’s supposed to strengthen the links. No one really explained how many links you could do until I actually talked to her about it.

**Interviewer:** Would you say that you mostly learn things by yourself or being with other people has impacted the way you’ve learned things?

**Sean:** It’s been a little bit of both, really. A lot of it I picked up before I ever met anybody. I just had to do it, because whenever you first start, trying to figure out what if I do this, what if I do that, and then you talk to somebody and you get into the hangouts and the Slacks, you can talk to people and you can learn more about how you could do this rather than the way you did it. Like, I’ve always thrown my fields from the anchors, but then I was speaking with [Player 1] about that and she said you can throw from the nodes as well. I didn’t know that, I figured you had to throw from the anchors. As long as you have the two anchors connected, you can throw from the nodes, you just have to start at the one closest to the baseline and work your way up through
there. So I started throwing my bigger fields that way, especially if I’m doing it by myself. Which is how she does it because she mostly does her fields by herself. That’s where I learned to throw from nodes rather than anchors.

**Interviewer:** What do you feel that you personally contribute to these spaces?

**Sean:** I’ve taught people how to better field. I’m good at explaining, like, this is the way you do a fan field. I can walk you through it, and you can see how it works. Sometimes even meet up with people and run them through the whole process. I can teach them the best way to lay out their mods for defense or offence. How to level a portal for the maximum amount of resonators you can deploy on one. Once you hit level 8, you get so many resonators and you can only put so many on a portal. If you start out with all level 1 resonators, you can get 45 resonators on one portal by upgrading each resonator slot all the way up as high as you can do it.

**Interviewer:** [Shows screenshot of tutorial] Tell me about this thing you made for OPR…

**Sean:** The portal location? Just recently, Ingress has re-opened portal submissions, but there’s no badge for it, which sucks. I’ve been doing a lot of portal recon. I’ve probably reviewed close to 15,000 portals, and the biggest problem is that people don’t put them in the correct location. You go to look for it, and it’s not there. They’ve put it in the middle of a field somewhere, because they don’t know how to do it. So I came up with screenshots showing hey, this is where you touch your screen, that’s where Ingress is going to put the portal. You don’t want the portal there, so you have to move it, and edit it, and then send it. I posted this on my G+ page, I posted it to Slack in 3 or 4 channels, and also to the ENL G+ page, and I’ve gotten a lot of good feedback off of it. I even sent the link to one of the RES players here, [Player 1] and told him to spread it throughout whatever RES Slack and Hangouts, so that those people know how to submit these portals correctly. I’ve gotten to the point that I’ve reviewed so many, that I just deny them because they don’t know how to submit them. I actually even sent it to Niantic for them to review. [Inhales then exhales vapor]

**Interviewer:** [Shows screenshot of fielding plan] Let’s talk about your fielding plans…

**Sean:** I have all kinds of fielding plans and I draw plans all the time. I’ve drawn plans for people up around Hermitage, and people will ask me, hey, how can I field this? They ask me for advice, because they know that’s what I do, I field. And whenever I do it, I do it big, and I do it right. People know that, it’s what I’m known for, my fielding in the area. It’s how I made a name for myself. I’ve made plans, mostly local. I’ve made a few plans that are statewide. I had one get pulled off that covered a really, really huge area from Columbia to Nashville to Smithville, TN. I didn’t participate in it because it was at the wrong time for me to do it, and would have taken way too many viruses to do it. They somehow pulled it off, and it was something like 5 million mu. It didn’t go through checkpoint, but it did get thrown. I plan fan fields all the time. I work in Smyrna and Murfreesboro, so I’m always looking at different places out there, like Stones River Battlefield, Hilltop park, Roselawn cemetery, Evergreen cemetery, Mapleview cemetery. I’ll
take each place and use every single portal to figure out the best way to maximize my fan fields, and that’s where I will throw from every time.

**Interviewer:** Do you post those fields for other people sometimes?

**Sean:** I have, but I can’t do it as a draw because there are too many links. You can only have 40 links for the Intel draw, so it’s kinda difficult to do that. I usually just show the picture of the after effect.

**Interviewer:** And you’ve written it out.

**Sean:** Yeah. Link from there to there then there to there then there to there. I’ll put steps in order. Say here’s the printout, link it just like this says, and you’ll get the most fields you can.

**Interviewer:** So how has participation in these spaces influenced the way you play the game? Or has it changed the way you play games, or how has it changed your life outside of the game?

**Sean:** I mean, there’s some guys, not a whole bunch of people that I’ll actually go and hang out with, but we will go out and have coffee with [Player 1] on the RES team. We’ll go out maybe once or twice a month for coffee. He actually invited us to a concert that the Nashville Symphony Orchestra had, so we hung out there and talked. Probably, he’s the most, the person that I actually talk to the most, and he’s not even on my team. Maybe because he lives in the same general area, and we’re closer together in age. I think he’s maybe a year younger or older than me. We have some of the same interests, well, more than some. We both like to grow hot peppers, so we’ll talk about stuff like that. It’s not always about Ingress. [Player 2] has come over to our house and hung out before, drank beer, and it wasn’t about anything game related. [Inhales & exhales vapor]

**Interviewer:** How has talking to other people in the spaces influenced the way you play the game?

**Sean:** After meeting other people, [Player 1] was the first one, and at the time he was [Player 1]. He had killed a couple of my portals, and I thought what the heck is this all about? He’s on the same team as me, why would somebody do that? Come to find out it was so he could throw bigger fields, cover up the area, and get us more points for the team. At the time I didn’t actually know that until I met him, and he explained everything to me. That was pretty influential in my learning experience.

**Interviewer:** So these discussions have helped you become a better player?

**Sean:** I have really bad short-term memory, even about things I really want to remember. I feel like talking about my plans, the throw order, the nodes I’m using…asking people about that helps me keep things straight in my mind.
Interviewer: So playing with other people has not only given you the knowledge on how to do it, but to coordinate with other people.

Sean: Yeah, and mostly in the [local] fields because that’s our main fielding area. That’s over here where I live, because it’s the most amount of mu you can get. It’s highly concentrated, so everyone wants to field this area. So, if we’re behind, or getting close to behind, or we just want to whip the crap out of the other team people will say “hey [Sean], why don’t you draw us up one of your fields?” So I go for it.

Interviewer: Have you learned anything else in particular?

Sean: With the whole thing with the builder on resonator deployment. I didn’t know you could stack resonators like that. I knew you could upgrade other people’s resonators but didn’t know you could do it yourself. I kind of figured that out myself, but think I may have read about it somewhere. It may have been [Player 1] who talked about that in a hangout once. I have learned about the different way of glyph hacking where you can get extra gear from the portals you hack. They have all these different symbols you use, and I’ve gotten to where I know the names of all the symbols, so I can put those together and create like a little sentence or a little phrase.

Interviewer: So did somebody in the space tell you that they stood for words?

Sean: yeah, I think I read that from [Player 1], actually. He had posted something about how he was trying to explain the whole thing behind the different names and how the phrases go together. Which, at the time I didn’t think anything about it. I’d say ok, here’s a kite, there’s a box, there’s an A, there’s a V. There are three glyphs that go together, there’s mind, body, and soul, and if you put it all together it equals human. I didn’t even think anything about that until he had said hey, have you ever thought about this? There’s mind, soul, body, human, it’s all right there. There’s past, present, future. There’s all kinds of things like that, that once I learned all the names of them, I got really good at it. So I learned about the names of them from him.

Sean: If there’s something I don’t know, I will ask in one of the channels, whichever one might be relevant.

Interviewer: Is there anything else you’ve learned?

Sean: There are places I’ve seen that I probably never would have gone to. Like for banner missions, you put these tiles together and make a bigger picture. We actually went and visited a Civil War battlefield around Chattanooga that I probably never would have gone to if I hadn’t been playing the game. I didn’t even know it was there, honestly.

Interviewer: Other people talked about going there in Slack.
Sean: [Player 1] had mentioned about this huge cannon banner down at Chickamauga and showed the picture of it. I said I gotta go there. Otherwise, I would’ve just thought pshhh it’s just another Civil War battlefield. Because of the pictures I saw, I got to go and learn about all the stuff, what was done there, how the war was fought. I’ve learned a lot of stuff like that. I’ve made missions as well for people to do. I did one for the Stones River Battlefield and people have told me they liked it and that it was a great mission. I will post them in Slack to let people know they are live, have people go do them and tell me what they think.

Interviewer: Well that’s all the questions I have for today. Did you have any questions for me?

Sean: Can’t think of any.

Interviewer: Then you’re free to go! Thank you so much for meeting with me today.

Sean: No problem. Glad to help.

Pseudonym: Susan
Date: 3/10/2018

Interviewer: If you don’t mind, I need to collect some background information on you before we begin.

Susan: Ok.

Interviewer: How old are you?

Susan: 67

Interviewer: Tell me a bit about your educational background, and your career experiences. I know you are an [in the medical field].

Susan: I am actually retired now, but I was [in the medical field] I have a Bachelor’s in [a medical field] from Western. Do you need to know more?

Interviewer: No, that’s good, thank you. So how long have you been playing the game, and what level are you?


Interviewer: How did you start playing the game?
Susan: Well, my sons play, my son-in-law, my daughter-in-law, and I got on it. First I didn’t play, then all of a sudden I turned it on one day and saw a portal I guess, and started messing around with it. Started asking questions, and I got into it.

Interviewer: Think about how we’re all part of the same cell. So tell me how the greater Nashville (AM02-Juliet) fan sites, such as hangouts, slack, and all that, which ones of those do you participate in, and why?

Susan: Ok. The hangouts, and then slack (I think it’s JGG now isn’t it)? If there’s a portal that has thrown a link from and I feel like it needs to be captured or killed, I can put it on there. If I have a question, I can go there. If a portal’s been accepted, I can ask about it, or if it’s rejected.

Interviewer: So basically to let other people know what’s going on and to keep up with other people in your area?

Susan: Right.

Interviewer: How active would you say that you are?

Susan: I’m pretty active…at least my husband says I am.

Interviewer: How often would you say you log in?

Susan: Every day.

Interviewer: How did you come to join the space? I know how you joined the game, but how did you get involved in the hangouts and in slack?

Susan: My son…I think we were, we needed to communicate about different things in Slack, and so we started that one up, or joined it. I can’t think of the reason, but we were talking about being able to turn in more portals. We were able to ask each other whether or not a portal had been submitted or not.

Interviewer: What do you think some of the benefits are to participating in Slack and hangouts?

Susan: Well, if I need to ask someone a question about anything, a field, a link, or a portal, I can get on there and ask.

Interviewer: The space says there are different resources in the space, which they can be things like documents, fielding plans, or other people can be resources you ask questions of. What’s a situation where you’ve used the resources of hangouts or Slack to learn something that you wanted to know?
Susan: I need to know how to do this field, and I know somebody has drawn a plan up, so I’m gonna go here and look at the plan and see what I need to do. And well, I have asked my sons how I can field, and it’s easier for them to draw and figure out a plan maybe. Or they like it better, maybe, and I can follow directions, I just can’t draw it up, you know. So, that’s one of the ways, I guess.

Interviewer: You mentioned earlier that you ask questions. Other people are resources, like maybe players that have been playing longer, or are higher level, they could be resources too. So do you ever have to go ask them questions about anything?

Susan: I do. I think one time we were fielding, and another guy was fielding at the same time, and we had to double check with him to make sure that we wouldn’t have links crossing over.

Interviewer: So, you used the resources in the space to find out something that you needed?

Susan: Yeah.

Interviewer: So when you’ve been learning through Slack, what does that look like?

Susan: I go on there and ask questions and go from there. That’s what I do. And I think as far as I’ve put portals on there that have been rejected or accepted, I ask what I need to do to get them resubmitted if they’re rejected. I do use it for that.

Interviewer: So they tell you what to do?

Susan: Right. Yes, I go back then and resubmit it again once they tell me what to do.

Interviewer: Can you think of any other learning experiences maybe you’ve had maybe because of participating with other people, and if your sons play in the same area with you, it doesn’t necessarily have to be if you talk about it outside of Slack, but you’re still participating together and you’re still part of the same group. Any other type of learning experience that you’ve had.

Susan: Fielding and links, and sometimes I may be out, and they may be at home. It’s easier for them to look up something for me, or I can ask them about something that I’ve looked up, maybe on the Ingress map.

Interviewer: So, do you do a lot of fielding?

Susan: I try.

Interviewer: So when you were first learning how to do that, how did you first learn how to do that? How did that come about?
**Susan:** Well, when I would fully resonate a portal, I would do the link, and then whatever would pop up, I would link. It kind of aggravated my sons, but I didn’t really know to do any different. And then they both told me there has to be a triangle, so I started looking at the Ingress map a little closer. It’s a process, but I’ve learned a little more.

**Interviewer:** Do you feel like they’ve taught you a lot?

**Susan:** Yeah, I do. And my little grand-daughter says, “Auntie taught you how to play.” [laughs]

**Interviewer:** Do you feel like there are other players in the space. What impact would you say that the other players have on your learning?

**Susan:** I go there and look things up that they have put there, and I guess I talk to other people and we plan and things.

**Interviewer:** How is this learning different than just going there and looking stuff up? Do they help you, or?

**Susan:** Most help. Occasionally there might be someone that I think, maybe they get irritated with me. But most of the time they help if I have a question and I can ask. I guess other players play a pretty big part in learning in the space together.

**Interviewer:** What do you feel like you personally contribute to the space? What are some of the thing you might contribute to the overall knowledge of the space?

**Susan:** Well, sometimes maybe more in Slack, I can see the questions that people ask or they’re talking about a certain field, and if I’m in that area then I can maybe help kill a portal and help them out. Then I can ask them to do the same for me if they’re where I need to be, but can’t get there.

**Interviewer:** What else do you feel like you add to the space? Since you said you go on there every day, it sounds like you’re pretty active. So what all do you do while you’re there? Either in Slack or in Hangouts? If you go on there every day, what’s your role? You mentioned earlier about the portals when you go on there.

**Susan:** Yeah. Like the ones that I’ve submitted that have been rejected, and I didn’t understand why. I can go on there and ask someone if I need to do something different, and actually sometimes I’ve been told to resubmit, and be careful about where it is or something like that. And then sometimes they’ve been accepted. I’m putting those out there and letting other people know. Having that there where other people can see it. Maybe it helps other people see because I’m willing to put that out there and say, “hey this is something that didn’t work, what happened?” And since I’m willing to ask questions, then other people can see that. Maybe because I am older and not worried as much about looking dumb. [laughs]
**Interviewer:** How do you feel like participating in any of these sites has influenced your gameplay? How has it changed from say, when you started and playing by yourself and joined the space? How do you feel that participating in the space has influenced how you are playing now, or has it changed the way you play?

**Susan:** Probably, because the players that are on there have been in Ingress longer. They’ve played longer and they understand some things more than I do. They can tell me the direction I need to go, like if I should link a different area first and then go to another area or field. Even if a portal needs to be upgraded, we can go on there and ask someone to do it for us if we know they’re in that area.

**Interviewer:** So, you’re doing things that you probably would not have done, were you just playing by yourself?

**Susan:** Right.

**Interviewer:** How do you feel that playing with other people affects anything outside the game? Do you feel like playing with other people makes you play more? Do you meet up with these people or have any kind of social connections with these people or any of that?

**Susan:** Yeah, I’ve actually met some of the people. Even on the RES maybe I could get aggravated, and not understand why they’ve done something. But then I’ve met them and see things in a different way. If you can meet somebody, your opinion might can change.

**Interviewer:** Did you have any questions for me, or anything you wanted to share about what you’ve learned?

**Susan:** I think I really learned a lot because in this game, the portals, everything is something about history. I didn’t know that, and I’ve actually learned, even going into cemeteries, it amazes me. The churches and things that help in the community. It’s those things that really, really got me going in the game. I like playing, but it’s definitely more enjoyable being able to play with other people.

**Interviewer:** Definitely. Thank you so much for meeting with me. You’ve given me a lot to think about.

**Susan:** Well that’s good! And you’re welcome. I had fun.

[End Audio]

**Pseudonym: Brad**

**Date:** 3/10/2018

[Begin Audio]
Interviewer: Before I begin asking about your learning, I’d like to get some background information on you, if that is ok.

Brad: That’s cool.

Interviewer: How old are you?

Brad: 32

Interviewer: Tell me a bit about your educational background and your occupation.

Brad: I have a degree in English, but I am actually in management at [a manufacturing plant]

Interviewer: How long have you been playing?

Brad: 2 years

Interviewer: How did you start playing the game?

Brad: My friend [Player 1]. He showed me the game and so I started playing.

Interviewer: I’m particularly interested in the types of learning experiences that take place in spaces like Hangouts and Slack and places like that. So, I just want to hear about your participation, and how that experience has been. If you have anyone you want to mention, you can use their in-game-name. So we all play in the same cell, all part of the greater Nashville area. So tell me about the different sites that you participate in, and why?

Brad: Currently, probably Slack or telegram because those are the ones that people directly contact me on the most. Sometimes Hangouts. I participate on these the most because that is where people contact me the most.

Interviewer: To what extent would you consider yourself to be active on these sites?

Brad: A couple of times a week, so fairly active. I would consider myself a casual player.

Interviewer: How did you end up joining these spaces to begin with?

Brad: Other players introduced me to them. Other players would say hey, there are other players from our area that use this, so you should join it. The first one I joined was hangouts. From there, I joined Slack and then Telegram.

Interviewer: What do you think are some of the benefits of participating in these spaces?
Brad: I am able to participate in larger operations. You can have people in your cell, but are 50-100 miles away go take care of something that is kind of messing up your own plan without having to drive there yourself [coughs].

Interviewer: Any other benefits to participating?

Brad: It can help you learn more about how to play the game properly instead of just stumbling through it. You can ask questions to more “seasoned” players.

Interviewer: Think of an Op where you used the space for information that you wanted or needed to know. Say there was a situation where you needed to use the resources of the space to learn something you needed to know to be able to do this OP. Can you think of anything like that? It doesn’t have to be recent, but can be from when you first started, and what were some of the resources used from the space?

Brad: Man-O-War Op, when I obtained my Onyx Illuminator badge. The directors of the OP would upload files to let the players who would be throwing the field know which portals they would be using and how many keys would be needed and what your particular job would be in the operation. They would use Hangouts or whatever to gather information.

Interviewer: It sounds like you’ve had some learning experiences. Walk me through your learning process and how using these spaces helped. What did your learning process look like?

Brad: When I first started, it was slow because I was in a less active area with a smaller portal density than a larger city would have. There were not nearly as many active players, so it was pretty slow going until I ran into some other players who introduced me to the different channels to communicate with other players.

Interviewer: Once you were in those channels, how did you learn from other people, or by the use of those channels and from being in those places?

Brad: People would communicate what their plans were, and if you paid attention to the intel, even without asking them direct questions, you could look at what they said they were going to do, then monitor intel and learn from that how to better plan fielding.

Interviewer: So you didn’t directly ask questions?

Brad: It was more learning by observation.

Interviewer: What impact have others players had on your learning? Obviously you have watched other players in the space, but have they had any other impact on your learning in the space?
Brad: Mostly just for fielding, and being able to learn how better to field. How to plan fields, what needs to go on in order to throw larger fields.

Interviewer: So would you say they have helped you or hindered you?

Brad: Both. Sometimes there’s not, if there’s a single player planning to do some fielding, they don’t necessarily let it be known, and it could kind of screw with other players trying to do stuff.

Interviewer: What do you feel like you personally contribute to the space.

Brad: I am the voice of reason.

Interviewer: Give me a scenario.

Brad: Sometimes there are conflicts of interest on what should be happening in the region. Sometimes you need an unbiased opinion to kind of smooth things over. We’re all playing for the same team.

Interviewer: So how has your participation in these kinds of sites influenced your gameplay or your life outside of the game, or anything like that? Let’s just go with gameplay first. How has participating with other people in these sites influenced how you play the game?

Brad: It’s nice to be part of larger OP’s occasionally, but I prefer to just kind of plan things or do things on my own, or with maybe one or two other players as opposed to in the dozens of people working towards the same goal. There are just too many variables.

Interviewer: What pre-disposes you to wanting to only play with a couple of people?

Brad: Keep it simple stupid.

Interviewer: Would you say that participating in these types of spaces has influenced your life outside of the game at all?

Brad: I mean, I’ve met some new people, and I don’t mind meeting up with them to do stuff in-game, but very few of them I would meet outside of the game. There are some weirdos.

Interviewer: Is there anything else you can think of such as teaching other people, or?

Brad: I got one guy started, and he’s kind of a fiend [laughs]. I’ve gotten a few people started in the game who have done a fair amount of work for the team.

Interviewer: Thank you for participating, and that’s all we need for today.

[END AUDIO]
Interviewer: Before we talk about your learning, I’d like to collect some background information on you, if you’re ok with that.

Brad: That’s fine.

Interviewer: How old are you?

Adam: 47

Interviewer: Tell me a bit about your educational background and your occupation.

Adam: I have my own [technology] company now. I used to work in telecommunications, and I was in intelligence in the [military]. I have a degree in general studies.

Interviewer: How long have you been playing?

Adam: Over 5 years I guess?

Interviewer: How did you start playing the game?

Adam: Initially, it was getting an invite from Google. That they were working on something new through the Niantic division, which is the people who made Google Earth. And they were like HEY, would you be interested in this? “I do software testing all the time, sure.”

Interviewer: I am particularly interested in your learning experiences that have taken place in any type of Ingress fansites like any of our affinity spaces. So, I just want to hear about your participation in your own words. So, which space do you mostly participate in?

Adam: Today that’s changed, so… I do use Slack because it afforded us a lot of mutability, meaning you could be able to collaborate on a lot of different things at a high functioning level, or a very base level. Which is a lot of things we did before, didn’t do. When we first started, we were using Reddit, and that’s basically just a bulletin board kind of thing. From there we went to G+, which was new at the time, and so we were actually able to make communities and bring people in. That where we did most of our planning structure, sharing documents, and things like that. As time went on, Hangouts of course, and that was really cool because we could do video conferencing and things of that nature. Teaching new, mentoring was a big thing at the time…this is how you go about the game, this is how you actually field, or this is how you go and attack something and gain points and figure that out. The biggest thing at that time was code-
breaking. That was a huge thing at the very beginning. Now, most people don’t pay any attention to it, but code-breaking is really cool, and that’s actually that’s what brought Dagmar to the game. It was doing code-breaking, because he would figure it out, how to get those codes, the passcodes.

**Interviewer:** So you said mostly these days you do Slack.

**Adam:** The reason why is because it integrates all of those things. Through Slack you can actually still share, you can do instant messaging, you can do direct message, you can do video chat, you can, use bots to call up anything, different information from the Cloud now. Instead of us trying to pack it all together in a bunch of different sites, we can now do it from one thing, which gave Slack a lot of power, let me tell ya.

**Interviewer:** To what extent would you say that you’re active?

**Adam:** Before, I ended up being one of the, oddly, this is what happened. I was one of the only people that decided, “well, we should organize, you know, and get together”. Now, there were other people I worked with, it wasn’t just me, it wasn’t just my idea. What I mean by that is, that we would get together and hang out, and scheme and plan together, and we should do that face to face. So that was something that I always liked to do, meet people face to face. That helped deal with community issues. Like “hey, I’m gonna take you out to lunch and we’re gonna have a talk about ‘your attitude’ or whatever it is, you know. Today, life has pulled me away a lot more, but at the time, it was everything from anomaly planning to working with cartographers for maps. Bringing in people, and it was a daily, absolute daily thing keeping up with my emails, my Hangouts, there were always like 35,000 Hangout different chats, plus the G+ groups and trying to maintain that and keep everything organized. That was the first three years of the game. I won’t say it was obsessive, but it was definitely ingrained into my life.

**Interviewer:** What about now?

**Adam:** Now, I check in at least a couple times a day I’ll check in, but it’s not, it’s not the highest level of priority like it used to be. And part of the reason actually is because I’m not having as much fun. If I was having the same level of fun as I was then, it wouldn’t be an issue, but that’s what actually cause me to not play as much. I started to not have as much fun.

**Interviewer:** Why do you think that is?

**Adam:** A lot of in-fighting. A lot of people deciding to act not as adults, but as children. When we first started, it was easier. It was like “oh look, there’s only 8 of us”. I remember the first time we all rode to actually go make a level 8 portal, it was like “oh my God, there’s eight of us”. That was a neat thing when it was smaller. It was much easier to be a person you could go and make friends and deal with people, but as soon as hundreds, and now thousands of people, it became just more difficult to manage, or weed out, bad elements. That sort of fell to me, as my job. Whereas, say, [Player 1] was really great at doing planning and motivating people to do
things, and [Player 2], his thing was actually game design and figuring out how this is how we’re going to map out the actual thing, and we’re gonna go do this. What I did was I made sure everybody got along. So, we all three did important things, but, you know, we balanced each other that way. Now there are just too many people to balance, and that’s sad for me. But I do have great memories.

**Interviewer:** What do you think, as a game player, some of the major benefits are to being in the affinity space?

**Adam:** Mentorship. That was a really big thing. Being able to share what you know with someone, so they don’t have to make the same mistakes you did. They can start where you already are and then move forward, and that was a huge game changer when we kind of instituted that. Like, well I’ll go out and say hey to these new people and I will teach them how to do things, and being able to use it in different online spaces made a HUGE difference. You could walk them through those practices.

**Interviewer:** Did you have anyone that mentored you?

**Adam:** We kind of did it at the same time, [Player 1]. When I started looking, I’m like “hey, I know you, I feel like we grew up together. I didn’t know you were playing this game”. And so we would talk all the time about he had a different focus than I did, and we just kind of worked that out. Over time, as new players started coming on, we started making those friendships. That’s how I met [Player 2], was through my buddy in my neighborhood. Hanging out with [Player 3] and tons of people. I have a lot of good relationships and reconnected with people that way, too.

**Interviewer:** Tell me about one situation in particular where you used the resources to maybe make something happen or learn something that you wanted to know.

**Adam:** I have a friend of mine who doesn’t play now, but he’s actually a cartographer. I met him through the game. He lives in Moscow, and he doesn’t speak much English, so we did have to talk a lot through translation, which is what we still do, which is very funny. But, [Player 1] is the coolest guy, and when anomalies came to be a thing, we were looking for people who could make our game better. So, we took real world applications and applied it to the game. He’s a mapmaker, so being able to figure out zones, and best ideas, and how long it will take to get from point A to point B, and scheming and planning in the background. He made most of our maps that we’ve used for years. Now, he doesn’t play anymore, so he’s not the guy, but being able to find him, from a global resource was a really, really sweet thing because the game went, of course, from being your local neighborhood to the people in your city to other cities across the state, and then going “oh, these are all the people in America that are playing”. Then we started talking, these are all the people that are playing in other countries, and then we started meeting each other. So, it instituted travel to go and hangout with somebody you’d only played with online, but that was a huge, huge, thing. And it helped me in a lot of different ways of being able
to talk to people virtually. I mean, it just expanded that for me. I don’t know if that answers your question or not.

Interviewer: Yeah it does. That’s a learning experience. You guys learned from [Player 1] who knew how to do this thing.

Adam: He did it before the RES. We had maps, actual maps before the RES did, because of that.

Interviewer: How did you go about finding him?

Adam: I’m the kind of person that will say hi to people. I don’t know why. I think I like people as much as I don’t like them, I like them. So, COMM’s. You can always zoom out in the COMM’s itself online, on the web and chat with people saying “hey, what’s going on?” The very first time that the shards happened, we were excited thinking what is that? I remember sitting in my office at the time and I was doing some programming and keeping the map open because I was watching people punt this shard around in upstate New York. And so I was curious, and all of a sudden we helped coordinate, and this was really before we started having operators is basically what we did. So we would talk to people online via their scanners from the web portal itself and then direct them the right place to go. So, that ended up getting us to know people in Australia and other places that would share their knowledge. So there came to be a hierarchy of different organized groups to do things. It’s kind of like how the JGG is right now. The JGG is handling most of the state. We’ve had groups that do that, but this is a newer one.

Interviewer: You’ve told me what impact other players have had in the space on your learning, but can you think of anything else in this space, like maybe how it impacted how you play the game or interact with other players?

Adam: I can’t think of her name, but there is a woman in Australia that I met, and this is the first time that I was able to get into the global part of the ENL group and make those contacts and go “wow, these are the people that are maintaining all the connections across the planet” who then talk to the local countries and then that brings your groups down to the smaller and smaller, down to say like the JGG level. So, working with her was a best practices really. Well, this is what happens when I hit an area that is completely covered by these many agents, and this is my, this is how I remember her specifically explaining how she would psyche out other players, and that took us back to discussing The Art of War. Figuring out how to make people think you were going to do something, but then you were going to do something different like you would attack a city then turn the whole thing green, comparatively. It was really cool to have someone bring that part into the gameplay itself. It made it smarter.

Interviewer: Best practices, I get that, because a lot of affinity spaces are like that as far as the social norms and things like that, not only in the space but in the game. I never really thought about it from a strategy/military standpoint.
Adam: That’s where the green party’s coming from. In the JGG, I taught [Player 1] a lot of the things we used to do when we used to do that through Sea Sick, was the organization. It covered the entire east coast and the south. So to have all of those people coming together with all your point of contacts, and figure out how “we’re gonna hit Chicago today”. RES have no clue that we’re gonna show up in Chicago, and how do we take down a city as big as that? That’s what the green parties are, and he’s starting to figure them out. But, it’s how you meet people, and you make contact. One of the easiest way to make contact if you don’t know someone is to open up the map and start talking to local people. Who do you know, and how do I talk to you, and see what we’d like to do.

Interviewer: What do you feel like you personally contribute to the space?

Adam: Originally, how we broke down, it’s just how we fell into it. [Player 1] would give leadership, [Player 2] would do planning, and I brought heart. I kind of kept the peace, and would say let’s keep going and a good motivator and being able to help people talk. “Use this tool, it’ll make you better”, or something of that nature. That goes back to how we’re able to balance ourselves. So, even as the game grew, and the first time Niantic came to Nashville to visit and just go hey, what’s going on? We met Joe Philly, and hanging out, and he specifically came to me, [Player 1], and [Player 2]. He said you are the guys that seem to be talking to everybody about what’s going on, and what’s your scene like? That was actually cool of them to come to us and actually seek us out.

Interviewer: You helped get things get off the ground, but you also help keep the lines of communication open between all the different people.

Adam: Especially cross-faction. That was a big thing for us as well. That’s why having the friendships that we do of people that play for the other faction. We would always plan parties or other things that we could do together that way.

Interviewer: We have our own cross-faction hangout for our Antioch area. It started out as a portal recon thing to make sure that none of us would be submitting the same portals, but it’s turned into all kinds of talking craziness.

Adam: See, that’s what I love, the fun part of it. That’s the part that I love about it. Maybe it’s because it got too big? There’s a point where my interests started to go global, and doing that I think is partly what burnt me out. Because when you start dealing with that, that’s where, that’s the reason why Catwoman1 doesn’t really join in any of the chats or anything anymore. Because as soon as she went global, it was “I can’t handle the pettiness, and this, and that, and the other, so I will come play, I will come field, and I will teach you and I will also travel across the planet to meet these people” because locally all of a sudden the drama happened.

Interviewer: Do you feel like other players have been a hinderance in any way?
Adam: Originally, yeah. The way the game was first designed, you were specifically led to the RES. I mean, even the text of the game and how it worked out, you were specifically going to be a RES agent, not an ENL agent. I chose ENL because, why not play for the other team? That’s how that happened. So, on the short of that, there were those of us who chose to be ENL, and a lot of those original ENL players became RES because they couldn’t work together. So there was a lot of bullying and “my way or the highway”, and I was like “well, we all just started, how are you gonna tell me what to do?” So, eventually, for whatever reason, what happened, at least here, and I’ve heard it happened in other areas as well, politics happened. So, here in the Nashville area, there ended up being two primary people that ended up taking over the RES. There was nobody that was leading the ENL, because we agreed to be ruled by committee. So it was, I can come in, you can come in, I can lead or you can come in, you know, that kind of thing. And that’s how that happened. We would always bring in new people and do whatever, because we didn’t want the fighting that was happening that the RES did. They just kept bringing in more people that were…mean. I don’t wanna hang out with that guy, he’s a bummer.

Interviewer: I can see how that happened, and then the response when that came out was less than what was desired. I feel like we’re kind of getting away from that some, I don’t think that’s a thing in JGG.

Adam: Actively trying not to, because they’ve seen it.

Interviewer: How do you feel like your participation has influenced your life outside of the game?

Adam: Something I didn’t expect was actually being able to network. I mean, obviously the game involves networking because collaboration is a thing. But finding more people that had similar interests to me, of course created friendships. I have made work relationships via the game based on certain things. How I actually met [Player 2] was to watch his movement on the map. So I would think he should be here at this time and he should be going there at this time. I liked his style of gameplay. I would think ooh that’s pretty cool, I would not think of that, and it impressed me. So I made a point to say hey, and we started being cool with each other online, and eventually we met. We have worked professionally. I hired him. He is a contractor and has done work for me. I figured out how his mind works just by paying attention to his gameplay. We were able to implement that for him to do design work for me.

Interviewer: Do you have any questions for me, anything else you’d like to say about learning in affinity spaces with adults?

Adam: It’s changing. Since Slack, they technically weren’t the first, but they were the first to get it right. I mean, the world over is using Slack. There are other tools you can use as well, however, bigger software companies have their competition that’s all coming out right now. So, Monday, Google’s official Google Hangout, the one for the G squeeze side of things, is there version of Slack. It does everything we wanted Hangouts to do, which is why we left to go to Slack. So, they have that, and that’s a cool thing and it easily integrates seamlessly with a lot of
other products, and it’s secure. Microsoft has their new one, I believe it’s called Teams. It’s taking a lot of the stuff from Skype, messaging, video chatting. Again, that’s their competitor for Slack. Even though a lot of people might not know what Slack is, a lot of people use Google services, a lot of people use Microsoft products, they’re going to see that that is a thing that works, and works well. To be able to manage projects, or communicate, and get real work done simply and efficiently. Which is something that originally we had to use, literally, seven different products to accomplish planning. I think it’s changed a lot of things to where people will be able to learn more, learn faster, have better access to information, and I’m impressed by that. I’m a huge tech nerd, so following this and how it can benefit people is right up my alley.

[End Audio]

**Pseudonym: Erin**  
**Date: 3/03/2018**

[Interviewer: I just want to collect some background information from you if you’re alright with that?]

**Erin:** That’s ok. [inhales then exhales smoke]

**Interviewer:** How old are you?

**Erin:** I’m 36.

**Interviewer:** Tell me about your background. Education…Jobs…etc.

**Erin:** I’m a teacher, and I have an MS in psychology.

**Interviewer:** Cool. My job is in education also.

**Interviewer:** So how long have you been playing?

**Erin:** I’ve been playing since 2014, so coming up on 4 years.

**Interviewer:** So, how did you start playing?

**Erin:** I used to date a guy who played. I was dating somebody who played, and he had played since Beta. I had wanted to play because I had seen him play it. I had an iPhone and they didn’t do Iphone then. So, in April, I went and bought a tablet, in April 2014, I went and bought tablet, and I tethered my tablet to my phone. I actually lost my unlimited data to play this game. Before I was tethering, I would just play off of wi-fi. I had seen him playing and it looked like fun.
Interviewer: You know I’m particularly interested in learning experiences taking place in these specific fan groups and all that. Tell me about the Nashville ENL Ingress spaces that you participate in.

Erin: When you say fan sites, what do you mean?

Interviewer: Like JGG or NashENL

Erin: Initially, I was in the regular group, and that was fairly drama free for my first several years. Then a player or two got a little big for their shoes, and because they had control of the Slack, which is what we use. So, those people were moderators, and we had lost some people who were active, but the other moderators were no longer active, so it was left with one or two active moderators. It became less of a democracy and more of a dictatorship really. Where things were no longer discussed. So I left that group and joined another that was a similar community and for the most part with the exception of the some people that were ill with that decision it's been relatively drama free. Definitely, in my first couple years it was very, very close knit. There were the first year I would say there were only two people in the game locally, one blue, one green who were just total assholes and cheated like crazy. So in terms of things like guardians and stuff that wasn't really an issue there was a really good, not agreement… The cross-faction relations the cross-faction relations were, were really good for the first year or so. We were very friendly with each other and then that went awry. And it got worse when the game expanded to iPhone. Actually, and that’s another. So I didn't just lose my unlimited data I switched from iPhone to Android because of this game. So, bittersweet when it comes to the community. We’re definitely nowhere near close, as close knit anymore and there’s been a huge divide in our Enlightened community for about six months to a year now which is, which sucks because we were very close. You know, we would meet at least once a week and have our farms and that was when they were just flash farms. We would all get together and there were no there wasn't such thing as a fracker. So, we would all get together at Bicentennial mall, walk around together, talk and maybe go eat, and it wasn't the sort of “like will this is what were supposed to be doing this is that”. That happened to the Resistance after the first year and that's what divided their team, and that's what killed the relationship between us. Because they started having more people who were siding with this sort of like saying things like we have a leader in this whatever this person says goes. And when we would try and do cross faction artwork or try and do things that were friendly with each other, like cross-faction farms or whatever something like that. The other team, the Resistance would deliberately sabotage it. Not all of them, but specific ones, and that it was like a disease, it spread. And then when I saw it starting to happen on our team in terms of the dictatorship, in terms of, you know that the lack of a democracy I tried to stop it. I tried to talk with the person directly, the person in question. That didn’t work, it didn’t go over well, and that's where we are. It’s kind of weird really if you think about it, that this is a game, but it became more than, much more than a game. And it became like pretty much all my friends now I’ve met through Ingress. Some of my other friends that live spread out, I don't see them as much. But if I think of people that I call, if I need to talk to somebody or call to hang out, it’s someone I met playing Ingress. If you’re not, it's weird. It's like, after a while you start identifying everything by portals, you tell people how to get places by portals. If you’re talking
to somebody that doesn't play Ingress, pretty much if you're a really active player. If you're not, then not so much. It's not that you don't relate to other people, it's just that you have this lingo, and you just expect. That's a lot of your life, and actually at one point I made a Google document of like all of our different lingo that we had. Not anymore, because it's evolved and changed. Another thing that I think, and we've kind of discussed this before, is so if you're enlightened you often will call a person on the Resistance a smurf. If a person on the resistance is talking to an enlightened player, they refer to them as a frog. These titles that we give each other seems almost like some sort of systematic way to de-humanize each other as we are the enemy. So, people I was friends with on the resistance, you know, you start hearing them using that title, and you're using it and you realize it's creating this divide between you over a silly game. [Inhales and exhales smoke]

**Interviewer:** So you participate in this new group and not the other one anymore?

**Erin:** I left that community. It was made clear by the leader that I what I did was not appreciated in the game, and pretty much anything, the things I enjoyed most, to do in the game. He said that nobody liked it when I did those things, even though they were people that said that was not the case. And this has nothing to do with Ingress if you think about it. It’s a power thing, you know? So it became…there is no power in this game, really. It’s virtual, it's portals that are not really there. I mean they’re just objects. Sometimes they are not there at all. There are several in this park that are not here, but I don't know exactly what happened, where it became that way. It is probably a personal issue, but you combine multiple people's personal issues together and especially when people have very strong personalities, and you get this sort of stuff. When you're really close community and two people are incredibly active, and they have a disagreement. Well, that that's where some of that I was talking about. It wasn’t just any one person, it was a clique of people. Early on I definitely was one of these people early on that would be like hey don't throw links through there, I’m trying to make a field. I stepped back from doing that as much, it’s like look, this person doesn't know how to play. You get to a point in this game though where you think that everybody is a dual account. You think that they are blocking you on purpose, and actually I found that by sometimes, by getting ill with people like that occasionally come across someone that’s vindictive, and they really don't care about teamwork. I’ve come across a couple of these, and if you say stuff to them, they will purposely derp as much as they can for your area.

**Interviewer:** [Player 1]?

**Erin:** No, well, yes, but for me, [Player 2] before her. [Player 2] would purposely block [Player 3] in Franklin because she wanted to play in the area, and she didn’t care about the team. So you have some people like that, that don't care about local stuff at all, they just want to be able to play. All I want to do is to play, and I don’t care about being part of the team. The person that gave me a problem was [Player 4]. So much so that during the anomaly, she started purposely blocking us. So, I inevitably, the way that I kind of learned how to fix things with her was I gave her the keys to my field and said, “here throw this”, and she stopped doing it as much. The yelling and being like what are you doing does not work, which is why I always tell people just
don't, don't say that. Some people maybe will listen but pretty much either a, they shut down and they quit playing, or b, they get mad and just start derping everywhere. Like at one point I had one player on our team that would get so mad that we fielded through his neighborhood, and he wanted to throw our field, but he only wanted to throw it after we set it up. He had all the keys for it, but he didn’t want to bother with the setup, he just wanted to throw it. So, one day he said he wanted to so we said okay and he wasn't getting back to us, and checkpoint was coming up, the first one, and we were like “let's get it up”. So, me and [Player 5] started throwing it and I guess he got mad. He had not responded to us he thought that we were ignoring him on purpose and right before checkpoint, he flipped the whole field. And I said why did you? If you were mad why didn’t you wait till after checkpoint to flip the field? Like, and he said because then you wouldn’t learn anything. So, there's a lot of…passive-aggressive behavior and attention-getting. The summary of all that is that anyone person thinks that they are have power over other people in a game environment. You can have leadership roles, but you can't have someone who decides that they make all the decisions. Because once you do people rebel. People don’t want to be told what to do. So it really is a lesson in don't try and exert power over other people. [Inhales and exhales smoke]

Interviewer: So would you say you’re pretty active on the site that you’re on now?

Erin: Yeah. Not as much lately because real life stuff but normally when real life stuff is not in the way, I'm really active. I sometimes organize things. I let's do that now but I definitely am active in terms of trying to talk about fielding or yeah. Talking about fielding and honestly because of that huge rift that occurred I kind of went back to the way that I started playing initially which was just joining together with a couple people and fielding with them. It’s strange that these people who at other times don't bother to tell us that there is a field going up or anything want to know, and it's like, but it's not that I don't want people to know. It’s just that I don't want so many people in a specific area chat when they don't have anything to do with the area. If we need to ask for their assistance, then we can ask for it with enough time. Hey, you know just like I would expect them to do, if they needed my assistance. But yet again that’s the power thing like this need to know everything. I don’t need to know everything, and that's where it's like where do you get the idea that you deserve more information? Where do you get the idea that you deserve to be a leader? Where do you get the idea that you are better than other people that are just as active as you? Maybe some of them have played longer than you. Where does that idea come from? I think some of that has to do with global. Local players are not as valued. If you are a global player then you know you think well, globally. I want my name to be known and whatever. I don't know if that's the case, but there is a huge divide in the local versus global.

Interviewer: So, how did you end up in any of these spaces, and how did you come to join any of them?

Erin: Well, because of the guy I used to date. He used to go to things called farms. He would just go to the farms, and I think we just used hangouts then. I don’t think we used Slack, we used hangouts, I think. You would go to a farm and people would like give you stuff because you're new and they would get you to level 8. That was a big deal. Get you to level 8, once you’re level
8, you’re cutoff in terms of people just like willy-nilly giving you stuff. Because once you’re level 8 you can deploy level 8’s and you can make level 8 portals, the highest level portal that can be. So there's this thing, if we can get you to level 8 then you can help the rest of us. So there's a big push for that and that's you also you get added, that I don't remember exactly how I got added to the community. I think the first person I met that was not the person that I dated was [Player 1]. It was kind of scary meeting someone I had no idea who they were, but we decided to meet [downtown], and so he came over from work and I went over there and I met him and he seemed cool. And then there is another player named [Player 2] who played in the Green Hills area, and I met her and started to come to farms. I don’t remember who invited me into the group but I was at some point.

**Interviewer**: So someone invited you to join?

**Erin**: Yeah, you can't just get into it without being invited.

**Interviewer**: So, what are some of the benefits you see to participating in this space with other people? What was the incentive to want to do that?

**Erin**: Social. And it was, again, I love games. I'm a gamer. Been a gamer since I was a kid. It was also, I had been previous to that an alcoholic for five years, and it’s once an alcoholic, always an alcoholic. But this got me going outside and walking around, and it gave me something to do when I was feeling restless, like I wanted a drink or something. And it gave me motivation to go do stuff I guess. Really more that when I started. What has kept me playing has been social. It has been the connections I’ve made with people. That's what’s kept me playing.

**Erin**: Other than the social benefits, why do you log in to this new site?

**Interviewer**: I am a very routinized person. I always have been. It is really something actually I struggle with, but I’m on autopilot most of the time. I'm not even paying attention I just open it up now. It just became part of my routine and became part of my fun. If it came it was an escape as well and it was something I get that there’s an emptiness, clearly. I can't speak for everyone but I feel like the people that are the most active, and I'm sorry if this offends you because you are also a fairly active player. I get the indication that what we all share is that there is something that is missing in our lives and this fills that hole. I don't know if that's true but it seems like the people that really stick with it that seems to be a common thing. And then it’s like one of the players on the resistance [Player 1], she doesn’t play as much anymore. She’s happy now. When she first started playing, she and her husband had a horrible relationship. She was unhappy, and they were getting a divorce and now that she's remarried and happy she barely plays. It’s not like that all the time. I certainly have fun with this but I think that's really what keeps it that way. In some ways, it’s a compulsion. In some ways, it’s unhealthy. It can be unhealthy. There are certain things I’ve had to back off of doing as much or taking things too personally. You can take things very personally in this game and that's really that something. The less green that you are in this game, the less personally you take things. So I remember, yet again, I told you before level 8 was a huge deal then. I mean when I started playing, it didn't go beyond level 8. Like, it
was maybe a month after I started playing that they started adding more levels. So, there was somebody that used to come through my neighborhood. I would go out and capture the portals, and then they would come take them. I was thinking who is this person? The name was [Player 2], and she barely plays anymore. I was like, I have this vendetta against them. Like, they’re taking all my stuff. So, she would keep a level 8 farm at Vanderbilt. Vanderbilt used to always be a blue level 8 farm, and so was Ellington, always. So as soon as I hit level 8, I went and blew up Vanderbilt. Well, another thing I did is I when I was level 4, I was near Trevecca, out on Murfreesboro Pike and there was a portal that [Player 3] owned. He owned the post office over there. He had it well shielded, and I couldn't kill it. He taunted me in comms. He said “are you hitting that with a pea shooter?” and then he said something like someday you will be able to kill it. So after it hit level 8, of course I went back. I had to go kill it. What’s really interesting about this game is how much the psychological aspect, some of it’s manipulation. Like some people, I’m speaking of [Player 4]. There are certain areas they feel so much that they are their area that they will do things like intimidate people. I mean, I’ve had death threats. Like, you know, it's crazy. And then there like, “well, I’m bored”. So then they start making extra accounts because they’re bored. But they have scared everyone out of their area, so nobody will play. They don’t want it, but they do want it. Their ego is very important to them. [inhales then exhales smoke]

**Interviewer:** So tell me, when you go into the new site and you’re talking to people, what do you normally talk about? Tell me about some of the resources that you have used from the space. Other than social, what benefits are you getting? Do you go there to plan stuff?

**Erin:** Yeah. I mean, depending. Since the fields I'm currently making are really, really local, I mean between three people, I actually talk in a hangout for that. Because I don't need everybody else to see as being like okay all right, I’m gonna flip this now and then you know. So, it's more in terms of planning, I tend to do things on more of an insular level? Some people talk more openly in larger channels, but yeah. I talk in there to plan things, I talk in there to make sure I'm not blocking anyone. I talk in there to tell people that I see a lane. I warn people that maybe somebody's about to field. I ask people hey, could you grab this portal? Could you kill this? Could you throw this link? Yeah, planning is a lot of it. Sometimes organizing farms, or stuff like that. We try and have channels that are by topic. So, you know you have Antioch fields. Well, we try to keep that mainly fielding in Antioch. If you want to talk about something random, we have a random channel. I try to remember to only post these things in these channels. It doesn't have to be that way, but it keeps it more organized.

**Interviewer:** So, say you wanted to learn something. It doesn’t have to be anything recent, but say a few years ago when you were still kind of learning. Or maybe even now, you still learn stuff.

**Erin:** Well, typically how this starts is that whoever brought you into the game is the person that initially teaches you everything. It was interesting in my case, because the person taught me was Dagmar, and he has a very strong opinion on everything. So, when I started branching out and meeting other people and it really happened when I started coming to the park and playing with people here. Which is [Player 1], [Player 2], [Player 3], [Player 4]… I’m trying to remember who
the original park team was. Anyway, those people. I started learning other things. Like I learned, well okay what Dagmar said about this mod is not entirely true in this situation. So I started learning different ways to do things, and kind of taking all that knowledge, putting it together, and saying well there’s a bit of truth in here, and just taking it all together and then testing it for myself. Which I think is what you do with really anything. That’s also depending on your personality. If you’re a person who is very stubborn, you're probably stick with one way. I’m probably more on the stubborn category than anything. You know, but yet I was willing to listen to people, especially early on, and that’s how I learned everything. I didn't learn it from reading. Some people study this game. Like on internet, they watch tutorials and stuff. I don't necessarily find that to be all that useful. Maybe it's because I’ve been playing for so long, but every now and then there’s something that I don't know. I remember when we figured out we could layer fields. We never knew that. It used to be that it was me and [Player 1], and [Player 2] on the north side. And then I guess [Player 2] and [Player 3] on the south side. [Player 4] was always the everywhere pretty much. We would throw from [the lake] over to [another portal], and [a third portal] in the middle and then up to like something north. So we would just make it make one field and then connect them in the middle, but we didn’t know we could go larger than that. We didn’t know about layering and then one day we tried it out, and like “oh my God, we can layer.” [inhales then exhales smoke]

**Interviewer:** So when you wanted specifically to learn something, you would not use tutorials?

**Erin:** When I needed to know something, I would ask somebody. That’s not for everybody, but I found that in this game. I’m a teacher, that's what I do. So, I like teaching people things as well, not just learning. I like to then give my knowledge, and I'm the first person to say I don’t know shit about global, but I am good at local moderate persistent fielding. With that, I learned a lot of this from Doc. Me doing this as well is that they get annoyed if you persistently field, and there are different types of wins in this game. You learn that too. That it's not just “we got the most mind units”. Like the resistance at this point have kind of learned that their win is to annoy people in comms. That's their win, is to troll you. And found over time that maybe if you lose enough, or since they had the early team divide, I think that's where that came from. But yeah, you ask somebody, somebody takes you under their wing, or somebody gets annoyed by you enough by your consistent derping. Like hey, meet me you know when they’re saying meet me that it is not really usually because you're playing well, it’s because you are messing them up. But it's not…Everybody went through it at some point everybody's been yelled at and had to go through the kind of embarrassing…It’s kind of like an initiation into this game. If you have not been yelled at because of a link you threw then you are not part of the enlightened, or part of the team. You learn from making mistakes, most of the time. Someone else will say something to you. At least early on. [Inhales then exhales smoke]

**Interviewer:** [Player 1] taught me, so you can imagine how well, seeing as we’re married and have been married for years. You can imagine how well that went sometimes.

**Erin:** Well, and there’s a lot of couples in this game. It just, it kinda works better. It's hard to play by yourself. Obviously you play with other people, but it’s easier to play if there's like, two
of you as a team that can work with everybody else. Because somebody comes to your neighborhood, they start killing stuff. They go to opposite sides and take one side, the other person takes the other, they go down there, ping-ponging back-and-forth. It becomes like this sort of… You work with people long enough like me and [Player 1], and you just know. You have learned each other's phrases, you've learned each other's style of play. To the point, in looking at the Intel map. That's another thing in learning, looking at the Intel map and seeing over time, learning people's patterns. So, the resistance talk about how I have certain document or whatever on all of them, which is certainly not true now. I will say early on I did sometimes assess people's patterns. I never use player tracker. I didn't want to use any sort of tool that helped me. I would, for like one hour or two hours in the morning before I would go do anything, is I would sit and watch Intel. I would write down where everybody was, everybody that was active, and I would learn their patterns.

Interviewer: Strategically, that makes perfect sense.

Erin: Yeah, and people might say “that’s stalking”, but it was strategy. I am a science person. I wanted data on people so I know. Like if I know [Player 1] was not at Wedgewood whatever, at such and such a time, but she’s actually over here, that's weird. So I would always know if people were not in their usual places which is why never understood why don’t you send people that would normally be over there, over there? That’s dumb. That’s all learning. I don't know if it’s healthy learning.

Interviewer: Have you had any specific learning experiences that took place in any of the spaces that you can think of? Have you ever gone on there specifically to ask about a particular topic?

Erin: It’s, I mean never specifically to do that. That's just a fluid thing that's just, if I think of something. I talk in Slack like we might as well be kind of sitting in a room together. Because I don't treat it as “okay I’ve entered the space.” It’s just like I'm going “hey, bub, over there in the corner, what did you think about that? Is that the right strategy?” I ask people's opinions on things. If I come up with an idea, I want people's opinions on it. Specific people that might be more knowledgeable in that area than others. Some of that may be related to the games or different aspects of the game. Some of that really might be related to how I approach this with this other person. As there is level of, really you have to use the word manipulation. As there is a level of that in this game as it pertains to the enemy especially. Maintaining friendships with the enemy is an interesting thing because you have to learn your boundaries with them. What is unfortunate is, the people that…with some of the people, that can really make it where you can’t be friends with them. Which was sucky. For the longest time I was really good friends with [Player 1] and her team could not stand that we were friends. They would yell at her, they would give her shit, they would not include her in things, and they would isolate her. Think about the movie West side story, you got the Jets and the sharks, Romeo and Juliet, jets and sharks, all right. Tony liking Maria. Did they like that? No. Maria liking Tony. Did they like that? No, because they’re the enemy. You don’t associate with the enemy and it did not used to be like that, but it became like that. Also I wonder, are they telling this person is getting more shit than there actually getting in order to…I mean it’s just, it's a weird dynamic. I’d say the thing you
learn the most in this game is paranoia. You learn to be really paranoid. Like that is if you're an active player become less like this because this game, there’s not as many people playing as there were. When things like, say I don't hear from [Player 1] for a while and then she messages me and says, oh, how are you doing, and then after that she says like happy birthday. I was like, oh thank you. Then after that she says is that what you were in Metropolis? She was fishing for information, she didn’t care. That’s actually hurtful to think you’re only talking to me because you want information about this game. It didn’t used to be like that. There’s a level of that, that everybody does. Whether or not you think you do it, you do, to an extent.

Interviewer: Would you say that any other people in the space have had an impact on your learning, on the way that you do things, or on the way that you’ve picked up on things? How have they helped you or hindered you?

Erin: Oh yeah! To be specific, there's some things that I used to do a lot. I don’t know if this will be helpful for this at all. Like, for instance, I used to talk in COMMs all the time, and respond to people. Over and over again, people said don't talk in COMMs. It’s like this lesson, and I impart this on everyone now. Do not talk in COMM’s. One, they can find out where you are. Two, you are giving them power when you do that. This just applies locally really. I don't know about other places, but that is something that you have to learn, is do not talk in COMMs. So, I learned that from people. And Erick, I’ve learned a shit-ton from. I mean, he figured out all the math on the cycle early on, and we had documents, and we had spreadsheets and we had like, we could input data. He made all these spreadsheets we could input data and make predictions about “if they throw this much, this is what the score will be.” We would make notes on it and every time there is a spike in the score would make a note on that and say what happened? Let’s not do this anymore. But yeah, I mean…and there's some people who try to teach but try to dictate instead of teach. We got our main ones. We got our [Player 1s] and those sorts of people. You don't learn from that. People end up just ignoring them. It’s a combination of telling people ways to do things, listening to you know, sometimes you're right, sometimes wrong, sometimes you have to let them figure it out for themselves, and sometimes they never will. I’ve kind of switch roles to more of a teacher in this game than anything. [inhales then exhales smoke]

Interviewer: I was just getting ready to ask you, what do you feel that you personally contribute? To that space in particular, or any other space where you could reach out to other players. Any kind of affinity type space. What do you feel like your contributions are at the moment?

Erin: I think more so, teaching persistence. That's probably my biggest thing. Teaching people how to properly annoy the other team, and not just in a shallow way. I make diagrams sometimes. I’ve made documents like for the, which is why it bothered me so much about mission day, when they didn't want my help with mission days. Like, I made a whole thing about what makes a good mission and all the different things. And it's like it's not just because I've done a few missions, it’s not that I’ve made a few missions, but I’ve done thousands of missions and I made, for a while it was like fifty percent of the missions in town were ones I made. I learned through trial and error. This doesn't work, and that’s a lot of your learning after the initial
stuff. It’s like you try it out, and then you’re like, I didn’t like this, and if I don't enjoy it then nobody else is going to enjoy it.

**Interviewer:** [Player 1] mentioned that a lot of times he will ask you about his missions, because you’ve made so many, and you know how it’s supposed to be done, and you know what they're looking for.

**Erin:** That’s the thing is that a lot of people don't like the way I do my missions. People don't like to walk. People want an easy mission. I like missions where you learn something. Now if it’s a banner, it should be six missions per, and it should be all hack if it’s a banner, because that's a lot. With the single mission, which nobody really does anymore, I like passphrase. I do, and a lot of people hate that. That, and drawing diagrams. I used to have all these little cards and I would like to draw. Like I would draw an A on one side, and then a B over here, and then C, D, E, F, G. You know, a drawing of a layer, and right little arrows on the order to do these things and then I’d take a screenshot of it or take picture of it and post it and say “this is how you layer.” Sometimes it's then, like with [Player 1]. The way that I got him layering, he finally figured out, but when he was on the blue team he never layered he just derped. He came over to us and one day I met up with him, and I said put all your keys away, every single one of them. “Now take this capsule. We’re gonna go to each one of these portals, and you’re gonna throw to those two.” And so I physically got him in the car, and had him throw my fields, and I said this is how you layer. Just make sure that baseline is up first. Within a couple week or whatever, he’d started figuring out layers of his own. My other thing, as I told you before is persistence. Keep throwing it. It doesn’t have to be something great, just keep throwing it. Keep doing it. It will annoy them because, and do it from somewhere that is ok for you, that is not an annoyance to you, but that they have to go out of their way for. You find people that complement your area geographically. So, like [Player 2] has always complemented me because he’s way out west, so he complements my area. [Player 3], where he lives now, complements my area because he’s south. Antioch, that complements my area. Green Hills is really a decent hub. Other areas have similar things. You guys could be a hub for say, like, if [Player 4] ever fielded, it could be hub for East Nashville and Gallatin, or something over there. You find people that play similarly to you, and your areas complement each other and you work together and you keep working together. You find your teams that just do well together. [inhales then exhales smoke]

**Interviewer:** [Player 1] and I seem like, a lot of the time we are a two-person team, just because with two people you can do a lot. He doesn’t always like to bother people, but if we need help, somebody that’s in our area, that’s pretty much who we ever use to ask for help. I kind of like that way because we always know where the other person’s gonna go. We know how far east or west we can go without getting in their way.

**Erin:** You start to develop an eye for it. Like I can look at the Intel map and typically know if I'm blocked. I used to have to draw everything and I don’t have to do that anymore.

**Interviewer:** I still do because I don’t draw as many fields as [Player 1] does. I mean he draws them all the time and I just don’t. I’m good at doing it on the fly. He’s better. I mean some people are just, they just have that kind of, that’s their thing. That’s what they like to do. I don’t
like to draw it, I just like to go out and say oh hey, I bet that’ll work. And just figure it out and
make it work and of course you know who is like Google message me “hey woman, go back and
do this because you could’ve gotten more AP if you’d done this, or you could get more mu if
you’d do this.

**Erin:** That’s another thing. In terms of your learning depends on you game. If you're looking for
AP, it’s a totally different learning experience. So there's the, I’m gonna call it selfish, because
honestly, passed level 8, who cares? Passed level 8, with the exception of your XM bar goes up
and that you can recharge further away, what do you really gain from being further than level 8?
I say selfish and really, I don't mean that in an offensive way but I just say a more “I am thinking
about my own AP right now.” That sort of thing. Are you thinking about the team versus are you
thinking about you? Same with are you thinking about the local? Are you focused on the local or
are you focused on the global, because those are all different learning experiences, for every
single one of them. So it’s going to depend on what sort of player you are or are you strictly the
social like moderator? Are you just the person who barely plays and just has a level head, which
is like [Player 1]. He has the most level head of anybody. Well, him and [Player 2]. [Player 2] every once in a while gets upset every once in a while. [Player 1] barely plays, and [Player 2] avoids conflict. So, yeah, it's all dependent on what you what you're going for. So if someone
wants AP, I’m gonna teach them, the first three levels capture everything you can link it up in a
small area with this much portal density as possible. Level four is actually about the point that
you can actually start killing stuff. Level four bursters. Anything below that, you’re kinda
screwed. But I learned that from Disney World, because portals flip so quick there that I ran out
of gear fast. You have to learn how to maintain your gear. You have to learn how many keys you
need. That's something else too. If you're not a fielder you're not gonna keep a bunch of keys.
But if you are…

**Interviewer:** You’ve got tons and tons.

**Erin:** So much of it is learning other players play patterns.

**Interviewer:** So, you’ve talked about how participation in these sites has influenced your
gameplay, but how does it influence your life outside the game?

**Erin:** What life? No matter where I go, if I go on vacation, I’m still you know…So, it depends
on how motivated I am. That’s a personal thing really, but like today, I could have gone and
killed Heard before checkpoint but I wanted to go interview for a passport. I knew if I'm late to
this appointment, I don’t know when I’m gonna get another appointment, so I'm making that
decision. Have I been late to things because of Ingress? Yeah. A lot. I've often been late to things
because of Ingress. Because I felt the need to go throw a field, or I felt “oh no, they just took it
down.” Well if I'm going to teach them that I'm going to always put it back up because that's the
thing with the persistent game. When you play the persistent game, then you better put it back up
the moment they take it down. And you teach them to only gut the field. So that’s what I do. You
make them afraid to take the whole thing down. If they take the whole thing down, you have to
immediately throw the whole thing, and so you have to be prepared to do that if you’re going to
play that way. I’d say the thing biggest way that it has positively affected my, my real life is that you know I have people I’ve and become friends with and whatnot. How it’s negatively affected, if you have a falling out with somebody and they play this game, then you’re constantly having to see their name in COMMs. You know where they, you know when they’re playing, so that can be a nasty thing. Sometimes, Erick always makes the joke of when he has to go do something for Ingress on the weekend. Because he tries to maintain something on the weekend that the weekend if for his wife or whatever, you know, family. So he always makes the joke that he is going out to get the milk. Four hours later…

**Interviewer:** I hear that excuse a lot. “Hey honey, I’m gonna go get something at Walmart”. I was born at night, but not last night. It’ll be 2 hours later. I thought you went to get milk.

**Erin:** Well, at least they’re like, not out messing around. But yeah, there’ve been times it’s been negative in the sense of, I’ve been late to things because of if and that sort of stuff.

**Interviewer:** Mostly would you say this is positive or negative experience. Like, your experience in Slack with whoever you particularly talk to. Would you say it’s been overall, a good experience?

**Erin:** Overall? Are you talking just Slack, or are you talking like my entire social time?

**Interviewer:** Your entire career. Anytime that you go to these places. Any of the hangouts or anything, or any of those where you would like, gather. Since our affinity spaces are really networked across spaces, like Zello is part of our space and sometimes telegram is part of our space. They’re networked across the spaces, so would you say it’s been a good learning experience or?

**Erin:** In terms of learning, yes. In terms of other things, that’s hard to say because it’s good and and there’s been times it’s been really bad. But in terms of learning whether it be good learning or bad learning and I mean bad learning like, you learn not to trust some people. You know, some things like that. It's been a combination of both. I don't really have a great answer for that one. In terms of about the game, yeah. I mean that’s the way a lot of learning I think came from initially seeing people in person, but a lot of it through messaging. It's usually been more specific people, and less the group as a whole. So, like. So, like [Player 1] or [Player 2]. It's almost like there's particular people that are in a way, kinda like mentors to you, kind of. [inhales then exhales smoke]

**Interviewer:** Pretty much, that’s been my experience also. It’s not like the group as a whole, and I don’t know how much of that is because I’m very much an introvert. Like, [Player 1] would always go to the farms and I would never go because there was too many people. I don’t want to go. I don’t want to hang out. Maybe if there’s a couple of people.

**Erin:** That’s why I always thought farms were good. Because you could sometimes get introverts to come to the farm. They didn’t necessarily go eat with you but is a lot easier to get
people to come to a farm than it is just say, “hey let's all go out for dinner.” So people that we didn't, you didn't know you could be like “hey, we don’t know this person so we as a group are getting together at this very public location if you want to meet us.” You can come meet with us if you want, or you don’t have to.

**Interviewer:** Yeah, and if I did come to the farm, I would never go eat with people. Honestly, I don't know how I've been a teacher. That’s kind of like, I think you’d probably understand. It’s like, that is a role that you’re playing. That, that's something that, like a costume you put on.

**Erin:** Well, do you teach kids?

**Interviewer:** Yeah, sometimes kids, sometimes adults.

**Erin:** But also, in a teaching environment…usually, but not always, you have a modicum of control of the situation. If you're in a situation where it's just like a group of people, you don't. They don’t know you from whoever. So you are sitting. It probably is a bit of control.

**Interviewer:** Oh, I’m the first to admit I have control issues. I like to exercise control over all I survey.

**Erin:** That could be part of it.

**Interviewer:** I also don’t like leaving my house because it’s too much work.

**Erin:** You leave your house sometimes to field. You gotta be motivated, so you got to figure out you motivation to do that.

**Interviewer:** You teach chess?

**Erin:** I teach at [school]? And I teach at [school].

**Interviewer:** Is that over by me?

**Erin:** Yes. That’s the weirdest thing. So I have a crazy memory for stupid things. So it's like, if I've seen a portal name a couple times, I will remember it. I will remember where it is. So there will be times someone will say somebody took this portal, and I’m like well that's over by there, that's weird. I mean like, I know where it is and the name of it, and I can tell you where it is. Like yeah I know every single name of every single portal in this park. There’s like 90 portals here, and I know the name of all them. I know the names of all the portals at Belmont. It’s weird. It’s like, and it still kills me to this day like [Player 1] is the one that goes to [the park] all the time but I know the names of the portals better than he does. So like, okay I want you to throw from [portal name]. Go to this then [portal name], then logging and then go to disappearance, and then go to [portal name] and he’s like, “what, what, what?” It’s like, I just, I don't know, I just have a weird memory for that.
Interviewer: I use portals for landmarks. If it’s me and him, we legit use portals for landmarks. Do you have any questions for me?

Erin: No. Oh, it’s 69, you better stop it.

[END AUDIO]
Appendix C

Points of Comparison Between Individual Cases and Theoretical Frameworks

<table>
<thead>
<tr>
<th>Participant Pseudonym: Matt</th>
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<tbody>
<tr>
<td><strong>Andragogy</strong></td>
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<tr>
<td><strong>Self-directed learning.</strong></td>
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<tr>
<td><strong>Experience used as a resource.</strong></td>
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<tr>
<td>Learning takes place when information is required.</td>
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<tr>
<td>“I wanted to learn to play better. Tried to connect with more experienced players, because I was just, you know, derping…”</td>
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<table>
<thead>
<tr>
<th>Learning is Problem-centered.</th>
<th>“…we also had people from global come in and help who have done other events who’ve had experience with Starbursts and the Dark XM events already who could come in and kind of give us pointers on what they saw in other cities.”</th>
<th>Participants can be producers, not just consumers.</th>
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<tbody>
<tr>
<td>“I started the Slack…just for the outreach opportunity, and to bring people together in just one platform.”</td>
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<tr>
<td>“…we basically posted everything in there that was important for the event.”</td>
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<table>
<thead>
<tr>
<th>Learning is motivated by internal factors.</th>
<th>“This has been a huge thing for me, because I’m an introvert, and so having this space and then doing the social stuff has actually helped with that. It’s helped in my job, actually. In being able to communicate in meetings because usually I’m the type that is very shy and quiet and not going</th>
<th>The content is transformed by social interaction.</th>
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<td>N/A</td>
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to say anything. But being out and social has actually helped that part of my life and I’ve come out of my shell.”

Learning is relevant to current experiences.  

“I wanted to learn to play better. Tried to connect with more experienced players…”

The development of both intensive and extensive knowledge is encouraged.

As a programmer and an experienced coder, Matt has developed AI and other apps for use in the space. In the interview, Matt states he has learned. “Fan fielding. Learning about the Ultra Strikes, like when you stay on the portal, like on top. I didn’t know that. Putting the resonators close, if you campfire one, you get the alert before they can destroy it…Learning some of the history and cultural stuff…”

Both individual and distributed knowledge are encouraged.

“…when I came into the space, I didn’t know anything about fielding. Learning how to do the noding, and draws, and they would teach draws.” “There’s some mentoring, even locally, that I’ll do when they come in.”
<table>
<thead>
<tr>
<th>Affinity spaces encourage and enable the use of dispersed knowledge.</th>
<th>“Even stuff that’s not really related to the game, just because of the way that Ingress works, it’s the real world, and learning about different areas. Learning some of the history and cultural stuff, that’s really interesting. Even stuff, you know, you’ve lived here your whole life, and it wasn’t until this game, like, wow, there was these Indian mounds in Brentwood.” (In the interview, Matt indicated he did the research.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tacit knowledge is valued and explicit knowledge encouraged.</td>
<td>“z…we also had people from global come in and help who have done other events who’ve had experience with Starbursts and the Dark XM events already who could come in and kind of give us pointers on what they saw in other cities.”</td>
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<tr>
<td>Participation comes in many forms and from many routes.</td>
<td>“I look for new ENL players to pop up, and I try to build some rapport…”</td>
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“…we basically posted everything in there that was important for the event…”
“…we’re trying to do is use the spaces to gather as many people to go to those events.”

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<tr>
<th>There are many paths to status.</th>
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<tr>
<td>Leadership is flexible.</td>
<td>“…the groups become very, I don’t know a better word to say, “clique-ish?” It became kinda competitive almost, even though we’re the same team, they competed with each other.”</td>
</tr>
<tr>
<td>Roles are reciprocal.</td>
<td>“…there’s some mentoring, even locally, that I’ll do when they come in. People have questions, and this game, there’s so many aspects of this game, so yeah, I do that.”</td>
</tr>
<tr>
<td>Learning is proactive.</td>
<td>“…it was watching the experienced players do it, and saying “I wonder if I can do that?” and then reaching out to [Another player] again and saying. ‘I noticed you can draw really well,”</td>
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<tr>
<td>Andragogy</td>
<td>Evidence from Case</td>
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<tr>
<td>Self-directed learning.</td>
<td>“Whenever I was new, I asked everything I possibly could to learn.”</td>
</tr>
<tr>
<td>Experience used as a resource.</td>
<td>“I actually learned about that from [Another player] as well. Since then, that is what I plan. Fields where I can layer them and get the maximum amount of mu out of everything.”</td>
</tr>
<tr>
<td>Learning takes place when information is required.</td>
<td>“Early on I didn’t know how you could stack fields on top of fields…I leaned that from [Another player].”</td>
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<tr>
<td>Learning is Problem-centered.</td>
<td>“He had killed a couple of my portals, and I thought what the heck is this all about? He’s on the same team as me, why would somebody do that? Come to find out it was so he could throw bigger fields, cover up the area, and get us more points for the team. At the time I didn’t actually know that until I met him, and he explained everything to me. That was pretty influential in my learning experience.”</td>
</tr>
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</table>
Learning is motivated by internal factors.

“He had talked about doing this fan field and I thought what is that? I’m thinking well, I’m a fan of fields, so I can do this. Ended up that he posted a video from YouTube of this guy, from England I think he is. He was showing how to connect them in a certain order to where you can layer them and... You multiply the amount of fields you get out of doing this. I mean, I do it at [a Civil War historical site] weekly.”

Learning is relevant to current experiences.

“I’ve always thrown my fields from the anchors, but then I was speaking with [Another player] about that. And she said you can throw from the nodes as well. I didn’t know that, I figured you had to throw from the anchors... So I started throwing my bigger fields that way, especially if I’m doing it by myself.”

The content is transformed by social interaction.

“We’ll go back and forth saying hey, here’s an idea I have, what do you guys think about this?”

The development of both intensive and extensive knowledge is encouraged.

“I’ve probably reviewed close to 15,000 portals... so I came up with screenshots showing hey, this is where you touch your screen, that’s where Ingress is going to put the portal.” “I’ve drawn plans for people [on the east side] and people will ask me, hey, how can I field this? They ask me for advice, because they know that’s what I do, I field. And whenever I do...
| Both individual and distributed knowledge are encouraged. | “Early on I didn’t know how you could stack fields on top of fields…Since [I learned how], that is what I plan. “I’ve drawn plans for people up around [the east side], and people will ask me, hey, how can I field this?” |
| Affinity spaces encourage and enable the use of dispersed knowledge. | “Ended up that he posted a video from YouTube of this guy, from England I think he is. He was showing how to connect them in a certain order to where you can layer them…” |
| Tacit knowledge is valued and explicit knowledge encouraged. | “I’ve probably reviewed close to 15,000 portals, and the biggest problem is that people don’t put them in the correct location. You go to look for it, and it’s not there. They’ve put it in the middle of a field somewhere, because they don’t know how to do it.” |
| Participation comes in many forms and from many routes. | “I came up with screenshots showing hey, this is where you touch your screen, that’s where Ingress is going to put the portal.”
“I’ve drawn plans for people”
“I’ve made missions as well for people to do.” |
|---|---|
| There are many paths to status. | “People know that, it’s what I’m known for, my fielding in the area. It’s how I made a name for myself.”
“I posted this on my G+ page, I posted it to Slack in 3 or 4 channels, and also to the...” |
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<tr>
<td>Roles are reciprocal.</td>
<td>“I’ve taught people how to better field. I’m good at explaining, like ok, this is the way you do a fan field. I can walk you through it, and you can see how it works. Sometimes even meet up with people and run them through the whole process. I can teach them the best way to lay out their mods for defense or offence.”</td>
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<tr>
<td>Learning is proactive.</td>
<td>“Whenever I was new, I asked everything I possibly could to learn.”</td>
</tr>
<tr>
<td>People get encouragement from peer feedback.</td>
<td>“I posted this on my G+ page, I posted it to Slack in 3 or 4 channels, and also to the ENL G+ page, and I’ve gotten a lot of good feedback off of it.” “I did one for [a Civil War historical site] and people have told me they liked it.”</td>
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</table>
and that it was a great mission. I will post them in Slack to let people know they are live, have people go do them and tell me what they think.”

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<th>Affinity Space Theory</th>
<th>Evidence from Case</th>
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<td>Self-directed learning.</td>
<td>“Well, if I need to ask someone a question about anything, a field, a link, or a portal, I can get on there and ask.”</td>
<td>The common endeavor is primary.</td>
<td>“We needed to communicate about different things in Slack, and so we started that one up, or joined it. I can’t think of the reason, but we were talking about being able to turn in more portals. We were able to ask each other whether or not a portal had been submitted or not.”</td>
</tr>
<tr>
<td>Experience used as a resource.</td>
<td>“I can see the questions that people ask or they’re talking about a certain field, and if I’m in that area then I can maybe help…”</td>
<td>Affinity spaces are not segregated by age.</td>
<td>Susan is 67. (Participants’ ages range from 32-67).</td>
</tr>
<tr>
<td>Learning takes place when information is required.</td>
<td>“I’ve put portals on there that have been rejected or accepted, I ask what I need to</td>
<td>Newcomers are not segregated from the masters.</td>
<td>“…the players that are on there have been in Ingress longer. They’ve</td>
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<td>Learning is Problem-centered.</td>
<td>“…the ones that I’ve submitted that have been rejected, and I didn’t understand why. I can go on there and ask someone if I need to do something different…”</td>
<td>Participants can be producers, not just consumers.</td>
<td>“I can see the questions that people ask or they’re talking about a certain field, and if I’m in that area then I can maybe help…”</td>
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<tr>
<td>Participants can be producers, not just consumers.</td>
<td>“It think I really learned a lot because in this game, the portals, everything is something about history. I didn’t know that, and I’ve actually learned, even going into cemeteries, it amazes me. The churches and things that help in the community. It’s those things that really, really got me going in the game.”</td>
<td>The content is transformed by social interaction.</td>
<td>“I can go on there and ask someone if I need to do something different, and actually sometimes I’ve been told to resubmit, and be careful about where it is or something like that. And then sometimes they’ve been accepted.”</td>
</tr>
<tr>
<td>Learning is relevant to current experiences.</td>
<td>“They can tell me the direction I need to go, like if I should link a different area first and then go to another area or field.”</td>
<td>The development of both intensive and extensive knowledge is encouraged.</td>
<td>N/A</td>
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| Both individual and distributed knowledge are encouraged. | “I ask what I need to do to get them resubmitted…I go back then [and
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- "I really learned a lot, because in this game, the portals, everything is something about history."
- "I started looking at the Ingress map a little closer."
- "I can ask them about something that I’ve looked up, maybe on the Ingress map."
- "We were talking about being able to turn in more portals. We were able to ask each other whether or not a portal had been submitted or not."
- "…the ones that I’ve submitted that have been rejected, and I didn’t understand why. I can go on there and ask someone if I need to do something different…"
- "I’ve put portals on there that have been rejected or accepted”
- "I can ask them about something that I’ve looked up…"
<table>
<thead>
<tr>
<th>Statement</th>
<th>Quote</th>
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<tbody>
<tr>
<td>“we had to double check with him to make sure that we wouldn’t have links crossing over.”</td>
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<tr>
<td>There are many paths to status.</td>
<td>N/A</td>
</tr>
<tr>
<td>Leadership is flexible.</td>
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<tr>
<td>Roles are reciprocal.</td>
<td>“I can see the questions that people ask or they’re talking about a certain field, and if I’m in that area then I can maybe…help them out. Then I can ask them to do the same for me.”</td>
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<td>Learning is proactive.</td>
<td>“if I need to ask someone a question about anything, a field, a link, or a portal, I can get on there and ask.”</td>
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<td>People get encouragement from peer feedback.</td>
<td>“I’ve been told to resubmit, and be careful about where it is or something like that. And then sometimes they’ve been accepted.”</td>
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### Participant Pseudonym: Brad

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<th>Affinity Space Theory</th>
<th>Evidence from Case</th>
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</thead>
</table>
| **Self-directed learning.**      | “It was more learning by observation.”  
   “People would communicate what their plans were, and if you paid attention to the intel, even without asking them direct questions, you could look at what they said they were going to do, then monitor intel and learn from that how to better plan fielding.” | The common endeavor is primary. | “Other players would say hey, there are other players from our area that use this, so you should join it. The first one I joined was hangouts. From there, I joined Slack and then Telegram.” |
| **Experience used as a resource.** | “I’ve gotten a few people started in the game…” | Affinity spaces are not segregated by age. | Brad is 32. (Ages of participants range from 32-67). |
| **Learning takes place when information is required.** | “When I obtained my Onyx Illuminator badge… the directors of the OP would upload files to let the players who would be throwing the field know which portals they would be using and how many keys would be needed and what your particular job | Newcomers are not segregated from the masters. | “You can ask questions to more ‘seasoned’ players.” |
Learning is Problem-centered.

| Participation is prompted by “fielding, and being able to learn how better to field. How to plan fields, what needs to go on in order to throw larger fields.” | The content is transformed by social interaction. | “It was pretty slow going until I ran into some other players who introduced me to the different channels to communicate with other players.” |

Learning is motivated by internal factors.

| “You could look at what they said they were going to do, then monitor intel and learn from that how to better plan fielding.” | The development of both intensive and extensive knowledge is encouraged. | N/A |

Learning is relevant to current experiences.

| “I am able to participate in larger operations. You can have people in your cell, but are 50-100 miles away go take care of something that is kind of messing up your own plan without having to drive there yourself.” | Participants can be producers, not just consumers. | “I…plan things plan things or do things on my own, or with maybe one or two other players.” |

| Both individual and distributed knowledge are encouraged. | “[Participation is] mostly just for fielding, and being able to learn how better to field. How to plan fields, what needs to go on in order to throw larger fields.” | N/A |

| Affinity spaces encourage and | “If you paid attention to the” | N/A |
| Tacit knowledge is valued and explicit knowledge encouraged. | “I am able to participate in larger operations”
“I...plan things or do things on my own, or with maybe one or two other players” |
<table>
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<tbody>
<tr>
<td>Participation comes in many forms and from many routes.</td>
<td>N/A</td>
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<tr>
<td>There are many paths to status.</td>
<td>N/A</td>
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<tr>
<td>Leadership is flexible.</td>
<td>“I am the voice of reason...Sometimes there are conflicts of interest on what should be happening in the region. Sometimes you need an unbiased opinion to kind of smooth things over. We’re all playing for the same team.”sd</td>
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<tr>
<td>Roles are reciprocal.</td>
<td>“I’ve gotten a few people started in the game who have done a fair amount of work for the team.”</td>
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<tr>
<td>Learning is proactive.</td>
<td>“[Participation] can help you learn more about how to play”</td>
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</table>
the game properly instead of just stumbling through it. You can ask questions to more ‘seasoned’ players.”

| People get encouragement from peer feedback. | N/A |

Participant Pseudonym: Adam

<table>
<thead>
<tr>
<th>Andragogy</th>
<th>Evidence from Case</th>
<th>Affinity Space Theory</th>
<th>Evidence from Case</th>
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<tbody>
<tr>
<td>Self-directed learning.</td>
<td>How I actually met [Another player] was to watch his movement on the map. So I would think ‘he should be here at this time and he should be going there at this time.’ I liked his style of gameplay. I would think ‘oooh that’s pretty cool, I would not think of that’, and it impressed me. So I made a point to say hey, and we started being cool with each other online.”</td>
<td>The common endeavor is primary.</td>
<td>“I do use [the Enlightened] Slack because it afforded us a lot of mutability, meaning you could be able to collaborate on a lot of different things…”</td>
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<tr>
<td>Experience used as a resource.</td>
<td>“I brought heart. I kind of kept the peace, and would say let’s keep going and a good motivator and being able to help people talk. ‘Use this tool, it’ll make you better’, or something of that nature. That goes back to how we’re able to balance ourselves.”</td>
<td>Affinity spaces are not segregated by age.</td>
<td>Adam is 47. (Participants’ ages range from 32-47).</td>
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<tr>
<td>Learning takes place when information is required.</td>
<td>“…when anomalies came to be a thing, we were looking for people who could make our game better.”</td>
<td>Newcomers are not segregated from the masters.</td>
<td>“Teaching new [players], mentoring was a big thing at the time…this is how you go about the game, this is how you actually field, or this is how you go and attack something and gain points and figure that out.”</td>
</tr>
<tr>
<td>Learning is Problem-centered.</td>
<td>“So, we took real world applications and applied it to the game. He’s a</td>
<td>Participants can be producers, not just consumers.</td>
<td>“we did most of our planning structure, sharing documents, and</td>
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</table>
Learning is motivated by internal factors.

mapmaker, so being able to figure out zones, and best ideas, and how long it will take to get from point A to point B, and scheming and planning in the background…”

“…we were excited thinking what is that? I remember sitting in my office at the time and I was doing some programming and keeping the map open because I was watching people punt this shard around in upstate New York. And so I was curious, and all of a sudden we helped coordinate…”

The content is transformed by social interaction.

“…working with her was a best practices really. Well, this is what happens when I hit an area that is completely covered by these many agents, and this is my, this is how I remember her specifically explaining how she would psyche out other players, and that took us back to discussing The Art of War. Figuring out how to make people think you were going to do something, but then you were going to do something different like you would attack a city then turn the whole thing green, comparatively. It was really cool to have someone bring that part into things like that… The biggest thing at that time was code-breaking.”
| Learning is relevant to current experiences. | “So to have all of those people coming together with all your point of contacts, and figure out how ‘we’re gonna hit Chicago today’. RES have no clue that we’re gonna show up in Chicago, and how do we take down a city as big as that?” “I remember her specifically explaining how she would psyche out other players…Figuring out how to make people think you were going to do something, but then you were going to do something different like you would attack a city then turn the whole thing green, comparatively.” | The development of both intensive and extensive knowledge is encouraged. | As a programmer, Adam helped develop AI for the space. “…you can use bots to call up anything, different information from the Cloud now.” “…it was everything from anomaly planning to working with cartographers for maps. Bringing in people, and it was a daily, absolute daily thing keeping up with my emails, my Hangouts, there were always like 35,000 Hangout different chats, plus the G+ groups and trying to maintain that and keep everything organized.” |
| Both individual and distributed knowledge are encouraged. | “I was watching people punt this shard around in upstate New York. And so I was curious, and all of a sudden we helped coordinate, and this was really before...” |
we started having operators is basically what we did. So we would talk to people online via their scanners from the web portal itself and then direct them the right place to go.” “working with her was a best practices really.”

<table>
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<th>Affinity spaces encourage and enable the use of dispersed knowledge.</th>
<th>“…it was… working with cartographers for maps…” “I remember her specifically explaining how she would psyche out other players, and that took us back to discussing The Art of War.”</th>
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<tbody>
<tr>
<td>Tacit knowledge is valued and explicit knowledge encouraged.</td>
<td>“I taught [Another player] a lot of the things we used to do when we used to do that through the [Regional] organization.</td>
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</table>
| Participation comes in many forms and from many routes. | Activates he describes include: “Bringing in people…” “I will teach them how to do things…” “…keep[ing]
“I made sure everybody got along.”
“…it was everything from anomaly planning to working with cartographers for maps.”

“I was one of the only people that decided, ‘well, we should organize, you know, and get together.’ Now, there were other people I worked with, it wasn’t just me, it wasn’t just my idea.”
“Bringing in people, and it was a daily, absolute daily thing keeping up with my emails, my Hangouts, there were always like 35,000 Hangout different chats, plus the G+ groups and trying to maintain that and keep everything organized.”
“The first time Niantic came to Nashville to visit and just go hey, what’s going on? [They] specifically
came to me, [Player A and Player B]. They said you are the guys that seem to be talking to everybody about what’s going on, and what’s your scene like? That was actually cool of them to come to us and actually seek us out.”

Leadership is flexible.

“That sort of fell to me, as my job. Whereas, say, [Player A] was really great at doing planning and motivating people to do things, and [Player B], his thing was actually game design and figuring out how this is how we’re going to map out the actual thing, and we’re gonna go do this. What I did was I made sure everybody got along. So, we all three did important things, but, you know, we balanced each other that way.”

“There was nobody that was leading
the ENL, because we agreed to be ruled by committee.”

<table>
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<th>Roles are reciprocal.</th>
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<tr>
<td>“Mentorship. That was a really big thing. Being able to share what you know with someone, so they don’t have to make the same mistakes you did. They can start where you already are and then move forward…”</td>
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<table>
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<th>Learning is proactive.</th>
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<td>“…when anomalies came to be a thing, we were looking for people who could make our game better. So, we took real world applications and applied it to the game. He’s a mapmaker, so being able to figure out zones, and best ideas, and how long it will take to get from point A to point B, and scheming and planning in the background. He made most of our maps that we’ve used for years.”</td>
</tr>
<tr>
<td>Andragogy</td>
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<td><strong>Self-directed learning.</strong></td>
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<tr>
<td>Learning is motivated by internal factors.</td>
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around, and it gave me something to do when I was feeling restless, like I wanted a drink or something. And it gave me motivation to go do stuff I guess.”

<table>
<thead>
<tr>
<th>Learning is relevant to current experiences.</th>
<th>“We try and have channels that are by topic.” “If I come up with an idea, I want people’s opinions on it.”</th>
<th>The development of both intensive and extensive knowledge is encouraged.</th>
<th>“I’ve done thousands of missions.” “I am good at local moderate persistent fielding” “That's another thing in learning, looking at the Intel map and seeing over time, learning people's patterns.”</th>
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<tbody>
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<td></td>
<td>Both individual and distributed knowledge are encouraged.</td>
<td>“You find people that play similarly to you, and your areas complement each other and you work together and you keep working together. You find your teams that just do well together.”</td>
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<tr>
<td></td>
<td>Affinity spaces encourage and enable the use of dispersed knowledge.</td>
<td>“That's another thing in learning, looking at the Intel map and seeing over time, learning people's patterns.” “Some people study this game. Like on internet,”</td>
<td></td>
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<tr>
<td>Tacit knowledge is valued and explicit knowledge encouraged.</td>
<td>“I’ve learned a shit-ton from E, he figured out all the math on the cycle early on, and we had documents, and we had spreadsheets and we had like, we could input data. He made all these spreadsheets we could input data and make predictions about ‘if they throw this much, this is what the score will be.’”</td>
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<td>Participation comes in many forms and from many routes.</td>
<td>“In terms of your learning depends on your game. If you’re looking for AP, it’s a totally different learning experience. Are you thinking about the team versus are you thinking about you? Same with are you thinking about the local? Are you focused on the local or are you focused on the global, because those are all different learning experiences, for every single one of them. So it's going</td>
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There are many paths to status.
Leadership is flexible.
Roles are reciprocal.
Learning is proactive.

to depend on what sort of player you are or are you strictly the social like moderator? Are you just the person who barely plays and just has a level head…”

“Leadership is flexible. You can have leadership roles, but you can't have someone who decides that they make all the decisions. Because once you do people rebel. People don’t want to be told what to do.”

“Roles are reciprocal. “I like teaching people things as well, not just learning. I like to then give my knowledge… I’ve kind of switched roles to more of a teacher in this game than anything.”

“Learning is proactive. “This doesn't work, and that’s a lot of your learning after the initial stuff. It’s like you try it out, and then you’re like, I didn’t like this, and if I don’t
| People get encouragement from peer feedback. | N/A | enjoy it then nobody else is going to enjoy it…I learned through trial and error.” |