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ONLINE GAMING AND TEAMWORK

by

LAKSHMI JAGAD

Under the Direction of Cynthia Hoffner

ABSTRACT

This thesis aims to find out the relationship, if any, between playing multi-player online games and developing teamwork qualities. Online multi-player games involve thousands of players who play in teams (or solo, as the preference may be) in sophisticated gaming environments. As gamers team together to complete missions within the game, teamwork concepts such as communication skills, leadership, coordination, negotiation and other similar qualities come to the fore. The research component of this thesis consists of a survey where respondents answered questions about their online gaming behavior. They also answered questions about their experience working in teams in the offline environment. A total of 202 responses were collected and analyzed. There was a significant negative association found between autocratic leadership ability and hours spent per week playing online games in teams/groups. Team communication skills and leadership communication skills were significantly related to the degree of involvement in

the gaming community, but only for individuals with low leadership-work experience. A significant relationship was also seen between democratic leadership skills and the degree of involvement in the gaming community. In addition, a significant negative relationship was found between autocratic leadership ability and degree of involvement in the gaming community.

INDEX WORDS: Online gaming, Teamwork, Leadership, MMO, MMORPG, Multi-player

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ONLINE GAMING AND TEAMWORK

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DEDICATION

This thesis is dedicated to my spiritual guide and teacher, His Holiness Sri Sri Ravi Shankar. His presence and valuable teachings have both been integral towards the completion of this thesis and obtaining my Masters degree. I would also like to dedicate this thesis to my dear husband Pratik who has been my constant companion and best friend for many years now. A huge thank you to my parents for their unconditional love and blessings all my life. Thank you.

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I would like to acknowledge the contribution of my adviser, Dr. Cynthia Hoffner, towards the successful completion of this thesis. Her undying enthusiasm and ability to keep focused on "what needs to be done" have been my greatest learnings over the last year and a half.

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Introduction

Kezsbom (2002) estimates that more than half of the American workforce now operates in some form of teams. We are now used to looking at teams as an obvious choice when it comes to working on any kind of project. At work, most people are part of at least one team, if not more. Popular games like football, basketball and baseball are played in teams. Art, generally viewed as an act of self-expression, has also been an area of teamwork with artists collaborating on art projects and initiatives. In educational institutions also, project teams and study groups are common.

Teamwork is now seen as being essential to achieve goals and complete projects. As more organizations and companies are coming to this understanding, considerable investment is being made in understanding better how teamwork can be fostered within organizational departments, project-based teams, study groups, and organizing committees. The benefits of teamwork are well known but efforts are now being undertaken to learn the various ways in which it can be built and bettered among groups. Some of these initiatives include team-building events (outdoor and indoor) such as adventure sports, service projects, group discussions, and play sessions. This study examines if playing online games can be effective in culturing skills that are essential to be a team player. The study used a survey instrument to collect data about how gamers operate in teams in the game space and in real life. Thus, this research will attempt to create an understanding, based on quantitative methods and data, about the use of online games in cultivating teamwork skills.

Groups and Teams

Although the words "team" and "group" are sometimes used interchangeably, the two terms are defined differently. Katzenbach and Smith (1993) define a team as "a small number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they hold themselves mutually accountable" (p. 69). Greenberg (1996) defines a group as "a collection of two or more interacting individuals with a stable pattern of relationships between them who share common goals and who perceive themselves as being a group" (p. 178). Even though the two definitions appear similar, it is important to affirm that the major characteristics of a team are commitment, accountability, and skills.

All teams are groups but all groups do not function as teams. For a team to function effectively, a collective synergy needs to exist that results in a final product for which each team member is accountable. In contrast, a group may be made of members each of whom does his/her part of the project without feeling accountable for the end product. Mutual trust is an essential component of teamwork that contributes to the synergistic attitude in teams. In case of groups, trust is not an essential component at all. In teams, all members feel responsible for the end product and therefore, each holds the other accountable. However, in case of groups, each member only holds himself/herself accountable and not everyone else (Bryant & Albring, 2006).

Teamwork

Pryor, Singleton, Taneja and Toombs (2002) found that job performance, company performance, product value, and customer satisfaction are improved when people in strategic business units or work teams support each other, and the emphasis is on cooperation and achievement of common goals than competition. Smart and Thompson (1998) posit that there are two major assumptions behind the team movement. First, the quality of work is enhanced due to in-

put from multiple individuals, and this contributes to successfully handling the complexity and multi-functionality of projects. Second, individuals that are part of a team are more invested in the successful completion of the project.

Annett (1997) put forth a conceptual model of structured team skills that differentiates between team product (understood as the common goal that all team members combine their efforts towards achieving) and team processes (mechanisms used to achieve the common goal). The team product(s) varies depending on the specific type of team involved. For instance, in case of software development teams, the team product could be a new software product release or meeting a project deadline. In case of a military operations team, the team product could be the success rate in identifying and responding to enemy threats. Similarly, for teams involved in treating patients in intensive care units, the team product could mean a reduced rate of patient mortality. Annett, Cunningham and Mathias-Jones (2000) opine that the attainment of team goals is hypothetically dependent on team processes. Team processes fall under three categories namely Behavioral, Cognitive and Affective. The behavioral processes include communication and coordination. Cognitive processes refer to mental models or common understanding that team members have regarding the team plan, responsibilities of other team members and team direction. Affective processes include factors also referred to as "team spirit" or "morale" that are regarded as vital to a team's effective functioning. While Annett et al. acknowledge that it is difficult to state with certainty which of the various types of team processes has the strongest effect on team performance, measuring the behavioral team processes is simpler in that it can be done by creating sub-categories of observable actions.

This study will consider two important aspects of teamwork: communication skills and leadership.

Communication Skills

Salas, Sims and Burke (2005) count leadership among one of the five core components of teamwork, also termed as the "Big Five." The others are mutual performance monitoring, backup behavior, adaptability, and team orientation. They also define three coordinating mechanisms that work with the "Big Five" to ensure team effectiveness. They are shared mental models, closed loop communication, and mutual trust. Shared mental models are essential so that team members clearly understand team dynamics, structure, task assignment, expectations and inter-dependencies. When shared mental models are absent, it is akin to "not being on the same page" and possibly having different ideas about team structure, expectations, and goals. Effective communication helps with maintaining shared mental models, thereby allowing team members to support each other better. It is also helpful in generating an environment of mutual trust which ensures that team members enjoy a high degree of comfort within the team allowing them to air their opinions freely without fear of reprimand or future action. Mutual trust also facilitates giving and receiving feedback. Closed loop communication ensures that communication within the team is clear, unambiguous, and transparent. A team that has a solid communication model is likely to be more effective than a team where communication is uncertain and ambiguous.

Dewan and Myatt (2008) posit that a leader's ability to communicate well is relatively more important than his/her ability to determine the best course of action for the group. Good judgment is wasted unless the leader can communicate the message effectively. Clear communication on part of the leader also helps team members to coordinate better as well as learn from each other. Having a common understanding is important within a team and clarity on part of the leader goes a long way in creating that common understanding. Shaw (2005) suggests that for organizations, having a formally defined set of competencies (actions, activities and behaviors

expected of leaders) is a good step forward. The leadership communication competency tool from The NY Times Company expects leaders to be proficient in using communication channels strategically, promoting open expression of ideas, actively listening to the ideas of others, and adapting one's communication style to suit audiences.

Leadership

Salas et al. (2005) opine that team leadership hugely influences how effective the team is. A good team leader is cognizant of the team structure and dynamics, shared understanding and mental models, and the final team objective. S/he always stays aware of external situations that could possibly compel the team to adapt and alter its strategy, if necessary. A good team leader also retains information about the individual skills and abilities of the team members and assigns/suggests tasks accordingly. A leader is one who encourages the use of new procedures and individualized rewards to reach unique goals. In addition, s/he inspires team members to commit their efforts wholeheartedly to team goals (Betts & Santoro, 2007).

Luthar (1996) notes that although there are various terms and classifications used in defining leadership styles and behaviors, the idea of autocratic vs. democratic leadership style is implicit in all categorizations. This dichotomy is a fundamental aspect of leadership and one that has seen much research. Eagly and Johnson (1990) define democratic leaders as those who behave democratically and allow subordinates to participate in decision-making. A democratic manager may employ the participative (making decisions in collaboration with team members, using majority rules or voting systems) or consultative (gathering opinions from team members, and then taking a decision himself/herself) style of decision-making (Vugt, Jepson, Hart & De Cremer, 2002). Correspondingly, autocratic leaders are those who behave autocratically and discourage subordinates from participating in decision-making. Another term that crops up often in

discussions pertaining to leadership style is laissez-faire. A laissez-faire manager does not have or seek control over group members thereby letting them make their own decisions. Such a manager can, however, provide information and/or feedback to the group (Vugt et al., 2002).

In an experiment conducted to learn more about the impact of leadership style on social dilemma groups, Vugt et al. (2002) also found that under autocratic leaders, group stability could be compromised. They found that group members felt unhappy about the level of control they could exercise over the decision-making process. This impacted the decision to stay or quit the group, especially among dissatisfied group members who found no forum to voice their concerns. They also found that group members felt more valued when their opinions were considered and this also impacted their decision to stay or quit the group.

Online multiplayer gaming provides many opportunities to see different leadership styles, team structures, decision-making styles, communication techniques and more. In the following sections, I will examine gaming and its various aspects, history of gaming, kinds of gaming, attributes of gamers, and more.

Gaming

Online gaming has become very popular in the recent years. According to Griffiths, Davies and Chappell (2003), the early 1990s console games were replaced with a new generation of machines that had a very sophisticated degree of processing power. These games allowed users to play together. Griffiths et al. describe three categories of social virtual online gaming, namely Stand Alone Games, Local and Wide Network (LAWN) Games, and Massively Multi-player Online Role-Playing Games (MMORPG). Stand Alone Games are single-player only but they also provide the player with the option to go online and seek other opponents. LAWN games are tactical combat-style games where players link together and complete missions. This form of gam-

ing also includes tournaments and LAN parties where players bring their computers and equipment to a specified location and compete over a weekend. MMORPGs can only be played online and they provide a rich and sophisticated gaming environment that can house thousands of players at a time. Most MMORPGs feature detailed narratives, elaborate plot constructs, non-playing characters (NPCs), evolving story lines, and real and game-generated opponents. When a player enters the MMORPG environment, s/he assumes a character as part of the role-playing game dynamic. The player can select the character, class, gender, and other attributes of the character from an array of choices. For instance, in *World of Warcraft* (WoW), an immensely popular MMORPG, some of the character classes include Paladins, Priests, Hunters, Mages, and Druids. Similarly, the list of character races includes Dwarves, Night Elves, and Gnomes. After the character is created, the player steps out into the fantastic world of WoW and proceeds with the game.

Some of the most popular online games of today include *World of Warcraft*, *EverQuest*, *Lineage*, and *Ultima Online*. *Meridian 59*, published in 1996, is credited as being the first MMORPG. The game involved thousands of players, an environment that stayed constant ("persisted") between players' sessions, and many other identifying elements seen in MMORPGs today (GameSpy, 2003). *Ultima Online* was another MMORPG that gained commercial success in the late 1990s even though it suffered from initial technical issues. It eventually attracted more than 200,000 subscribers and became a hot favorite with gamers. *EverQuest (*EQ*)* was released in 1999, and it is regarded as the second big game in the MMORPG genre after *Ultima Online*. At its peak, *EverQuest* attracted more than 500,000 subscribers. It focused on a game model of players cooperating with each other as opposed to fighting each other. EQ is also credited with having introduced the idea of "raids," when players team together to accomplish missions

(Achterbosch, Pierce & Simmons, 2008).

The second generation of MMORPGs was released in the new millennium. Although these games mostly remained true to the concept of the older generation of games, they were more sophisticated in terms of graphics and interface design. Some of the well known second generation MMORPGs include *Dark Age of Camelot, Anarchy Online, Final Fantasy XI*, and *Eve Online. Anarchy Online* introduced the concept of "instances" where every player who enters the game world is presented with a new "instance" or copy of the zone. This ensures that experienced players, who camp out in the game world waiting for a specific resource or an enemy to spawn, do not have any advantages over newcomers. *Final Fantasy XI* allows players to experiment with different jobs (classes) within the game, thus allowing them to experience the game in a variety of ways. Unlike other MMORPGs that contain themes of fantasy, *Eve Online* is set in a fictional galaxy 24,000 years in the future. The game revolves around space exploration, combat and trading (Achterbosch et al., 2008).

Many games also allow players to customize and develop their own content after release. Herz (2002, cited in Humphreys, 2003) reports that 90% of the content in the game *Sims* is player created. Pearce (2002) gives the example of *Counterstrike*, a game created entirely by players. Some games also provide websites that facilitate trading of content between players. Not all games are receptive to players trading material. Sony, the publisher of EQ, clearly states in the End User License Agreement (EULA) of the game that such transactions are banned.

Learning to Play is a Shared Experience

In most MMORPGs, the players learn the game as they play. Humphreys (2003) describes how EQ is played.

> As a player you create a character of a particular race and class (profession) and set off into the world of Norrath in a tattered tunic and bare feet. You have a basic

weapon and you run around a zone hitting things with it. You whack a rat, it bites you back, you whack it, it bites, eventually either you or it dies. You do this a few times over and you get little messages – You just got better at one-handed slashing [2], you just got better at defence [4]. You have a wide variety of skills like this that keep building throughout the game (it's a big moment when you build your first skill to 100 and become a 'master'). Some skills automatically build as you engage in play, some you have to build deliberately (trade skills). Every now and then you advance so much you move to the next level, gaining access to more power, more spells, more health. You learn to loot the corpses of the things you kill and sell the loot to merchants or other players. You buy food and water, armour and spells, weapons and trade items. The game is training you along the way. Teaching you this tactic not that tactic. As a player you exercise many choices while you play. There are very few of the 'progressive' 'on-a-rail' prescriptions for play that are found in some games. (p. 83)

New players also learn from others who are more experienced. Steinkuehler (2004) conducted an ethnographic study of *Lineage* and found that JellyBean (played by the researcher), an elf new to the game, was "coached" by Myrondonia, a more experienced elf not only in how to play the game (gather treasure, defend oneself, and game shortcuts) but also in how to socialize with other players, how to conduct oneself, and other common courtesies within the game. Humphreys (2003), in the process of studying EQ, spent many days finding his way around the game. Then another player told him about player-created websites with detailed maps and connections. Humphreys also discovered websites with "guides on how to play different classes in the game, how to develop various skills like baking and fletching, what all the quests are and how to do them and so on" (p. 84).

In the online gaming world, learning is a shared experience as players share notes with their fellow players, exchange tips, create repositories of information, and participate in discussion forums. As Galarneau (2005) puts it, most MMOGs can be played individually to greater or lesser degrees depending on the game but the gameplay mechanics are such that true mastery of the game can be achieved only by working collaboratively with other players. Some players are committed to finding "loopholes" in the game design that help them master the game. Such in-

formation is usually passed on from player to player (Galarneau, 2005). Shaffer, Squire, Halverson and Gee (2005) give the example of Apolyton.net, a website devoted to the game *Civilization*, where players aim to develop game expertise and share skills, knowledge and understanding of the game. In addition to news feeds and discussion forums, this site also features a radio station, forums to exchange saved game files, and a university where other players can learn how to play better!

Gaming and Learning

Shaffer et al. (2005) explain that video games provide tremendous opportunities for learning by allowing players to participate in new worlds and derive novel experiences from their new identities and roles. They give the example of a player in *Deus Ex* (an action role-playing game) who experiences life as a government special agent, having to question the difference between state-sponsored violence and terrorism. In another example, a town presidential election in the game *Sims Online* resulted in intense campaigning, political debates, and judicial system restructuring, all in the virtual world. A third example is linked with the game *Railroad Tycoon* where players grapple with economic and geographic issues similar to those faced by railroad engineers in the 1800s.

In some games, players are able to make the connection between concepts learnt in the classroom and the real world applications of those concepts. Examples include learning about the effects of gravity in different parts of the solar system by planning manned flights and knowing the inverse square law of gravity by entering worlds that have smaller mass than the Earth. As Shaffer et al. (2005) describe it, "... by creating virtual worlds, games integrate learning and doing" (p. 6). Bonk and Dennen (2005) explain that gaming worlds also offer players the opportunity to develop metacognitive monitoring skills and discern patterns in events and uncover hid-

den relationships. The in-game situations and events also foster critical thinking and problem solving skills, not only in students but also among adult professionals.

Teamwork in Gaming

In the world of gaming, teamwork is necessary to complete many tasks ranging from obtaining a weapon to defeating a mob. Teams that have better organizational and team work skills can easily defeat a less organized team. Being seen and known as a good team player is also very important for gamers who wish to advance in the game. It amounts to a kind of social capital within the game space that can be utilized for mobilizing resources and asking for help from other gamers (Jakobsson & Taylor, 2003).

As seen in the following sub-sections, gaming involves communication skills and leadership ability in good measure.

Communication Skills

Nardi and Harris (2006) describe guilds as "named groups that socialize and play together" (p. 150). Guilds can be large (made up of couple of hundred players) or small (a handful of players), based on geography (made up of players from a certain city), based on religion, or any other parameter. Some guilds may be highly organized and goal-driven whereas some may be very casual in their attitude towards the game. Most guilds have their own chat channels where much of the non-game-related conversation takes place. This allows players to connect with each other and develop a sense of each other's lives.

Freitas (2006) mentions that online game play, by virtue of its social interactive dimension, can develop team-based skills like leadership, coordination and communication skills. In addition, the success of raid operations and similar missions is heavily dependent on effective communication among team members. Task delegation, member recruitment and mentoring,

communicating new strategies, mediating conflict within teams and negotiating rewards - all these are facilitated by good communication skills. Various communication channels exist in the gaming world. Instant messaging, online chats and website forums are but a few of them. Each channel has its specific usability. Being aware of the specifics of each communication channel is vital. For instance, posting on the online forum is a good idea when it comes to communicating news that affects the entire guild organization. Mediating conflicts between players would be best done over a dedicated online chat session. A real-time Voice Over Internet Protocol (VOIP) is useful while conducting a raid operation. As players spend more time in the gaming world, they develop an understanding of communication tools and their respective applicability to various in-game situations (International Business Machines Corporation, 2007).

Leadership

In online games, leadership happens quickly and sometimes it is undertaken by people who are otherwise reserved players. There are many opportunities to lead in the gaming world. For instance, most raid operations involve a group of players led into the mission by a single player. This is valuable leadership experience because leading a raid operation involves managing both people and resources. Players are easily able to view the skills and competency levels of each other, and this helps leaders in making decisions related to task delegation. Similarly, becoming the leader of a guild involves directing various aspects of the guild and providing the vision to the members.

Mediating conflict and maintaining relationships is an important part of the guild leader's job. Personal guild dynamics can interfere with the guild mission and therefore, it is the responsibility of the leader to maintain harmony and cohesiveness within the guild (International Business Machines Corporation, 2007). Guild leaders need to have an attitude of professionalism that

allows them stay focused on the mission objective instead of getting drawn into personal arguments and petty fights (Ducheneaut, Yee, Nickell & Moore, 2007). In the gaming world, leaders also have to deal with various kinds of issues some of which are deciding how rewards are to be shared among team members, managing crises, planning logistics, handling hostility and negative attitudes, and encouraging group loyalty (Yee, 2006).

Using Games to teach Teamwork Skills

Hussain et al. (2007) conducted a study to determine if multi-player games could be used to train soldiers in teamwork skills. Forty members of the United States Army Infantry participated in the study. The results showed that such games could support large-scale exercises with multiple individuals possessing varied and complementary skills working together for a specific purpose. It was also observed that teamwork behaviors improved as the participants went through successive missions (in the game). More specifically, the soldiers learned and implemented more effective ways of working together as they moved from one phase of the game to the next. Also, the soldiers themselves agreed that games as *Gorman's Gambit* could help them become better team players.

In a similar exercise, Ye, Liu and Polack-Wahl (2007) used *Second Life* (3-D online virtual world) to enhance software education classes. *Second Life* was used as a collaborative and communication tool both in and outside of the classroom to help facilitate interaction between the students. Two multi-player online games were also developed as a means to teach students the fundamentals of software specification activities and development processes. Surveys were conducted to learn about the experience of the students. More than 72 per cent of the students surveyed thought that communication and collaboration among the team was the most useful skill they learned from the games. They also thought that the game improved team work skills

that are highly essential while developing software in real life.

Hussain et al. (2007) posit that the degree of immersion experienced by the gamer during a MMO game may contribute to the amount of information acquired, skills developed, and the subsequent transfer of the knowledge to real environments. Young (2004, cited in Hussain et al., 2007) opines that a game of chess or a book may also be immersive but video games are particularly known for providing that kind of experience. This is a strong point in favor of online gaming being well suited for developing team player skills. In the next section, I'll examine the concept of situated learning and how it can explain transfer of skills from the gaming world to the real world.

Situated Learning and Communities of Practice

As per Young, Schrader and Zheng (2006), the basic premise of situated cognition is that all learning is contextual and dependent on one's actual and immediate circumstances. Learning happens due to the interaction between the individual and the environment. In another article, Brown, Collins and Duguid (1989) use the example of language. They explain that the meaning of a word is so highly dependent on usage and context that it cannot truly be captured by a definition even if a couple of exemplary sentences are provided. In a similar way, any given concept changes as it begins to be applied in various kinds of situations. The authors describe it as below.

> So a concept, like the meaning of a word, is always under construction. This would also appear to be true of apparently well-defined, abstract technical concepts. Even these are not wholly definable and defy categorical description; part of their meaning is always inherited from the context of use. (p. 33)

Brown et al. (1989) compare knowledge to tools. Just as tools can be acquired without the knowledge of how to use them, so also students can memorize algorithms and formulae without a clear understanding of their specific usage and applications in problems. In contrast,

people that use tools actively develop a rich understanding of the tools themselves and their usability. In the words of the authors, "Learning and acting are interestingly indistinct, learning being a continuous, life-long process resulting from acting in situations" (p. 33). Thus, activity and situations become an integral part of the learning and cognition process, thereby giving cognition its "situated" nature.

Wenger and Snyder (2000) describe communities of practice (CoP) as "groups of people informally bound together by shared expertise and passion for a joint enterprise - engineers engaged in deep-water drilling, for example, consultants who specialize in strategic marketing, or frontline managers in charge of check processing at a large commercial bank" (p. 139). Wenger (2005) defines the three main characteristics of a CoP as domain, community, and practice. Domain refers to the specific area of shared interest. For example, a group of friends living in the same neighborhood cannot be called a CoP. However, a group of chess enthusiasts dispersed across a city (or across the globe) can be classified as a CoP. Being part of a CoP entails having a common interest and a strong sense of commitment to furthering that interest. Membership in a CoP also involves community activities such as joint discussions, community forums, and information sharing, all of which also facilitate learning. Interaction and sharing are integral features of CoP. Finally, it is important to note that the members of a CoP are not connected by mere interest alone; they are practitioners who develop a shared set of resources (stories, tools, how-to guides, etc.) based on their individual experiences. These resources constitute the shared practice of the community that helps newcomers, develops and furthers deeper understanding, and acts as a repository of information and guidelines.

As new members join CoP, their initial level of participation can be termed as peripheral. Legitimate peripheral participation is a useful stage where new members observe other experi-

enced practitioners to get a sense of how to interact in the community (Brown et al., 1989). Lave (1993) explains, "Newcomers become oldtimers through a social process of increasingly centripetal participation, which depends on legitimate access to ongoing community practice" (p. 68). As new members begin to participate more and more in the community, they gradually get transformed into old-timers. Brown et al. (1989) explain that learning can be looked at as a way of enculturation. People get socialized to the behaviors and belief systems of new groups as they spend more time in the legitimate peripheral participation stage. Soon enough, when given the opportunity, they begin practicing these behaviors, and then move on to a more direct kind of participation. Dede (2005) gives the example of graduate students working in the laboratories of expert researchers who model the practice of scholarship. The students also interact with other team members and staff with varying degrees of experience and scholarship. Gradually, the students move from being inexperienced researchers to becoming experienced team members with better skills and higher expertise.

As seen earlier, the gaming world also provides many opportunities where new gamers learn how to play the game through interactions with more experienced players. Not only do they learn gaming techniques and methods, but also how to interact with other gamers, commonly used jargon, terms and terminologies, and accepted behaviors. This is an example of situated learning and legitimate peripheral participation that leads to learning and improved skills.

Dede (2005) observes that situated learning, although highly powerful, is not utilized enough in instruction methods. He attributes this to the fact that it is not simple to create complex real-world settings that foster learning in a natural and unstructured format. However, gaming worlds, by virtue of their rich design and sophisticated detail, can provide that experience which may be conducive to situated learning. In addition, the multi-user capability and the real-world

settings also allow gamers to collaborate actively, learn from each other, and share knowledge and skills.

Immersion and Transfer

Witmer and Singer (1998) define immersion as a "psychological state characterized by perceiving oneself to be enveloped by, included in, and interacting with an environment that provides a continuous stream of stimuli and experiences" (p. 227). Referring specifically to a virtual environment, the authors note the factors that influence immersion. These are isolation from the physical environment, perception of self-inclusion in the virtual environment, natural modes of interaction and control, and perception of self-movement. Higher the degree of isolation from the physical environment, greater is the degree of immersion experienced. As the individual perceives himself/herself to be part of the environment (as opposed to being a mere spectator), s/he feels more immersed, so to speak. In addition, smooth and natural modes of interaction with the environment also contribute to an immersive experience. Lastly, being able to perceive oneself as moving and interacting in the environment is an important factor that influences the sense of immersion.

Mestre (2002) defines transfer of learning (or transfer) as the ability to apply concepts (or methods) learned in one context to new contexts. Transfer can be of two types: near and far. In case of near transfer, learning from one setting is transferred to another setting that is closely related. In case of far transfer, learning is transferred between settings that are different from each other. It also includes the ability to use learning from one setting to resolve new problems that have a common structure with the knowledge acquired initially. For transfer to occur effectively, it is essential that the learner understand the principle behind the initial learning. Therefore, attention to initial learning is important for transfer. Context also plays a vital role in the transfer.

While it is simpler to learn concepts in a specific context, transfer depends on the ability of the learned to apply the concepts in a separate context. Exposure to multiple contexts provides opportunities for learners to abstract the principles behind the initial learning which is the first step to applying them elsewhere (Mestre, 2002). Dede (2005) notes that the importance of situated learning lies in the fact that it supports transfer. As the setting for learning becomes more and more similar to the real-life setting, it become easier to apply the learned skills.

Dede (2005) notes that multi-user virtual environments provide a sense of psychological immersion due to design strategies that "combine actional, symbolic, and sensory factors in manipulating one's avatar to further the suspension of disbelief that one is "inside" a virtual environment; the equivalent of diving rather than riding in a glass-bottomed boat" (p. 11). Psychological immersion can be induced by the use of egocentric frames of reference i.e. providing a view of the space as if one were within it. For instance, in this specific frame of reference, one would see a house as if one were inside the house. In contrast, the exocentric frame of reference would provide a view of the entire house as if one were viewing it from outside. Dede (2005) posits that psychological immersion facilitates situated learning. Referring to MMORPGs, he explains that the content and activities involved may not lead to knowledge that is useful in the real world. However he claims that new types of learning styles are developed in these environments that are based in media interactivity and immersion.

Hypotheses

Based on the preceding sections, it can be surmised that MMORPG environments provide ample opportunities to observe teamwork skills and leadership in action. As players learn the game and graduate to higher levels of expertise and skill, they find that good team and leadership communication skills are valuable assets that help in getting ahead in the game. It is also

postulated that regular game play helps in developing these skills. Therefore frequency of gaming is an important point of consideration. In addition, the specific kinds of games played also could be influential in development of the teamwork skills.

Ducheneaut and Moore (2005) observe that at higher levels, players need to be good "conductors" while guiding newcomers. Since the gaming environment is one where players essentially wish to have fun, authoritarian leaders are usually not very successful. The authors note that the good high-level players have a more empathic approach. They reinforce good group behavior and point at issues linked with coordination. It is also important to be sensitive to the needs of other players. This helps players to function better as they are able to observe each other's activities and adapt accordingly. Ducheneaut and Moore (2005) observe that players who do not act according to the needs of others are quickly excluded from a group. Therefore it may be possible that MMO gaming could be instrumental in developing democratic leadership ability. However, it may not have any impact as far as development of autocratic leadership skills are concerned.

A gamer that has greater experience playing MMOs as opposed to Stand Alone Games or FPS games may be more likely to develop leadership ability and communication skills. Playing as part of a team instead of solo could be a vital component of developing these qualities. Similarly, playing MMOs as part of a team for extended periods of time may also enhance both team and leadership communication skills. Of the two types of leadership ability, the democratic type could be enhanced since MMOs require leaders to coordinate with other players/teams and work together. However, it is not clear if autocratic leadership ability could be improved from playing MMOs as part of a team for extended periods of time.

H1: Team communication skills are positively related to a) amount of time per week and

b) years of experience playing MMOs as part of a team.

H2: Leadership communication skills are positively related to a) amount of time per week and b) years of experience playing MMOs as part of a team.

H3: Democratic leadership ability is positively related to a) amount of time per week and b) years of experience playing MMOs as part of a team.

RQ1: Is Autocratic leadership ability related to a) amount of time per week or b) years of experience playing MMOs as part of a team?

Active participation in raid operations and guilds creates opportunities for gamers to learn how to work with others in a collaborative manner. It also provides avenues for gamers to learn effective team and leadership communication that is vital to plan and lead missions, discuss strategies, analyze past missions, give and receive feedback, delegate responsibility, and negotiate rewards. Democratic leadership ability can also benefit from active guild and raid participation since these activities involve coordination, opinion gathering, and collaboration, all signifiers of democratic leadership. But it is an open question if autocratic leadership ability could benefit similarly from active guild and raid participation.

H4: Team communication skills are positively related to participation in guilds and raids.

H5: Leadership communication skills are positively related to participation in guilds and raids.

H6: Democratic leadership ability is positively related to participation in guilds and raids.

RQ2: Is Autocratic leadership ability related to participation in guilds and raids?

A higher degree of participation in the gaming community implies a greater level of involvement on part of the gamer. It could also mean active participation in gaming forums, online bulletin boards and gaming events, and interacting with other players on various levels.

These are opportunities to learn democratic leadership skills as well as how to collaborate with others on various activities, and communicate effectively both as a team leader and a team member. However, it is not clear if the autocratic style of leadership could be developed or enhanced through high involvement in the gaming community.

H7: Team communication skills are positively related to the degree of involvement in the gaming community.

H8: Leadership communication skills are positively related to the degree of involvement in the gaming community.

H9: Democratic leadership skill is positively related to the degree of involvement in the gaming community.

RQ3: Is Autocratic leadership skill related to the degree of involvement in the gaming community?

Chapter 2

Method

Procedure

A survey was created on SurveyMonkey (www.surveymonkey.com), the Internet survey site. An invitation to participate in the study and a link to the survey were circulated among members of the gaming community. Twitter was also used as a means to put out information about the survey. The survey link took participants to the consent form that they needed to agree to before being taken to the questionnaire. See Appendices A and B for the invitation and the consent form. Members were recruited from a total of 28 websites. They included the forums on World of Warcraft, Lern2Play, MMORPG, OnRPG, Guild Wars Guru, Dragonsfoot, Forums.Unfiction, Online Gaming Forums, Online Multiplayer Games Network, IGN Board, Sirlin.net, Game Ogre, MMRPG, Guild Wars Inc. Gamers, Freddy's House, Gamerz Planet, Big Boards, MMO Site, Quarter to Three, Gamers Underground, CGE Network, Tech Forums, MMORPG Forum, FOH Guild, Global MMO Forums and MMO Hut. The survey itself was posted online on 01/19/2011 and it was closed on 05/17/2011. It is worthwhile noting that this sample has its limitations in that it is self-selected and made up of respondents who belong to the gamer community.

Participants

Although 467 people opened the questionnaire, many answered none or only a few of the questions. A total of 203 completed questionnaires were collected for the study. Fully 167 respondents (82.7%) identified themselves as male, 26 (12.9%) identified themselves as female,

and 9 respondents did not report their gender. Ages of the respondents ranged from 18 to 67 years, with the average age being 34.85. Two respondents (1%) had not graduated from high school, 17 (8.4%) reported themselves as high school graduates/GEDs, 53 (26.2%) had completed some college, 67 (33%) respondents were college graduates, 57 (28.1%) had completed a graduate/professional degree, and 6 (3%) did not report their highest education level.

More than three quarters of the respondents (158, 78.2%) identified themselves as White/Caucasian, 11 (5.4%) identified as Asian/Pacific Islander, 5 (2.5%) as Hispanic Latino (a), 2 (1%) as African-American, 3 (1.5%) as Native American. An additional 12 respondents (5.9%) identified themselves as being multi-racial, and 11 respondents (5.4%) did not report their race.

Regarding their occupations, 29 (14.4%) respondents were students, while 25 (12.4%) mentioned that they worked in the field of information technology. A total of 16 respondents (7.9%) identified themselves as engineers, 14 (6.9%) as managers, 13 (6.4%) as software professionals and 11 (5.4%) identified themselves as service professionals. A total of 10 (5%) respondents identified themselves as unemployed, 8 (4%) as medical professionals, seven (3.5%) reported themselves as working in the financial field, and six respondents (3%) reported themselves as workmen. Gaming professionals, scientists and technicians each made up 3% (6 responses each) of the respondents. Government workers, educators, and retail workers each made up 2.5% (5 responses each) of the respondents. Media/PR professionals, military staff and office staff constituted 1.5% (3 responses each) of the respondents. Finally, four respondents (2%) fell in the 'Other' category and 14 respondents (6.9%) failed to report their occupations.

It is worthwhile to note that this sample is fairly representative of the gaming community at large. Williams, Yee and Caplan (2008) conducted a study of EQ gamers and found the mean age to be 31.16, similar to what was found in this study. This strengthens the idea that the typical

gamer is no longer the adolescent male, as it used to be thought earlier (Griffiths, Davies & Chappell, 2003). Cole and Griffiths (2007) observe that a notable increase in the number of female gamers seems to be occurring. They conducted a study of MMORPG players and found that 70% of the participants were male while 29% were female (1% did not give their gender). In this study also, the sample is mostly male.

Measures

The questionnaire used in the study is presented in Appendix C.

Team communication skills. Nine items (questions 1-9) were adapted from the Communication and Teamwork Scale (Pollard, Miers & Gilchrist, 2004). They measure the participant's perception about his/her communication skills, as required for being part of a team. A sample statement is 'I am able to adapt my communication style (written & oral) to specific audiences and situations.' Responses were measured on a 5-point Likert scale ranging from '1 - Strongly Disagree' to '5 - Strongly Agree.' Negative items on the scale were reverse coded. The nine items were averaged, with higher scores indicating that the participant considers himself/herself to have better team communication skills. The Cronbach's alpha was .71.

Leadership communication skills. Nine items (questions 10-18), adapted from the Leadership Communication Skills category of Team Skills Scale (Hepburn, Tsukuda & Fraser, 2002) were used to assess the participant's perception about his/her communication skills, as required for a team leader. A sample statement is 'I am an active participant in team meetings.' Responses were measured on a 5-point Likert scale ranging from '1 - Strongly Disagree' to '5 - Strongly Agree.' The nine items were averaged, with higher scores indicating that the participant considers himself/herself to have better leadership communication skills. The Cronbach's alpha was .79.

Democratic leadership skills. Twelve items (questions 19-30), adapted from the Democratic subscale in the Revised Leadership Skill for Sports (Zhang, Jensen & Mann, 1997) were used to assess the participant's perception about his/her leadership skills, specifically belonging to the democratic category. A sample statement is 'I put suggestions made by team members into operation.' Responses were measured on a 5-point scale ranging from '5 - Always' to '1 - Never.' The twelve items were averaged, with higher scores indicating that the participant considers himself/herself to have better democratic leadership skills. The Cronbach's alpha was .86.

Autocratic leadership skills. Eight items (questions 31-38) were adapted from the Autocratic subscale in the Revised Leadership Skill for Sports (Zhang et al., 1997). They measure the participant's perception about his/her leadership skills, specifically belonging to the autocratic category. A sample statement is 'I refuse to compromise on a point.' Responses were measured on a 5-point scale ranging from 'Always' to 'Never.' The eight items were averaged, with higher scores indicating that the participant considers himself/herself to have better autocratic leadership skills. The Cronbach's alpha was 0.68. Even if individual scale items were dropped, the value could not be raised.

General gaming experience. Participants were asked if they played online games of any kind (question 39) and also to report on their years of gaming experience and their average time spent on gaming in a week (questions 40 & 41).

Experience playing MMOs. Participants were asked how often they played MMOs as part of a team/group (question 42). Responses were measured on a 4-point scale ranging from '1 - Never' to '4 - Often,' wherever applicable. They were also asked to report on their years of experience as well as average time spent per week playing MMOs (or similar games) as part of a team/group (questions 43 & 44). In addition, they were asked to name the type of game that they

spend maximum time playing (question 45). Options included Stand Alone Games, multi-player games, and others.

Participation in raids/guilds. Six items were used to measure participants' experience with raid operations and guild membership (questions 46–51). A sample question is 'How often do you participate in raids and/or team quest operations?' Responses were measured on a 4-point scale ranging from '1 - Never' to '4 - Often.' The six items were averaged, with higher scores indicating a higher degree of participation in raids and guilds. The Cronbach's alpha was .80.

Degree of involvement in the gaming community. Six items (questions 52–57) were used to measure the participant's degree of involvement in the gaming community. A sample question is 'How often have you contributed to online gaming forums and bulletin boards?' Responses were measured on a 4-point scale ranging from '1 - Never' to '4 - Often.' The six items were averaged, with higher scores indicating a higher degree of involvement in the gaming community. The Cronbach's alpha was .76.

Kind of gamer. This question was used to determine how participants classify themselves as gamers. A total of three gamer categories were available to choose from namely, Achievement-oriented, Social-oriented and Immersion-oriented. The Achievement-oriented gamer is described as one who desires to progress in the game, understand the game mechanics better, learn how to play better and improve oneself as a player. The Social-oriented gamer is one who likes interacting and forming meaningful connections with other players, and derives satisfaction from group efforts. The Immersion-oriented gamer engages in creation of new personae and improvised story lines and uses the gaming environment as a diversion from real life.

Additional experiences. Participants were asked if they had worked and led as part of a team at work, school or any other similar setting. Responses were measured on a 5-point scale

ranging from '1 – Never' to '5 – Very Often.' They were also asked to describe how, in their opinion, online game–playing had affected their teamwork skills.

Demographic information. Demographic information included age, gender, ethnicity, highest level of education and occupation.

Method of Analysis

SPSS 18 was used to compute all analyses. Descriptive statistics of all variables were first obtained in order to view the general data distribution as well as check for any errors. Zero-order correlations were calculated between the teamwork variables and the gaming variables. Four multiple hierarchical regression analyses were conducted, predicting the four teamwork variables and using the four gaming measures as independent variables.

Hypothesis 1 examined the relationship between team communication skills and two gaming variables namely a) amount of time per week and b) years of experience playing MMOs as part of a team. Hierarchical regression analysis was done to understand this relationship. Demographic variables were entered in the first step, work experience was added in step two, two variables representing gaming experiences were added in step three, and the two remaining gaming variables were added in step four and five. The dependent variable in this analysis was team communication skills. This analysis was also used to address Hypothesis 4 (examined the relationship between team communication skills and participation in raids/guilds) and Hypothesis 7 (examined the relationship between team communication skills and degree of involvement in the gaming community).

Hypothesis 2 examined the relationship between leadership communication skills and the two gaming variables mentioned in Hypothesis 1. Hierarchical regression analysis (similar to that done for Hypothesis 1) was done to understand this relationship. In this case, the dependent

variable was leadership communication skills, all other parameters remaining identical. The analysis was also used to address Hypothesis 5 (examined the relationship between leadership communication skills and participation in raids/guilds) and Hypothesis 8 (examined the relationship between leadership communication skills and degree of involvement in the gaming community).

Hypothesis 3 examined the relationship between democratic leadership skills and the two gaming variables mentioned in Hypothesis 1. Hierarchical regression analysis (similar to that done for Hypothesis 1) was done to understand this relationship. In this case, the dependent variable was democratic leadership skills, all other parameters remaining identical. The analysis was also used to address Hypothesis 6 (examined the relationship between democratic leadership skills and participation in raids/guilds) and Hypothesis 9 (examined the relationship between democratic leadership skills and degree of involvement in the gaming community).

Research Questions 1, 2 and 3 aimed to understand the relationship between autocratic leadership skills and the gaming variables. Multiple hierarchical regression analysis, similar to that done for Hypothesis 1, was done. All parameters were kept identical but the dependent variable was autocratic leadership skills. This analysis was used to address the three research questions.

Chapter 3

Results

Descriptive Data

Part of the survey was comprised of questions linked with the preferred online games, gamer categories, experiences leading teams, and perceived benefits of playing MMOs in the offline environment. Participants reported the number of years that they had been playing online games such as MMOs in groups/teams ($M = 6.73$, $SD = 4.93$). They also reported the number of hours per week spent playing online games such as MMOs in groups/teams ($M = 8.47$, $SD = 9.6$). A total of 83 respondents (40.9%) chose MMOs as the type of online game they played most, and Stand Alone Games came in a close second (73 responses, 36%). An additional 28 respondents (13.9%) selected 'Other' as the category of games played most and 18 respondents (8.9%) picked LAN/WAN games.

A total of 98 respondents (48.5%) mentioned that they were members of a guild. The remaining (104 respondents, 51.5%) reported not being members of a guild. A total of 113 respondents (55.9%) identified themselves as leaders/officers of a guild while 89 respondents (44.1%) reported themselves as being neither guild leaders nor officers. Respondents were asked to pick a gamer category they most closely identified with. From the survey data gathered, it was found that a total of 96 (47.3%) respondents regarded themselves as achievement-oriented players, while 64 (31.5%) participants identified themselves as being immersion-oriented, and 42 respondents (20.8%) identified as social-oriented gamers.

The respondents were asked to rate how often they participated in a team setting at school, work or other such environments. On average, they reported that they occasionally participated in a team setting at school, work or other similar environments (M = 3.88, SD = 1.08). The participants were also asked to rate how often they led a team or group at school, work or other similar settings. On average, they reported that they occasionally led teams at school, work and such environments (M = 3.12, SD = 1.22).

Participants were also asked if they thought that their ability to work in and/or lead teams had been affected by playing MMOs in teams. Seventy-four participants (36.6%) replied in the positive while 70 participants (34.7%) replied in the negative. A total of 47 participants (23.3%) indicated that they were not sure, and 11 participants chose to skip the question.

Means, standard deviations and zero-order correlations for the variables can be found in Table 1. Team communication skills were positively correlated with leadership communication skills and negatively correlated with autocratic leadership skills. Similarly, leadership communication skills were positively correlated with democratic leadership skills but negatively correlated with autocratic leadership skills. Democratic skills were negatively correlated with autocratic leadership skills.

Similarly, it was found that hours per week spent playing MMOs in teams positively correlated to MMO gaming experience in years, participation in raids and guilds, and degree of involvement in the gaming community. MMO gaming experience was positively correlated to participation in raids and guilds, as well as degree of involvement in the gaming community. The results also showed positive correlation between participation in raids and guilds and degree of involvement in the gaming community.

It was also found that team communication skills and democratic leadership skills were both positively correlated to degree of involvement in the gaming community.

Table 1. Means, Standard Deviations and Zero-order Correlations between Teamwork Variables and Gaming Variables

	Mean	SD	2	3	4	5	6	7	8
1. Team Communication Skills	3.74	.55	.60***	.07	-.17*	.06	.06	.07	.14*
2. Leadership Communication Skills	3.81	.51	-	.30***	-.29***	-.04	-.02	.00	.10
3. Democratic Leadership Skills	3.81	.51		-	-.22**	.02	.04	.12	.27***
4. Autocratic Leadership Skills	2.32	.50			-	.11	-.03	.05	-.13
5. Hours spent per week playing MMOs in teams	8.47	9.6				-	.15*	.47***	.26***
6. MMO gaming experience (in years)	6.73	4.93					-	.38***	.47***
7. Participation in raids/guilds	2.49	.76						-	.57***
8. Degree of involvement in the gaming community	2.76	.85							-

Note. *p < .05, **p < .01, ***p < .001

Overview of Regression Analyses

Hierarchical regression analyses were conducted between the two sets of variables. In the first step, age, gender and highest education level were entered. In the second step, experience of leading teams/groups at school or work (or other similar environments) was entered. In the third step, the two gaming experience variables (MMO gaming experience in years, hours spent per week playing online games in teams/groups) were entered. In step four, participation in raids/guilds was entered, and in the last step, degree of involvement in the gaming community

was entered. Tables 2 through 5 show the regression analyses conducted for each teamwork variable.

Table 2. Hierarchical Regression Predicting Team Communication Skills

Predictor Variables	Standardized β	ΔR^2
Block 1: Demographic variables		.08**
Age	.17*	
Gender	-.14	
Highest Education Level	.17*	
Block 2: Work Experience		.10***
Experience leading teams/groups at work/school	.33***	
Block 3: General Gaming Experience		.00
MMO gaming experience (in years)	.00	
Hours spent per week playing online games in teams/groups	.06	
Block 4: Specific Gaming Experience		.00
Participation in raids/guilds	.03	
Block 5: Psychological Variable		.02
Degree of involvement in the gaming community	.18	
R^2 = .20 **Adjusted R^2 = .16** **F (8, 168) = 3.55**		

Note. *p < .05, **p < .01, ***p < .001

Table 3. Hierarchical Regression Predicting Leadership Communication Skills

Predictor Variables	Standardized β	ΔR^2
Block 1: Demographic variables		.06*
Age	.17*	
Gender	-.05	
Highest Education Level	.14	
Block 2: Work Experience		.04**
Experience leading teams/groups at work/school	.22**	
Block 3: General Gaming Experience		.00
MMO gaming experience (in years)	-.05	
Hours spent per week playing online games in teams/groups	-.03	
Block 4: Specific Gaming Experience		.00
Participation in raids/guilds	.02	
Block 5: Psychological Variable		.01
Degree of involvement in the gaming community	.16	
R^2 = .12 **Adjusted R^2 = .08** **F (8, 168) = 2.67***		

Note. *p < .05, **p < .01, ***p < .001

Table 4. Hierarchical Regression Predicting Democratic Leadership Skills

Predictor Variables	Standardized β	ΔR^2
Block 1: Demographic variables		.02
Age	.15	
Gender	.00	
Highest Education Level	-.02	
Block 2: Work Experience		.01
Experience leading teams/groups at work/school	.11	
Block 3: General Gaming Experience		.00
MMO gaming experience (in years)	-.01	
Hours spent per week playing online games in teams/groups	-.01	
Block 4: Specific Gaming Experience		.01
Participation in raids/guilds	.13	
Block 5: Psychological Variable		.06***
Degree of involvement in the gaming community	.32***	
R^2 = .10 **Adjusted R^2 = .06** **F (8, 167) = 10.60***		

Note. *p < .05, **p < .01, ***p < .001

Table 5. Hierarchical Regression Predicting Autocratic Leadership Skills

Predictor Variables	Standardized β	ΔR^2
Block 1: Demographic variables		.02
Age	-.09	
Gender	-.07	
Highest Education Level	.12	
Block 2: Work Experience		.01
Experience leading teams/groups at work/school	.10	
Block 3: General Gaming Experience		.03*
MMO gaming experience (in years)	-.11	
Hours spent per week playing online games in teams/groups	-.17*	
Block 4: Specific Gaming Experience		.00
Participation in raids/guilds	-.01	
Block 5: Psychological Variable		.04**
Degree of involvement in the gaming community	-.28**	
R^2 = .11 **Adjusted R^2 = .07** **F (8, 167) = 8.31**		

Note. *p < .05, **p < .01, ***p < .001

Hypothesis 1, 2, 3 & Research Question 1

Hypothesis 1 predicted a positive relationship between team communication skills and two of the gaming variables namely a) amount of time per week and b) years of experience playing MMOs as part of a team. Similarly, Hypothesis 2 predicted a positive relationship between leadership communication skills and the gaming variables mentioned in Hypothesis 1. Hypothesis 3 predicted positive correlation between democratic leadership ability and the two gaming variables from Hypothesis 1. Research Question 1 sought to find if autocratic leadership ability is related to the two gaming variables mentioned in Hypothesis 1.

Based on the standardized beta coefficients and R^2 change presented in Tables 2, 3 and 4, it is clear that there are no significant relationships between any of the three teamwork variables (team communication skills, leadership communication skills, democratic leadership skills) and either of the two gaming variables (hours spent per week playing MMOs as part of team, years of MMO gaming experience in teams). Therefore, Hypothesis 1, 2 and 3 were not supported. About Research Question 1, Table 5 shows that there is a significant negative association between autocratic leadership ability and hours spent per week playing online games in teams/groups.

Hypotheses 4, 5, 6 & Research Question 2

Hypothesis 4 predicted a positive relationship between team communication skills and participation in raids and guilds. Similarly, Hypothesis 5 predicted a positive relationship between leadership communication skills and participation in raids and guilds. Hypothesis 6 predicted a positive relationship between democratic leadership ability and participation in raids and guilds. Research Question 2 aimed to know if autocratic leadership ability is related to participation in guilds and raids.

From the standardized beta coefficients and R^2 change presented in Tables 2, 3 and 4, it is clear that there are no significant relationships between any of the three teamwork variables (team communication skills, leadership communication skills, democratic leadership skills) and participation in raids/guilds. Therefore, Hypothesis 4, 5 and 6 were not supported. About Research Question 2, Table 5 shows that there is no significant relationship between autocratic leadership ability and participation in raids/guilds.

Hypotheses 7, 8, 9 & Research Question 3

Hypothesis 7 predicted a positive relationship between team communication skills and degree of involvement in the gaming community. Similarly, Hypothesis 8 predicted a positive relationship between leadership communication skills and degree of involvement in the gaming community. Hypothesis 9 predicted a positive relationship between democratic leadership ability and degree of involvement in the gaming community. Research Question 3 aimed to know if autocratic leadership ability is related to degree of involvement in the gaming community.

Based on the standardized beta coefficients and R^2 change presented in Tables 2 and 3, team communication skills and leadership communication skills were not related to degree of involvement in the gaming community, although both of the betas approached significance at $p <$ .10. Therefore, Hypothesis 7 and 8 were not supported. However, Table 4 shows that there exists a significant positive relationship between democratic leadership skills and degree of involvement in the gaming community. Therefore, Hypothesis 9 was supported. For Research Question 3, it can be seen from Table 5 that there is a significant negative relationship between autocratic leadership ability and degree of involvement in the gaming community.

Supplemental Analyses

The degree of involvement in the gaming community was only a marginally significant predictor of team communication and leadership communication skills but it seemed that this association varied on the basis of work-related leadership experience. Experience of the respondents in leading teams/groups at work, school or other similar environments was associated with higher scores on both team communication and leadership communication skills. To explore this further, an interaction between degree of involvement in the gaming community and work experience was entered as the sixth block in all four of the regression analyses.

The involvement-work experience interactions were not significant for either democratic leadership skills (standardized beta = -.11, ns) or autocratic leadership skills (standardized beta = -.03, ns). However, the interactions were significant for both team communication skills (standardized beta = -.25, p < .05) and leadership communication skills (standardized beta = -.29, p < .05). To interpret these interactions, leadership-related work experience was split into high ('Often' or 'Very Often') and low ('Occasionally,' 'Seldom' and 'Never') and regressions were rerun for the two subgroups. It was found that there was a significant relationship between team communication skills and degree of involvement in the gaming community only for respondents who had low experience leading teams at school/work (standardized beta = .29, p < .05), but not for respondents who had more experience (standardized beta = -.01, ns). Similarly, it was found that for people with low experience leading teams at work/school, there was a significant relationship between degree of involvement in the gaming community and leadership communication skills (standardized beta = .32, p < .05) but not for people with high experience leading teams at work/school (standardized beta = -.12, ns). Thus Hypotheses 7 and 8 were partially supported, for people with low leadership-related work experience only.

Chapter 4

Discussion

The present study examined how teamwork variables may be related to gaming variables. The specific teamwork variables considered were leadership communication skills, team communication skills, democratic leadership skills and autocratic leadership skills. Similarly, the four gaming variables included in the study were hours spent per week playing MMO games as part of a team, years of MMO gaming experience in teams, participation in raids/guilds, and degree of involvement in the gaming community. Zero-order correlations and multiple hierarchical regression analyses were conducted.

Hours spent per week playing online games in teams/groups was negatively related to autocratic leadership ability, but was unrelated to the other teamwork variables. Years of experience playing MMOs and participation in raids/guilds were not related to any of the teamwork variables. Both team communication skills and leadership communication skills were positively significantly related to the degree of involvement in the gaming community, but only among individuals with low leadership-work experience. A positive relationship was also seen between democratic leadership skills and the degree of involvement in the gaming community. Unexpectedly, a negative relationship was found between autocratic leadership ability and degree of involvement in the gaming community.

Teamwork and Gaming Experience

Hypotheses 1 through 3 focused on understanding the relationship between the leadership and communication skills variables and level of experience in the gaming community. Gaming experience included years of playing online games as part of teams/groups as well as hours spent

per week playing online games in teams/groups. Research Question 1 questioned if autocratic leadership skills could be related to gaming experience. None of the three hypotheses were supported. However, a negative association was found between autocratic leadership ability and gaming experience.

With regard to the lack of an association found between communication skills and gaming experience and frequency, there may be an explanation. Galarneau (2005) opines that the best way to learn (and gain expertise in) online multi-player gaming is by playing with others, getting insider tips and techniques, and using the experience of other players to better one's own game. Therefore, it is logical to surmise that in their many years of online multi-player gaming, long-time gamers would have interacted with other gamers on missions, raid operations and other in-game events. Team communication skills involve being able to communicate with other team members (senior, peer, junior), explain one's viewpoint, negotiate differences in opinion, and work with different kinds of groups. Even in many years of gaming experience in teams/groups, it is possible that players don't engage in such interactions. Being part of a team does not imply that one is an active team member. Unless one participates in team interactions and engages actively with the other members, there may not be a big difference between being a team member and playing solo. In fact, for certain character classes in WoW, the chances of survival are higher for gamers playing solo (Ducheneaut, Yee, Nickell & Moore, 2006). Therefore, a long-time gamer who has been playing the same class all the years may not have teamed up with other players very often. In their study, Ducheneaut et al. also observed that many gamers in WoW began grouping only after they were past expertise level 55 and the challenges became difficult for solo players. Schrader and McCreery (2007) conducted a study on gaming and skill development and found that collaboration with other players declined as gamers gained exper-

tise. They ascribe this to the possibility that for developing players, collaboration and mentoring is accentuated. However, for proficient players, collaboration is not recognized due to its basic nature in the gaming process.

The nature of leadership in the gaming world may be the reason why no relationship was established between leadership skills and gaming experience. Leadership is assumed quickly and easily in gaming (International Business Machines Corporation, 2007). Depending on the specific challenge at hand, group size, responsibilities and the kind of leadership required are variable. Decisions have to be taken quickly in the gaming world and therefore, leadership changes hands fast, depending on the expertise and capabilities of the players involved. The leaders of today may be followers tomorrow, and vice-versa. Due to the temporary and fast-changing nature of leadership in the gaming world, it may be that online leadership communication skills are not easily transferred to the offline environment. Yet a survey conducted of IBM's internal gaming community found almost half of the respondents believing that game playing had improved their "real world" (quotes included) leadership abilities; and four out of 10 saying that they had applied MMORPG leadership techniques at work to improve their effectiveness as leaders. There was a similar question included in the present study to which 74 respondents (36.6%) responded in the positive i.e. playing MMOs in teams had affected their ability to work in and/or lead teams. However, an almost equal number (70 respondents, 34.7%) replied in the negative while 47 respondents (23.3%) reported as not being sure. One of the participants in the IBM study said that she regarded herself as a quiet person but found herself playing the role of a raid leader in the online gaming environment. She felt that the rapid pace of events as well as the assortment of communication channels afforded by the online multi-player gaming world helps individuals to try on leadership roles. She also thought that certain games, by virtue of their design and me-

chanics, lent themselves easily to leadership opportunities. Therefore, it may be worthwhile to conduct more research to understand the relationship between gaming experience and leadership and communication skills.

In the world of online multi-player gaming, leadership changes hands fast and is taken up by multiple individuals simultaneously. Many decisions are taken in an informal fashion and by building consensus. Therefore it is difficult to establish the presence of a single leader. This is also the probable reason behind the difficulty in using a conventional leadership scale for the purpose of studying online gaming because most scales assume a single leader and a specific style of leadership. In the study conducted by Hussein et al. (2007) involving army members, it was found that the gaming sessions elicited various instances of teamwork skills including leadership. However, leadership in this specific study was described as a more supervisory role than an autocratic one. Hence the likely explanation may be that people conforming to the autocratic leadership style do not spend much time gaming. This possibility can be confirmed by additional research at a later stage.

With regard to the negative association between autocratic leadership ability and gaming experience, it is possible that individuals who are inclined towards the autocratic style of leadership find it difficult to assimilate into the more casual and free-form world of online multi-player gaming. Correspondingly, it may be that long-time gamers who become accustomed to operating in the casual multi-player gaming environment are more resistant to the autocratic leadership style in the offline environment. According to Castronova (2007), "The organizational structure of production in today's games is utterly flat, with no bosses except yourself" (p. 141). He explains that in today's sophisticated multi-player gaming environment, fifty per cent of the characters are at the top level in game while the remaining fifty per cent is spread among the lower lev-

els. However, the top half does not have any authority over the lower half. Therefore, the world of gaming is a largely democratic one, and long-time gamers may find it challenging to submit to an autocratic style of leadership at their workplaces and other offline environments.

Teamwork and Participation in Raids/Guilds

Hypotheses 4 through 6 were based on understanding the relationship between the leadership and communication skills variables and participation in raid operations and guilds in the gaming world. Research Question 2 aimed to find if autocratic leadership skills could be related to the same gaming variable. None of the three hypotheses were supported. Also, there was no significant relationship found between autocratic leadership skills and participation in raid operations and gaming guilds.

As gamers participate in raid operations, they interact with other gamers to discuss strategies, coordinate their actions, negotiate rewards and points, and work together on the combined mission. The success of raid operations is dependent on good team communication, coordinated actions, timely responses and cooperation. So it seems natural that gamers who participate in multiple raids (and other similar operations) gain experience in best communicating to teams, and consequently become adept at it. However the results of this study do not support this view. Ducheneaut et al. (2006) remark that guilds generally comprise of a core group that plays together and engages actively, and peripheral team members who barely interact with their guild mates. For a gamer that simply follows instructions and does not interact much with other gamers, even participation in multiple raid operations, however complex and long-drawn, may not result in opportunities to communicate with others. Similarly, gamers that are not actively engaged with the tasks and operations of the guild do not stand to develop or improve their team communication skills necessarily.

Ducheneaut et al. (2006) also found that many guilds suffered from a high rate of attrition. That is, old members left the guild and were replaced by new ones, on a frequent basis. They also found that only 3.5% of the guild's population truly engaged in joint activities. As guild size increases, it becomes difficult for guild leaders to retain members and keep the guild together and engaged. In case of WoW, there are certain rules that allow only gamers possessing a certain range of expertise levels to even group and play together, even if they belong to the same guild. Therefore, in spite of being part of the same guild, gamers may not be able to team up and play together. Therefore, in the survey, asking more directed questions about specific actions undertaken as part of raid operations may have brought in information more pertinent to developing leadership and communication skills. Similarly, getting specific information about roles undertaken as part of guild membership could have elicited more details particular to team communication skills.

Teamwork and Degree of Involvement in the Gaming Community

Hypotheses 7 through 9 were based on understanding the relationship between the leadership and communication skills variables and the degree of involvement in the gaming community. Research Question 3 aimed to find if autocratic leadership skills could be related to the same gaming variable. Hypothesis 9 was supported by a significant positive relationship between democratic leadership skills and the degree of involvement in the gaming community. Unexpectedly, it was also found that there was a significant negative relationship between autocratic leadership skills and the degree of involvement in the gaming community. Hypotheses 7 and 8 were partially supported; degree of involvement in the gaming community was positively related to team communication skills and leadership communication skills only among people with low work-related leadership experience.

Democratic leadership skills involve getting inputs from team members on important decisions, allowing for them to voice their individual opinions, and providing freedom for independent decision making. This is a participative style of leadership that allows for opinions and feedback from others. Democratic leadership skills are enhanced by the active participation and involvement of others in all decision-making and other team processes. Discussions, brainstorming, feedback and review sessions are features of this style of leadership. On the other hand, the autocratic style of leadership is less participative and inclusive. Autocratic leadership skills are more authoritarian in style, and involve less accountability and more independence on side of the leader. In this study, the degree of involvement in the gaming community was measured by asking specific questions about how respondents engaged with other gamers. Mentoring new players, attending gaming conventions, introducing family/friends to gaming, and spending time with other gamers – these were some of the activities specifically asked about in this measure. That is, this measure related to specific interactions with other gamers, connection to the sport of online gaming, and to the gaming community at large. These activities build a sense of community among the gamers, even when they are not actively gaming. They help to create a collegial atmosphere that facilitates the development and enhancement of democratic leadership skills. This gaming attribute was not as much about specific gaming patterns or practices as much as it was about a perspective and attitude towards gaming. A higher degree of involvement in the gaming community expresses itself in the form of in-game social connections and interactions, participation in gaming events, willingness to assist newcomers and share one's personal experience, and openness to get involved with various aspects of the gaming world. In essence, this gaming variable is a good indicator of the individual's level of interest in gaming, over and beyond play, and in-game points and progress. By the same token, these skills are not part of what an autocratic

leader requires. Aloofness and autonomy are aspects of autocratic leadership skills, and a high degree of involvement in the gaming community is antithetical to both qualities. Therefore, it may follow from these results that gamers who have a high degree of involvement in the gaming community by means of engaging in meaningful interactions with other gamers and participating in gaming events also have greater opportunities to develop and enhance their democratic leadership skills. However, these activities may not be the most conducive to the development and enhancement of autocratic leadership skills, and hence a negative relationship exists between the two variables.

From the supplemental analyses, it was found that both team and leadership communication skills had a significant positive relationship with the degree of involvement in the gaming community but only for those people who had low experience leading teams at work/school. For people with higher experience leading teams in various offline environments, the relationship was not significant. This is an interesting finding, and it implies that immersion in the gaming world and active engagement in gaming activities may have a beneficial influence on team and leadership communication skills, when people do not have that kind of experience at work or school. However, for those individuals who already have experience leading and/or working in teams in the offline world, involvement in the gaming community may not make any additional contributions to their team and leadership communication skills. This raises the question of whether gaming can be used to improve teamwork qualities for individuals from all levels of work experience or if it may be effective primarily for individuals with limited work/management experience. Further research should be able to clarify this point.

Limitations and Suggestions for Future Research

Although this study yielded some interesting findings, there are a few limitations to the study as described below.

The sample was comprised of self-selected members of the gaming community, all of who were recruited online through gaming forums and websites. Obviously, these individuals who participated in discussions, chat forums and other such online avenues related to online multiplayer gaming were part of a population with a relatively high level of Internet-savvy. Since the online gaming community is far bigger and diverse, the results observed from this sample cannot be generalized to the entire community. By the same token, it is not possible to establish if these results would apply to members of the non-gaming community. This is a significant point to note especially with regard to using online multi-player games as a means for training and education for all kinds of populations. At the same time, it must be noted that the survey respondents came from a variety of educational backgrounds and professions. Thus, the sample was more diverse than what it would have been had the respondents been recruited from undergraduates or members/employees from a single organization.

All responses were self-reported; there was no experiment conducted to examine the influence of particular gaming activities on participants' work-related skills. Therefore, these results are based on the individual perceptions that respondents have about their behaviors in the gaming world and offline team settings. In addition, these results were gathered at a single time point. If the results would be collected over an extended period of time, their validity and generalizability would be higher. It is also important to note that it is not possible to determine from this study if there is a causal relationship between participation in multiplayer online gaming and development of teamwork qualities. This study has certainly shown a relationship between these

two sets of variables. However, these results could also imply that individuals possessing these teamwork qualities are more inclined towards actively participating in multiplayer online games. Therefore, the direction of influence cannot be established by the results of this study.

The survey did not contain any questions linked with experience working in and/or leading teams in the offline world before participants began gaming. However, respondents were asked how often they led and worked in teams at school, work or other similar settings. It would have been interesting to know if previous experience of working in and/or leading teams in offline environments itself would have influenced gaming behavior. However, this question may not have been relevant to all survey participants since some of them were college students who may or may not have had experience working in teams before they joined the gaming world.

An attempt was made to list the situations typically encountered in the multi-player online gaming environment, and to ask respondents for their responses to those situations. From the survey data, it was obvious that there were many kinds of online games that people played, and that these gaming situations were not part of everyone's gaming experience. Listing more specific gaming situations could have given a truer picture of what respondents experience as part of their online gaming activities. However, this may have resulted in a far longer list of survey questions. Therefore, refining the current list of gaming questions to include specific gaming situations and to quiz participants on their responses to these situations would have possibly resulted in more valid data. Another option would have been to focus the survey questions on a certain category of MMOs/MMORPGs. This would have brought in specific responses as well.

The results from this study also reiterate the importance of a gaming community. In order to experience the positive contributions of online multi-player gaming towards teamwork qualities, simply playing online multi-player games on a regular basis may not be sufficient. It is the

continued engagement and involvement with the larger gaming community that helps in the enhancement of teamwork communication skills and other qualities. Therefore, organizations that seek to use online multi-player games to build teamwork qualities need to think about how to build and grow an active online gaming community.

The three aspects of gaming explored in this study were gaming experience, participation in raids and guilds, and degree of involvement in the gaming community. The assumption here is that these three attributes are of utmost importance to gaming and possibly related to teamwork. However, there may be other aspects of gaming that are more relevant. For instance, "modding," the ability of game players to build new extensions or completely new versions of existing game, is connected to participation in gaming as well as method of learning (Joseph, 2008). However, the current survey did not contain any questions linked with "modding." Another aspect of gaming is related to playing with family members. Nardi and Harris (2006) found many individuals who regularly participated in multi-player online gaming with their family members and/or friends. It would have been interesting to examine how this group fared as far as expression of teamwork and leadership skills were concerned.

Future study could also delve into the actual learning processes that occur in the online multi-player gaming environment. Interacting with and learning from more experienced players is one of the commonly seen methods of learning. Legitimate peripheral participation also plays a part, as discussed earlier. Understanding these specific learning processes could prove useful in designing games with particular in-game situations, challenges and storylines for the express purpose of learning.

Conclusion

In the recent years, online gaming has grown a great deal in terms of sophistication, complexity and fans. Today's gaming environment is teeming with millions of players, some playing with each other, and others acting as spectators. The online multi-player game space allows for all kinds of players and gaming experimentation. While it may seem that a lot of the play is casual and fun, there is no dearth of serious gaming. For the serious gamer, there are definite objectives to playing. Building skills, gaining arsenal and gear, meeting other gaming enthusiasts, learning from each other, sharing one's skills, leading teams on missions, conquering dragons – these are some of what gamers seek to do in the gaming world. Most online multi-player games are iterative and involve a fair degree of repetition. Therefore, simply by virtue of its repetitive nature, online gaming provides scope for development and improvement of certain skills. These skills could be gaming-related or they could be practical applications of actual real-life concepts that come in use in game space.

A 2007 report released by the International Business Machines Corporation suggests that the company is looking at using multi-player games as a mechanism for its employees to learn and develop various teamwork qualities such as leadership, effective communication and collaboration. As per the results of this study, in case of individuals possessing low experience leading teams at school or work (or other such environments), a high degree of involvement in the gaming community is related to team and leadership communication skills. However, this relationship does not hold for individuals with high experience leading teams. Therefore, it is a pertinent question if online multi-player games could be useful in developing teamwork qualities for employees from all levels of experience.

Experience leading teams in various offline environments also plays a part in how gaming patterns can affect teamwork qualities. Rickard and Oblinger (2004, quoted in Bonk & Dennen, 2005) opine that the kinds of plots and situations encountered in the MMORPG world are useful in fostering critical thinking and problem solving skills. The learning that takes place through participation in online multi-player gaming owes itself in no small measure to the active gaming community. In-game interactions, mentoring, knowledge bases and discussion forums play a vital role in learning to play the game and mastering it. Nardi and Harris (2006) claim that their analysis of learning in WoW shows that community is the only one resource of learning. The higher the level of involvement in the gaming world, the greater are the opportunities to learn skills and techniques. This has been corroborated by the results from this study as well since participants who were deeply involved in the gaming community also reported higher level of democratic leadership skills and teamwork skills (for participants with low work-leadership experience).

It is clear that multi-player online gaming and teamwork are related in some ways although the direction of influence has not been ascertained. There are many kinds of online multi-player gaming environments today, and each one comes with its own set of challenges, objectives, rewards and communities. Yet there is commonality between the games in terms of player dynamics and interactions, team structure, communication style and team workings. Further research can help understand the relationship between gaming and teamwork, and also throw light on specific interactions that feed into the learning cycle and transfer the skills to the off-line world.

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APPENDICES

Appendix A

The invitation for the research study read as follows: "You are invited to volunteer in a research study examining people's experiences with online video gaming. To participate in this study, you should have been playing online video games for at least one month. This online survey asks about your various experiences playing online video games, and also asks some questions about opinions on teamwork skills and abilities. You must be 18 years or older to participate. Thanks in advance for your assistance! Here is the link: _____."

Appendix B

Georgia State University

Department of Communication

Informed Consent

Title: Experiences with online video gaming

Principal Investigator: Cynthia Hoffner

Student Principal Investigator: Lakshmi Jagad

Purpose:

You are invited to volunteer in a research study. The study examines people's experiences playing online video games as part of one or more groups and their perception about their individual teamwork skills. We will recruit a total of 300 people for this study. The survey should take about 20 minutes.

Procedures:

This study involves an online survey. We will ask for details linked with your online video gaming experience. You will also be asked for your thoughts about your individual teamwork abilities. To participate in this research study, you should have been playing online video games since at least one month.

Risks:

In this study, you will not have any more risks than you would in a normal day of life.

Benefits:

You may not benefit from participating in this study. However, the results should be beneficial in understanding better the connection, if any, between online video gaming and teamwork skills and abilities.

Voluntary Participation and Withdrawal:

You must be at least 18 years old to be in this study. Participation in the research is voluntary. You do not have to be in this study. If you decide to be in the study and change your mind, you have the right to drop out at any time. You may skip questions or stop at any time. Whatever you decide, you will not lose any benefits to which you are otherwise entitled.

Confidentiality:

We will keep your responses private to the extent allowed by law. Because this is an online study, complete anonymity cannot be guaranteed. The questionnaire does not ask for any identifying information about you. Your results will be kept completely confidential. Only the researchers will have access to the data. Information may also be shared with those who make sure the study is done correctly (GSU Institutional Review Board). The results will be summarized and reported in group form. You will not be identified personally.

Contact Persons:

If you have questions about the study, you may contact Dr. Cynthia Hoffner at joucah@langate.gsu.edu or 404-413-5650. You can also contact Lakshmi Jagad at lakshmi.jagad@gmail.com. If you have questions or concerns about your rights in this research study, you may contact Susan Vogtner in the Office of Research Integrity at 404-413-3513 or

svogtner1@gsu.edu.

If you are 18 or older, and willing to volunteer for this research, please click the "I agree" button below.

      __ I agree   __ I decline

Appendix C

Questionnaire

<u>Section 1</u>

The following questions ask about your experience working as part of a team at school, work, or any such similar environment.

Please rate the following statements using a five-point scale (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree).

1. I feel comfortable justifying recommendations/advice face-to-face with senior team members.
2. I feel comfortable explaining an issue to team members who are unfamiliar with the topic.
3. I have difficulty in adapting my communication style (written & oral) to specific audiences and situations.
4. I prefer to stay quiet when other team members express opinions that I don't agree with.
5. I feel comfortable working in a group.
6. I feel uncomfortable putting forward my personal opinions in a group.
7. I feel uncomfortable taking the lead in a new group.
8. I am able to become involved quickly with new teams and groups.
9. I am comfortable expressing my view in a group, even when I am aware that other people have different opinions.

Please rate your ability to carry out the following tasks using a five-point scale (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree).

10. I treat team members as colleagues.

11. When disagreements arise, I handle them effectively.

12. I strive to create an environment of cooperation within the team.

13. I address issues in a succinct manner at team meetings.

14. I participate actively at team meetings.

15. I raise appropriate issues at team meetings.

16. I can recognize when the team is not functioning well.

17. When the team is not functioning well, I intervene effectively.

18. I help draw out team members who are not participating actively in meetings.

For each of the following statements, there are five alternative answers, as follows: 5 means 'always' (100% of the time); 4 means 'often' (75% of the time); 3 means 'occasionally' (50% of the time); 2 means 'seldom' (25% of the time); and 1 means 'never' (0% of the time).

19. I let team members share in decision-making and policy formulation.

20. I put the suggestions made by team members into operation.

21. I let team members decide on methods to be used in completing a task.

22. I give team members the freedom to determine the details of conducting an activity.

23. I get approval from the team members on important matters before going ahead.

24. I ask for the opinion of team members on important matters.

25. I let team members try their own way even if they make mistakes.

26. I ask for the opinion of team members on specific strategies.

27. I encourage team members to make suggestions for ways to conduct team meetings.

28. I see the merits of team members' ideas when they differ from the leader's.

29. I get input from team members at regular team meetings.

30. I let team members set their own goals.

31. I present ideas forcefully.

32. I disregard fears and dissatisfactions of team members.

33. I keep aloof from the team members.

34. I dislike suggestions and opinions from the team members.

35. I prescribe methods to be followed.

36. I refuse to compromise on a point.

37. I plan for the team relatively independent of the team members.

38. I do not to explain my actions to team members.

Section 2

The following questions ask about your experiences with online video gaming.

39. Do you play online games (any kind)? **Yes, No**

40. Approximately how long have you been playing online games (any kind)? **___ Years ___ months**

41. How many hours per WEEK do you spend playing online games (any kind)? **___ Hours per WEEK**

42. How often do you play online games (such as MMORPGs/MMOGs) as part of a team/group? **Never, Rarely, Sometimes, Often**

43. How many hours per WEEK do you spend playing online games (such as MMORPGs/MMOGs) as part of a team/group? **___ Hours per week ___ N/A**

44. Approximately how long have you been playing online games (such as MMORPGs/MMOGs) as part of a team/group? **___ Years ___ months ___ N/A**

45. Please select the type of game that you spend most time playing:

    ___ Stand Alone Games

    ___ LAN/WAN Games

    ___ MMOs

    ___ Other (Please specify) _____

46. Are you currently a member of any guild? **Yes, No**

47. Have you ever been a guild leader or a guild officer? **Yes, No**

48. How often do you participate in raids and/or team quest operations? **Never, Rarely, Sometimes, Often, Very often**

49. How often have you participated in challenges where most players, if not all, are people you haven't met before? **Never, Rarely, Sometimes, Often, Very often**

50. How often have you assisted other players who you do not know on their quests and raid operations? **Never, Rarely, Sometimes, Often, Very often**

51. How often have you approached new players asking them to join your guild or a raid operation? **Never, Rarely, Sometimes, Often, Very often**

52. How often have you communicated with your team/guild members outside the game environment? **Never, Rarely, Sometimes, Often, Very often**

53. How often have you logged in to the game environment to spend time with your guild/team members? **Never, Rarely, Sometimes, Very often**

54. How often have you contributed to online gaming forums and bulletin boards?

Never, Rarely, Sometimes, Often, Very often

55. How often have you attended any gaming conventions or 'lanning' events? **Never, Rarely, Sometimes, Often, Very often**

56. How often have you mentored players who are new to the gaming environment? **Never, Rarely, Sometimes, Often, Very often**

57. How often have you introduced any friends or family members or colleagues to on-line gaming? **Never, Rarely, Sometimes, Often, Very often**

58. Please select an option that best describes the kind of gamer you are.

___ **Achievement-oriented (desire to advance in the game, interested in analyzing the game mechanics to learn to optimize character performance; desire to challenge and compete with others)**

___ **Social-oriented (interested in interacting with and helping other players; desire to form meaningful relationships with other players; deriving satisfaction from group efforts)**

___ **Immersion-oriented (interested in discovering new aspects of the game; enjoy creating interesting personae and interacting with other players to create an improvised story; using the online gaming environment as a diversion from real life)**

Section 3

Finally we would like to know more about you. Please answer the following questions.

59. In what year were you born? ___

60. What is your gender? **Male, Female**

61. What racial group(s) do you identify with? **African-American/Black, White/Caucasian, Hispanic/Latino(a), Asian/Pacific Islander, Native American, Other (Please specify)**

62. What is your profession? ___

63. At school or work (or other similar environment), how often do you participate as part of a team or group?

64. At school or work (or other similar environment), how often do you lead a team or group?

65. What is your highest level of education? **Did not graduate from high school, High school graduate or GED, Some college, College graduate, Finished a graduate or professional degree**

66. Please describe your experience of working in and/or leading a team in your professional and/or personal life (outside of online gaming).

67. Do you feel that your ability to work in and/or lead a team has been affected by your experience playing online video games (such as MMORPGs/MMOGs) as part of a team/group? **Yes, No**. If yes, please describe how your leadership/teamwork abilities have been affected by playing online video games.