Collaborative Games: An Exploratory View for Instructional Designers

Jason Drysdale, University of Colorado—Denver

Abstract: This action-research study examines the value of collaborative gaming in team-based work environments, as a means of team building and collaboration. Based on findings from survey, interview, and literature review, the potential value of videogames was confirmed in support of workplace collaboration. A growing number of workers are experienced gamers – and even those less experienced can contribute in positive ways to collaborative games-based activities. Examples are provided to illustrate ways that games can be productively used in the workplace.

Keywords: team building, collaboration, videogames, instructional design

Recently, I received some fantastic feedback from a team member. While I knew the expectations for this particular project, I misunderstood a few of the more nuanced aspects of our goal. The feedback my team member provided helped me see my mistakes clearly without making me feel inferior; the collaboration helped define my role more specifically so I could support my teammates. My understanding clear, we forged on to complete our objective: the final boss in Blackrock Caverns, a five-player dungeon in the massively multiplayer online role-playing game, *World of Warcraft.*

Games have provided pivotal learning experiences for me. Whether team dynamics from *World of Warcraft*, critical thinking and strategy skills from *Final Fantasy Tactics*, or the importance of clear and effective communication from *Modern Warfare 2*, games have taught me skills beyond the stories and gameplay. My experience is not unique. Gamers everywhere have synthesized these experiences into tangible skills that benefit the organizations for which they work. Video games are no longer a niche hobby for kids and computer geeks. A multi-billion dollar industry, well-known game releases can rival the revenue of blockbuster movies and platinum records. Video games have broken into the mainstream.

Instructional designers seek to implement new forms of training to improve the success of employees. Teamwork is a commonly cited issue among managers and business owners; team members often feel that more vocal members overshadow their ideas, or that teamwork slows down processes, rather than positively informing the project. A paradigm shift is necessary: gaming may provide the framework for collaboration needed for instructional designers to help improve team member buy-in and productivity.

Just as movies and television have informed training practices in new ways, instructional designers must start using video games as a valuable facet of training and learning. As new waves of people native to

digital and interactive media enter the workforce, team collaboration and practices change; training and learning environments have largely remained the same. The business world faces an imminent paradigm shift among its workers brought on by the advent of the digital age. The potential cost of failing to make this shift is high: communication among team members may become increasingly difficult; productivity may suffer from the lack of a unified identity; feedback may become forced and unnatural; and workers may feel division between those who wish for more digitally relevant opportunities and those who are satisfied with the status quo. *In this article I examine the value of collaborative gaming in team-based work environments as a medium for team building and collaboration.*

Research Questions

These research questions evolved over the course of data collection. I adjusted the questions to better suit my research goals and collection methods, and subsequently gathered more valuable data.

- How accurate is the popular expectation of demo graphics for gamers?
- What collaborative skills can games teach or enhance that would be valuable in a professional setting?
- How can video games provide learning experiences that are more valuable than traditional methods?
- How open are workers to learning and collaborating in such a different context?

Method

The study was an action-research project involving survey and interview methods along with a review of literature. I interviewed David Aregood of *Popsy Interactive,* a smartphone app company with an emphasis on gaming during live entertainment events. Surveys were a valuable course of action for qualitative research, and I implemented surveys on Facebook with responses from friends and family (*Game Experience and Online Usage Survey)*, as well as with *Multi-Chem's* training center in Houston, Texas (*Implementing Games as a Collaborative Tool Survey)*. A group of professionals acted as a focus group, playing the games that I anticipated would add value to team training practices.

Participants

Participants came from a variety of sources. This benefited the purpose of the study, given the wide range of experiences associated with gaming and business. All participants were interested and invested in the outcomes of the research.

Multi-Chem, a chemical company in Houston, Texas, participated in a survey regarding its openness to learning team-building skills using collaborative games. The training development manager consented to send the survey to employees who work in teams and who would find the survey relevant and engaging.

My interview with David Aregood regarding *Popsy's* market research and product goals provided useful information regarding the expected demographics of gamers and how games offer discovery-based learning environments at the entertainment level that would be valuable to implement in team-based work environments. This interview provides insight into the consumer gaming market and the manner in which organizations may be able to tap into congruent models for training purposes.

The survey conducted on Facebook informed my research from a broader scope of demographics, engaging people of both genders as well as from different generations.

The gaming focus group consisted of a group of professionals with whom I am acquainted from a variety of professional backgrounds. The group consisted of an instructional designer, a teacher, a web designer, and an office manager. Two participants were men and two were women; two participants were in the 18-34 demographic, while the other two were in the 45-54 demographic. Each participant was interested in the outcome of the experience and had varying levels of experience with video games–from avid to absent.

Data Collection

Table 1 comprises the research questions, method of research, rationale for use, and sampling plan.

Data Analysis

Most of my data was qualitative in nature, save perhaps the data obtained from an interview with David Aregood. Because of this, the analysis primarily

Table 1: Methods for Addressing Research Questions

Research Question	Method of Research	Rationale	Sampling Plan
How accurate is the popular expectation of demographics for gamers?	Interviewed David Aregood of *Popsy Interactive* regarding market research; data from *Game Experience* Survey	Information from a gaming professional and multi-generational users to dispel the "basement gamer" myth	Contacted upon referral from a mutual friend based on similar professional interests
What collaborative skills can games teach or enhance that would be valuable in a professional setting?	Focus group of professionals for gaming to record critical reflections and insights	Direct data from people who would be impacted by the implementation of gaming in training curricula	Approached individual professionals from unique contexts within my circle of influence
How can video games provide learning experiences more valuable than in traditional methods?	Focus group of professionals for gaming to record critical reflections and insights	Practical element to the report–how video games can improve existing practices	Approached individual professionals from unique contexts within my circle of influence
How open are workers to learning and collaborating in such a different context?	Facilitated *Implementing Games as a Collaborative Tool* Survey	Assessed the likelihood of actual implementation and gauged potential employee buy-in	The survey was distributed to all employees at the training center over a two week period

focuses on reporting the reaction of my participants in relation to possible implementation of collaborative gaming in training programs. This information did not give me proof of success, but rather the likelihood of success or participation and the ability to either recommend or dissuade from implementation.

The data for both surveys was compiled and reported through Google Forms. I recorded the information from the focus group using a simple table listing game played, reflections, and recommendations for use.

The interview with David Aregood was conducted through email correspondence. I provided a set of ten questions that introduced the work of *Popsy Interactive* and addressed the indicated research questions. Using these tools, I answered my research questions using formats that were appropriate for the data being collected.

I analyzed the collected data in conjunction with my literature review; each informed the other and ultimately created a cohesive approach by which to answer my research questions. First, the survey for *Multi-Chem* provided relevant data from a specific organization; this helped to ground my findings and make them directly relevant to instructional designers, as opposed to having theoretical information that could not end in a plan of action. Next, the survey conducted through Facebook provided a multi-generational perspective useful for changing the perception of the stereotypical gamer. This data helps provide the rationale for my entire report, in that it helps open up the realm of video games to a broader professional audience. Whereas the Facebook survey helped diversify my research, my interview with David Aregood gave industry-specific insights into discovery learning, game design, and demographics from the entertainment standpoint– data that helped bridge the gap between the worlds of game development and instructional design. Finally, the video game focus group offered a more personal and practical perspective; the

reflections brought both affirming insights and cautionary observations that helped clarify the need and process to implementing video games in team-building.

Findings

I began a review of literature with a book by Jane McGonigal: *Reality is Broken: Why Games Make Us Better and How They Can Change the World.* This book received press recently from both proponents and skeptics, and was thus a logical place to begin. The book exposed me to other valuable researchers and resources, which I used to inform my keyword and database searching. I also chose a few resources from David Thomas' *Games and Learning* course, in which I am currently enrolled. I used the EBSCO database to find reliable journal articles; my keyword searches included the following: World of Warcraft, collaboration and video games, team building, cooperation, and shared intentionality. I also chose a few specific game and educational theorists to look up, including James Paul Gee, Nick Yee, and Robert Drake. Lastly, I used Google Scholar to find a specific article by Gee. My searches proved fruitful on all fronts; my literature review is a narrative framework and rationale for the use of games as a tool for team building based on reliable sources and empirical data gathered during the course of my collection period.

Defining "Games"

Games may be defined as activities with rules that connect the real and the fictitious–through fun–to accomplish an inherent goal or achieve an outcome. While many consider the concept of "rules" to be inhibitive, rules are a necessary element of games that provides the framework for creativity and expression (Bogost, 2007). Rules give the player a world full of self-imposed obstacles to overcome; since no one forces the player to play, the obstacles become a source of accomplishment and success unrivaled by any obstacles imposed by an external authority (McGonigal, 2011). It is this drive to succeed—framed by rules and fostered by self-imposed obstacles—that give gamers the drive to continue gaming. Another way to explain the relationship between the game and the gamer is to break games down into their basic elements: mechanics, dynamics, and aesthetics, or MDA (Hunicke, LeBlanc, and Zubek, 2001). *Mechanics* defines the world and provide limitations on paths to success, rules, and the overall objective of the game. *Dynamics* describes how the player manipulates and interacts with the rules to achieve the intended outcome. A*esthetics* describes the look and feel of the game, specifically the user experience and enjoyment.

A necessary distinction should be made between games and simulations: games include "fun" as a necessary component, while simulations do not. Drake, Goldsmith, and Strachan (2006) describe a project to teach teamwork to graduate students in which they participate in a business simulation designed to reproduce "working in a team under pressure" (p.37). The simulation wasn't intentionally fun; while the simulation was deemed successful overall, one student left his group and many felt extreme pressure to succeed. Games inherently provide opportunities to solve problems, overcome obstacles, and be creative—all desirable traits for team-building practices.

How Games Affect Us

Jenova Chen, a game developer who focuses on developing games that reach a broad audience and elicit an emotional response from the gamer, developed a PC and PS3 game called f*lOw*, in which the player controls an aquatic microorganism that evolves as players fluidly move between levels. Chen drew inspiration from the psychological mindset of the same name, in which the person shows continuous and singular engagement in the task. Athletes call it "the zone," and it is one of two positive responses that gamers feel when they achieve a goal in a game, the other of which is *fiero,* or "what we feel after we triumph over diversity" (McGonigal, 2011, p.33). Gamers primarily draw satisfaction from these two states.

World of Warcraft (WoW*)* is a prime example of the positive effects of gaming on an individual. McGonigal (2011) sites *WoW* as a phenomenon of satisfying work: "Gamers have collectively spent 5.93 million years [playing *World of Warcraft*]" (p.52). Gamers spend so much time playing *WoW* because at its core, *WoW* is about self-advancement and improving one's character: leveling up, learning professions, participating in raids to earn better equipment, and so forth. What players love most in the game would typically be considered work—*WoW* offers a system of work that is satisfying and fun (McGonigal, 2011). Nick Yee (2006)—a researcher in MMORPGs, or *Massively Multiplayer Online Role-Playing Games*—found that "real-life skills can be acquired or improved upon in these environments," referring to online team-

based experiences (p.323). Specifically, Yee (2006) found that a combined 50.3 percent of participants learned leadership skills from playing MMORPGs like *WoW* (p.323). Games make us feel good about ourselves and provide opportunities for growth. The benefit of gaming cooperatively with others is apparent.

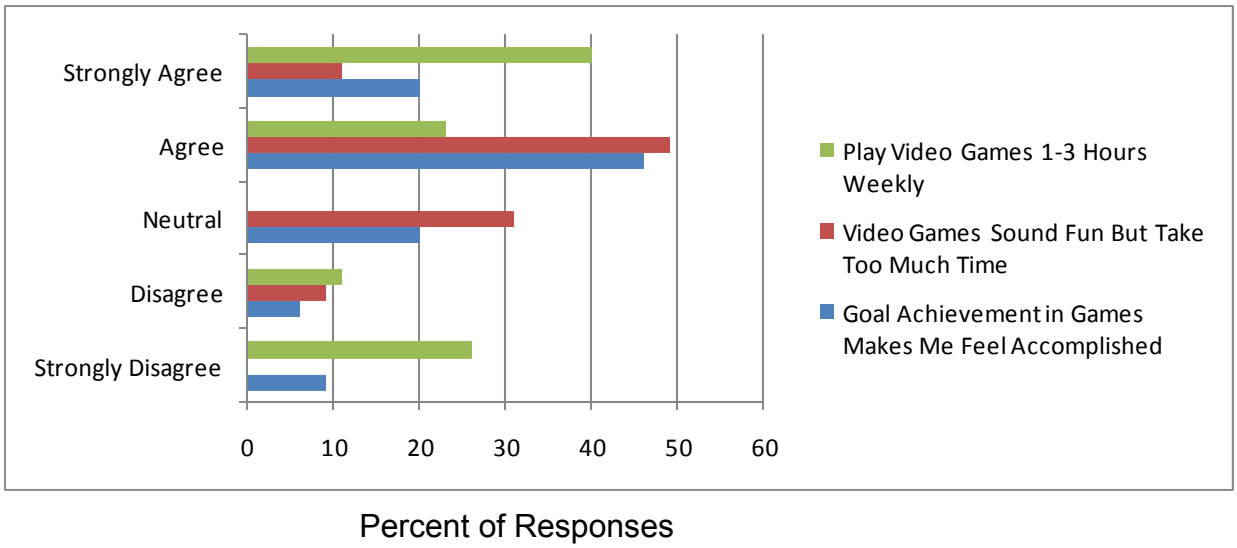
In the focus group I conducted with four people of different professional backgrounds (instructional designer, teacher, web designer, office manager) the experiences and critical reflections on *Worms: Armageddon* generated by participants focused on how failure in the game creates optimism for future success. *Worms* is a game where the players each have four worms to control and the goal is to be the last one standing. While the common expectation would be that players be competitive, the opposite was true: the payoff isn't winning, but experiencing the ridiculously over the top explosions and funny animations that happen when someone gets hit--even one's own worm. Because of this, failure on the part of the participants created optimism and a desire to help the other players make better decisions in subsequent turns. Collaboration happened naturally because each player was invested in the successes and failures of the others. This drive to improve, even in the face of failure, is a highly sought after trait among teams; *Worms Armageddon* helped the participants experience that feeling, and bond as a team quickly because of it.

Games at Work

The number of people who identify themselves as gamers has grown: 69 percent of heads of household play video games; 97 percent of youth play video games; and one out of four gamers is over the age of fifty (McGonigal, 2011, p.11). The average age of people who play video games is thirty (Yee, 2006, p.312). People who identify themselves as gamers are no longer just the stereotypical geek in the basement; games have broken into the mainstream. The survey I conducted on game experience and online usage was open to all generations through Facebook; 35 people responded over the course of the two weeks in which the survey was open. The data defies the anticipated demographics for gamers: 60 percent of respondents agreed that many video games sound fun, but require too large of a time investment. This would not be the expected response from the stereotypical gamer. Sixty-six percent of respondents agree that completing a goal in a game makes them feel accomplished. Finally, 63 percent of respondents confirmed that they play video games at least one to three hours weekly. The graph in Figure 1 compiles the data.

One may conclude that since a majority of respondents play video games at least one to three hours weekly but consider many video games unreasonable due to the required time investment, the time spent playing is, on some level, productive–

Figure 1. Survey findings relating to feelings, attitudes, and game-playing activity.



specifically that many respondents feel accomplished after playing. This would also suggest a broader scope for the gamer demographic than popular opinion would expect; the stereotypical gamer is not expected to question gameplay based on time investment and associated feelings of accomplishment.

Several organizations have chosen to utilize games as a way to provide content for employees. One such company, Sun Microsystems—now a part of Oracle—implemented two games, *Dawn of the Shadow Specters* and *Rise of the Shadow Specters*, that teach employees to adopt company values (Penenberg, 2009). Since introducing fun and exploratory learning can greatly enhance the user experience, it is likely that employees were more enthusiastic about the content and synthesized it more effectively. Kurt Squire (2008), a researcher in game design and education, notes that many organizations want immersive experiences in which their employees can learn: context trumps content (p.16). This is pointedly important with younger generations of the work force who have grown up learning by experience online; discovery is an expected medium for learning. Traditional instructional designers work from a top-down information dispersal model, whereas the new media landscape embraces "open access to information, flexibility, nonlinearity, user autonomy, customization, and permeable boundaries" (Squire, 2008, p.30). The contextual, discovery based learning opportunities presented by video games make sense to implement from both the perspective of the intended user and the instructional designer. If the goal is to deliver content effectively, then methodologies should change with the times. Video games are a next step, and they hold particular value in team-based settings.

In my interview with David Aregood of *Popsy Interactive*–a web app company that delivers a game layer to sports events through smart phones–we discussed how Popsy would allow users to interact with other users through issuing challenges and sharing results:

While playing our game, we have the ability to create what we call a Popsy Posse. This allows you to issue a challenge to a friend or multiple friends and compete for points while watching a particular game. We have also initiated a dynamic on our website that allows players to communicate or leave messages with each other or invite others through social media outlets such as Facebook and Twitter.

Though *Popsy* is a consumer-based product and is not designed for use in training settings, it illustrates the possibilities of gaming as a way to interact in a new way with one's environment; this is essentially discovery based learning. Users answer questions relevant to the events they watch; rather than a sports announcer sharing statistical information or trivia, users discover it themselves by participating in a game. This format of information acquisition is becoming both increasingly more prominent and important in training and learning environments; organizations would do well to adopt *Popsy's* model.

Video Games and Team Building

Games provide many opportunities to develop and enhance teamwork and leadership skills. Yee (2006) focuses on MMORPGs, in which he notes such skills as "role assignment, task delegation, crisis management, logistical planning, and how rewards are to be shared among group members" (p.323). Most of the MMORPGs chosen for study required a subscription fee to play at the time (p.314), and thus may not be a viable option for companies to use for team-building exercises. However, many other multiplayer and cooperative games exist in entertainment that may prove valuable for such endeavors.

New Super Mario Bros.(*NMSB*) for the Nintendo Wii, is one such game that turned out to be a fun and productive choice for my focus group participants. The game is what anyone familiar with the franchise would expect: players take Mario (or Luigi or a Toadstool, up to four players) through eight worlds of side scrolling levels, each with unique themes and challenges. In *NSMB*, players can be a hindrance to each other if not careful–a change made for the Wii version of the game so player have to strategize and work together to beat each level. In one instance of such a hindrance, Mario jumped off of Luigi's head to prevent falling and losing a life; however Luigi just lost a life in his place. Coordination is key in *NSMB*, as all participants learned quickly. Another potential downfall: acquiring power-ups. Each power-up block contains four, one for each player. However, one player can retrieve all four, rendering the other players depowered. These obstacles promote clear verbal communication and collaboration to beat each level–skills valuable for team-building as well.

McGonigal (2011) attributes three subgroups to collaboration: cooperating, coordinating, and co-creating (p.268). Multiplayer games promote these facets naturally. For instance, in a round of Team Deathmatch in *Modern Warfare 2*, teammates must *cooperate* to discover and assault enemy strongholds; *coordinate* to cover all possible escape routes while managing bullet and grenade supply; and *co-create* by pooling total kills to receive a game advantage not attainable by oneself (and hopefully win the round). Focus group participants were invested in the success of other participants in *Modern Warfare 2* because the success of the team determined the success of the individual. Other game modes played in *MW2* were less valuable; for instance a regular Deathmatch game is every man for himself; the "optimistic failure" effect of *Worms* was absent in *MW2*, primarily because the payoff lay in earning points by eliminating other players, not in enjoying the visuals. Rather, participants became frustrated with each other, driven by bragging rights and proving prowess rather than having mutual investment in the outcome. Not all multiplayer game modes are equally valid team-building tools; even within the same game, as *MW2* shows, some modes may even be counterproductive. Instructional designers must be selective about the games and modes they choose to use in training.

James Paul Gee (2004) offers another perspective in that the gamer collaborates with the game designer to create the virtual environment. In essence, the gamer brings the world which the designer created into being—a form of co-creation. SCE (Sony Computer Entertainment) expands this relationship in their Play, Create, Share initiative with games such as *Little Big Planet 2* and *ModNation Racers*. Both games center around user-generated content: players create avatars, racetracks, and levels to share with other players who then assign value to the content using a five star system and an adjective cloud system, in which players use descriptive words for the content which others can see. In this sense, the user is helping the designer to co-create and rate content. These collaboration skills, while fun and valuable in-game, must be translated to real world environments to make these skills worthwhile for organizations. Drake, Goldsmith, and Strachan (2006) share the evaluation process from their business simulation exercise: a questionnaire promoting reflection on the process and how the simulation affected the participants' understanding of teamwork (p.41). Participants must critically reflect to facilitate skill transfer. Other important elements include: disciplinary discussion between game goals and project goals; consistency in play for further development; a conducive environment for expression during the experience; and an experienced instructional designer to facilitate the process until discourse becomes natural.

Such critical reflections happened naturally in my focus group; since participants knew the purpose of the group, they were thinking critically about the process as a whole and as individuals. We discussed skill transfer extensively since the goal of the focus group was to observe teamwork skills experienced and to discuss how those skills could transfer to teamwork environments. During play, I noted that players created clearly defined roles for each other that the whole team agreed upon without hesitance. If a certain tactic wasn't working, the team would brainstorm other options and come to a consensus before the next try. This happened both with *New Super Mario Bros.* and *Modern Warfare 2*, the two cooperative games I chose.

I also noticed that when the experienced gamers helped teach inexperienced players, the learning curve became substantially smaller–specifically with controller use and button layouts. Both of these observations can be attributed to the players having a unified vision for a single task. The task was clear in each scenario: beat the level before time runs out, take out the guards silently to prevent detection, and so on.

Participants were invested in the success of their teammates. Upon reflection with the group, we determined that "fun" was the factor that made each participant so invested; they wanted to beat the level or achieve the next goal, which they couldn't do without the help of teammates. One participant thought that our reflection time would help her be more conscious of the teamwork principles she experienced in her own professional setting. Overall, participants thought that their time spent playing was valuable, and that it would translate well to team-building training at their respective jobs. Table 2 shows the games played, critical reflections, and recommendation for use.

Video games are, from design up, valuable mediums for learning skills desired by a variety of organizations. The literature–and the data I gathered–supports that collaborative games, when used with specific learning goals in mind, can provide the kind of context-important learning environment that can transform teamwork.

Table 2. Summary of games reported by participants.

Game Played	Critical Reflections	Recommendation for Use
Worms: Armageddon	Failure creates optimism	Yes, as an introduction to collaborative gaming
Modern Warfare 2	Invested in team success; natural role assignment	Yes, only if game modes are chosen intentionally
New Super Mario Bros.	Coordination and team problem solving	Yes, as a regular tool to build teamwork

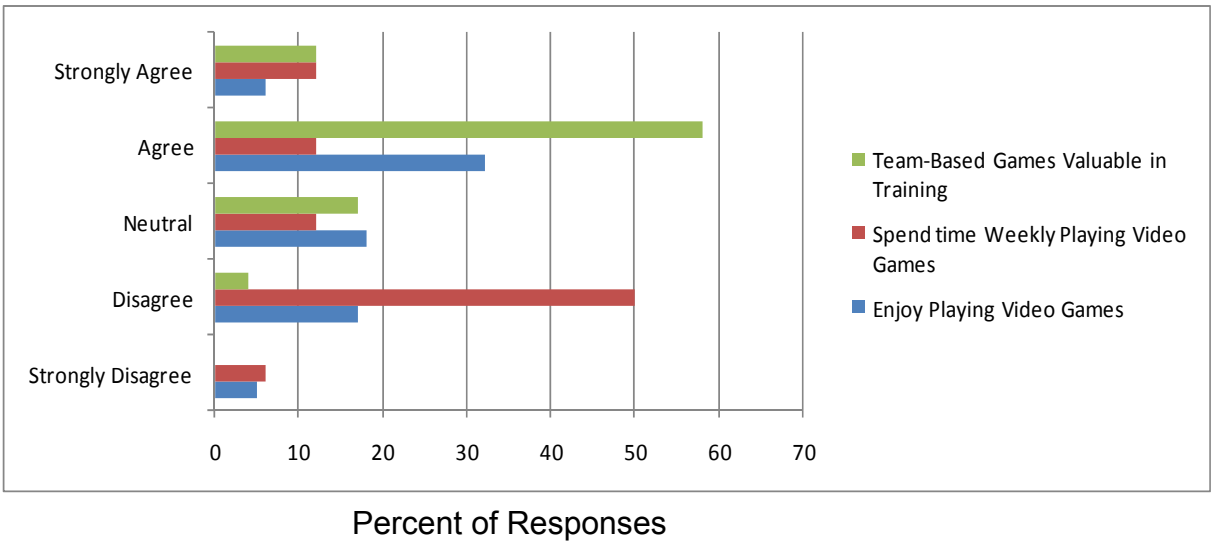
Openness to Change

The consulted articles favored implementing video games in training. In particular, Squire (2008) indicates three game design companies that have been contracted to develop games as learning tools for organizations: Breakaway Games, Root Learning, and YaYa Media. While the literature suggests that implementation is valuable, I have found no literature regarding employee openness to such a change in procedure. Through the survey I conducted with *Multi-Chem*, I gathered some compelling data. Of the 24 respondents, 41 percent enjoy playing video games; a combined 69 percent were either neutral or disagreed. Seventy-one percent were either neutral or disagreed that they spend time weekly playing video games. However a combined 71 percent of respondents agreed that team-based games could be valuable in a training setting. The data is presented in Figure 2.

This shows that while the majority of respondents do not regularly play video games, they recognize the potential of video games to aid team training. Additionally, 91 percent of respondents are open to non-traditional methods of learning if proven effective. This solidifies that, in *Multi-Chem*, surveyed employees would be open to using video games in training.

Though Yee's (2006) research on gamer motivation in MMORPGs may prove a valuable resource to promote collaborative games in training, it does not directly address the manner in which teams and organizations can utilize those motivations. Regardless, the literature and survey are clear: collaborative video games are assets in the workplace.

Figure 2. Survey findings for game enjoyment, time, and perceived value.



Conclusion

This study supports the relevance of video games for collaborative learning in a variety of workplace contexts. As per my research questions, I determined that most gamers don't fit the popular stereotype of kids and computer geeks, as supported by my research and the literature. *Gamer* increasingly describes a wider variety of people. Most surprisingly, a majority of participants feel accomplished after playing video games. The focus group observations confirmed that skill transfer from games is possible, and may even be more likely than in traditional team-building methods. When players share a fun experience, they become mutually invested in the outcome. This context-centric learning provides opportunities to both hone old skills and learn new ones. Such skills include: defining member roles, constructive criticism, developing a unified vision, and notably, the ability for failure to create optimism. Finally, I discovered that even if employees may not spend personal time playing games, they recognize the benefit of games in team-building and would be open to using them during training.

Though my findings were conclusive, any instructional designers interested in applying my findings should note the limitations. I did not measure gender and age demographics; if one's organization leans heavily toward a single demographic, further inquiry would be necessary to determine the potential success of learning with collaborative games. Additionally, if instructional designers are not gamers themselves, this plan of action could quickly go awry. Familiarity with the content is vital. I would suggest testing different games to see what works and to ensure that the instructional designer can adequately articulate and guide the process for learners.

I encourage instructional designers to pursue similar research in their individual contexts to assess the likelihood of implementing a collaborative games learning environment. I would further recommend that learning specialists examine existing training practices to ensure contextual learning; my research and the literature both suggest that content synthesis happens more naturally when information is applied in authentic contexts, not merely delivered. For teams, this is pointedly important; with many different perspectives, teamwork can quickly turn more competitive than collaborative. Video games provide a viable option for employees to smoothly transition into a team.

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