Farming Education: A Case for Social Games in Learning

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Abstract. Social games have skyrocketed in popularity; much to the surprise of many in the game development community. By reinforcing individualized internalization of concepts while framing those experiences in terms of social activities, social games are filling a void not adequately filled by other games and may turn out to be power learning tools. Their potential use in education is still in its infancy as many consider how the characteristics unique to social games could be used within a learning paradigm. By creating asynchronous multiplayer environments and play dynamics designed to leverage both individual and collaborative goals, social games may foster long distance relationships and encourages reflection of the tasks preformed.

Keywords: Social Games, Social Networks, Learning Games, Serious Games.

1 Introduction

Social activities continue to evolve as technology moves more of society's activities from the real space to the virtual. Casual occurrences such as keeping in touch with friends and family, announcing accomplishments, sharing photos, or wishing someone happy birthday have in many cases become an online activity. One researcher, Valentina Rao suggests that social networks are a "Third Place" [1]. That is, an area dedicated to playfulness. Ray Oldenburg first introduced "Third Places" as a place that is separate from home or work [2]. In a "Third Place" people congregate to play, interact, and engage in discourse among other things that are generally playful in nature.

Rao suggests that online social networks have already begun to replace conventional "Third Places", removing the need for people to be in the same geographic location and moving that experience to a variety of virtual places. With the removal of geographical limitations comes the increase in both size and relevance of social networks. These virtual social activities and their ability to expand an individual's social network have begun to transcend the barrier of the "Third Space" making them integral at both work and home. Incorporating education and training into these "Third Places" might be an effective way to keep learners connected, to keep them motivated and to keep them learning.

1.1 Pervasiveness of Social Networks

Facebook is the undisputed heavy weight of the social networking world. In February 2011 they had over 500 million users who spend over 700 billion minutes on Facebook per month [3]. What is really impressive is the active users create an average of 90 pieces of content a month, resulting in 3.5 billion pieces of content per week. Image uploads alone equal 2.5 billion each month [4]. Although, other popular social media sites lag behind Facebook they are by no means small. Most of these sites tend to target specific demographic markets, and provide valued services for their audience. For example, LinkedIn targets professionals with services for advertising and looking for employment. While maintaining focused on their market they have managed an impressive 15 million monthly users and over 67 million total [5].

1.2 Pervasiveness of Social Games

Social networks have quickly become a standard part of everyday life, and from this social games have gained popularity as well. While not all players of social games play them on Facebook, many do. In a recent study, market research group Lightspeed Research found that 53 percent of the people who use Facebook have played a social game [6]. A study by PopCap Games found that 55 percent of the players are female, with an average age of 48 years old. Less than half, 43 percent, were found to have a college degree, however, an additional 36 percent had completed some college or trade school courses. In the United States, 33 percent of respondents do not play other types of games [7]. Social games are introducing a new breed of players to games who have never played before, as well as, introducing a generation that did not grow up playing games to them.

2 Popular Types of Social Games

In 2009, blogger Tadhg Kelly defined 8 types of Social Games. These included: Social RPGs, Sports RPGs, Casual Games, Word Games, Virtual Villages, Casino, Just for Laughs, and Ownership Games [8]. This set of definitions is problematic, however, in that its reliance on gameplay mechanics to define social games are not critical characteristics of these games as most of them can easily be replicated in a nonsocial system. This definition does not focus on which characteristics or elements make social games unique and how they could be used for learning. To break down social games into discernable categories, it might be more productive to investigate which features propagate the game while leveraging the social aspects of the game.

   Social Games gauge success by Monthly Active Unique (MAU) hits, their players who are active in a given month. These players promote to friends by inviting them to play, advertise by posting results to their walls, and otherwise exploit the games they play virally throughout the social network. It is important to not define these games solely by how they promote the game on the social network as most games use multiple strategies to accomplish this point, but how they create returning players by relying on the social aspects. The following represents a list of currently popular or new types of social games that to place reliance on the social network to sustain returning players.

2.1 Energy Depletion Games

Energy depletion games are one of the more popular genres of social games. This type of game is defined by providing the player with a specific amount of energy and allowing them to take actions that use up a predetermined amount of it. Once the energy is depleted to zero, the player must wait for more energy to build up or they must request and/or be gifted energy from their social network before taking more actions [10]. The most popular of these is Zynga's Mafia Wars. In February of 2011, it had 16 million MAUs, more than the entire LinkedIn network [9]. Some activities only require a small amount of energy but larger ones might require the player to wait for hours or even days before taking the action and advancing in the game. As players continue with the game they gain power and build energy faster, making hard tasks easy and impossible tasks attainable.

2.2 Appointment Games

In Appointment Games, the player can immediately start a task in a predetermined location in the game and then wait for their appointment to be rewarded for the task. FarmVille is the most well-known appointment game. Using FarmVille as an example, the player starts with a farm and a limited number of plots in which they can plant seeds. Once the player plants the seeds, they must wait until the plants ripen. Depending upon the particular seeds this could take a few minutes or several days. After the plants have grown, the player must keep their real world time based appointment in order to harvest the plants. If their appointment is missed the plants will wither away and unable to be harvested. Members of an individual's social network may, if so included assist the player by keeping their appointments for them. These types of games have shown to be the most popular on Facebook. The current leader as of February 2011 was CityVille with over 98.6 million MAUs [9].

2.3 Social Competition Games

Social Competition Games follow standard casual game genres in their gameplay style. The most popular game of this type is Bejeweled Blitz, a fast paced high scoring version of the popular casual puzzle game Bejeweled by PopCap Games. These styles might vary greatly between casual puzzle, casino, platformer, or other similar games where points are earned and a competition against their social network friends is created. Players are drawn into this style of game because of the popular draw shown on their network feed. They stay engaged by attempting to beat a previous score or an opposing friend. Further, scores are often reset on a weekly or monthly basis depending upon the game allowing every player within a social network an opportunity to start anew.

2.4 Linked to Friends

The final engagement discussed here is linked to friends. The word "game" is not used, because these engaging activities are often more like toys than actual games. A popular Facebook application of this style is actually titled Zombies. Users might participate in activities related to friends in their network. For example, they might

fictionally buy and sell friends to each other. One popular linked to friends application has the user turning friends in to zombies or vampires with no real goal or ambition. Users come back to asynchronously interact with friends or see what their friends have done.

3   Current Educational Examples

Currently, few examples of educational social games that leverage the social network as a tool in a way that could improve learning exist. Social games are being used in education, but these games are primarily social competition or simple casual games that post updates to the user's wall. The following examples detail several applications of social games being used to help students learn:

3.1   Hidden Agenda

Hidden Agenda is a competition for student game developers to create fun games with a hidden educational purpose. The contest has run for many years, but in 2010 the competition was moved to Facebook [11]. With Zynga as a new sponsor, developers were challenged to build educational games for Facebook that will teach high school level material. The first year on Facebook resulted in five games, Dig Deep, AmeriQuiz!, Spider Trig, Timeline the Game, and Body Defense. Each of these games follows the casual games model, and other than posting on a players wall, does very little to tempt the player back.

3.2   EnerCities

EnerCities has incredibly high production value for a social game. Funded by Intelligent Energy Europe, EnerCities has players building a sustainable city. It uses the Unity3D plug-in and contains a high quality 3D world that looks on par if not superior to most commercial entertainment social games. While it appears at first glance to be an appointment game it is actually a social competition game that does not save player progress [12].

   This seems to be a missed opportunity to allow the player to see the results of their actions over time. If a player could set up a coal burning plant or a solar energy plant and return after a few days and see the level of pollution and the long-term effect their actions had on the environment they might have learned more than just the short term effect on their current game.

3.3   Farmville for Math Education

An article on eHow.com provides six steps for using Farmville to teach math. The steps are sound, but require paying attention outside of the actual game [13]. Lisa Russell, writing for the home schooling section of Suite101.com suggests there is a simple formula students should learn to determine the Return on Investment (ROI) of actions taken in the game. She states, "Though scientifically inaccurate, Facebook's FarmVille video game offers kids an opportunity to practice math skills, calculating farm profits in a neighborly environment." [14]

Using existing game structures to form lesson plans is not uncommon among games. Students could explore the math in Farmville, but they could certainly do the same thing in other games. The true power of social games for learning is building the learning explicitly into the game itself.

4   Untapped Opportunities for Learning

The current developments in educational social games have not met the potential of the technology. By leveraging the existing paradigms of linked to friends, energy depletion, appointment, and social competition games; educational social games can reach more learners and provide previously unobtainable learning opportunities within social networks.   The characteristics of these games that make them appropriate for use in education include, but are not limited to their ability to motivate learners; their ability to make their players feel connected to one another and responsible for their own and in some cases each other's learning and success; and their ability to provide learners with the opportunity to reflect.

4.1   Motivation

One of the most common features of social games is the ability to inform your social network of your achievements and actions in that game. On Facebook, this occurs by posting events to the player's wall. These transmissions of player success are the most important feature for developers to grow their potential customer base by motivating new players to join, and earn similar recognition. In learning games on social networks, this same feature should be leveraged to both allow the player to get recognition for their learning, as well as motivate others to engage in the material.

For example, if a learning game existed on a corporate social network then players could not only share their in-game achievements with their coworkers, but also their boss. The boss would have the ability to see learners progress within the learning game and be informed on their progress. In the right climate, a boss might make a comment on a player's progress and initiative allowing other learners to see that coworkers receiving praise and thereby motivating them to play in order to get similar recognition. Akin to peer pressure, this extrinsic motivator towards learning can be leveraged to bring learners into the content faster and provide a compelling experience at the same time.

4.2   Connected Learning

Players in most social games are provided with opportunities to see each other's progress in the game. This might take the form of a high score table in a social competition game, or actually visiting another person's world in an appointment game. By seeing the progress of friends in their social network, learners have the opportunity to remain connected to the other learners and should be better able to pinpoint their levels of ability and strengths and deficiencies through comparative analysis. The use of casual games in education would also provide opportunities for individual learners to see the climate of their social networks skills and abilities allowing them to reach out to those in need, or when in need to create mentoring types

of relationships. The ability to have a transparent learning management system like a social game would also enable students to create their own goals and strategies for their own learning.

4.3 Inter-reliant Learning

Social games are primarily played in an asynchronous multiplayer environment and therefore do not evoke strong similarities to teamwork based learning opportunities. Players and potentially learners in social games are not present in the same place at the same time, but they do have the ability to impact and influence the outcomes of another player's game. Social games prey on their player's sense of responsibility and desire to be a productive member of their social networks by creating situations that a player's chances of success are highly increased if they have the support and assistance of other players. Players can often avoid long waits or periods of inability to play if the other players in their network area ble and willing to complete tasks for them, to give them gifts and to share their own resources.

In Ravenwood Fair players often receive tasks that require a player recruit their social network in order to accomplish, such as having to to restock the assets in your neighbors fair. Players with more neighbors are given more assets daily and are more likely to receive assistance when they request it. In Farmville, if a player misses their appointment another player can fertilize their crops. This provides the player with more time to harvest their crops, it also helps build bonds between players, solidify teams and foster relationships.

4.4 Reflection

In the Army Learning Concept for 2015, the US Army presents a plan to revolutionize learning within the service. One of the issues identified in that document is, "mandatory subjects overcrowd programs of instruction and leave little time for reflection or repetition needed to master the fundamentals . . . training requirements will decrease to avoid increasing the course length while shortening the training day, to allow time for reflection that is necessary to maximize the learning effect." [15] Time for reflection is important for metacognition. J. H. Flavell defines metacognition as, "one's knowledge concerning one's own cognitive processes or anything related to them." [16] Put simply metacognition is a learners self awareness of their own knowledge. Metacognition leads to learner autonomy, independence, and self-regulation.

The appointment game based model encourages players or potential learners to leave the game and return at a later point. During this time the player is aware that the effects of their actions are still ongoing within the social gaming environment.

In FarmVille, in order to grow corn a player simply clicks the plot of land where they want that corn to grow and then must wait for their corn. If more complex task such as selecting the appropriate members for a tactical military unit sending the force on a mission had stop and wait periods built into it; the player could spend their waiting time outside the game reflecting on the decisions they made inside the game.

5 Conclusions

Social games are a new and interesting type of game that have untapped learning potential. Social games for learning will likely never compete with entertainment games in their ability to garner the audience they need to become viral, but they do have characteristics that have positive learning potential. By allowing their users to leverage a social network as part of their learning experience, social games enable multiple types of positive learner attributes, such as self efficacy and self regulation to be elicited. The implementation of social games within learning and social networks contextually tailored towards a specific group, like a company or class might motivate learners to participate in social games. Their ability to connect users as groups or through dependent relationships and the possible mechanic of built in reflection time that can be designed into and/or implemented within social games leaves their potential uncovered. New content and instructional design models that support learning within a social game need to be created and employed into the framework of social games in order to allow accurate research to be executed.

References

1. Rao, V.: Facebook Applications and Playful Mood: the Construction of Facebook as a Third Place. In: MindTrek Conference (2008)
2. Oldenberg, R.: The Great Good Place. Marlow & Company, New York (1999)
3. Facebook Press Room, http://facebook.com/press/info.php?statistics
4. Saleem, M.: Visualizing 6 Years of Facebook, Mashable.com (2010), http://mashable.com/2010/02/10/facebook-growth-infographic
5. TechCrunch, LinkedIn ChrunchBase Profile (2011), http://www.crunchbase.com/company/linkedin
6. Caoili, E.: Study: 53% of Facebook's Users Have Played Social Games, 19% Addicted. Gamasutra: The Art & Business of Making Games (2010)
7. Information Solutions Group, 2010 Social Gaming Research, PopCap Games (2010)
8. Kelly, T.: The 8 Types of Social Game, Gamasutra Expert Blogs Tadhg Kelly (2009)
9. Inside Network, Latest AppData Update: February 2011, AppData: Independent, Accurate Application Metrics and Trends from Inside Network (2011), http://www.appdata.com
10. Sumner, J.: Ideas that will keep players around and coming back. Mafialife Commission (2010)
11. Hidden Agenda Contest., http://www.hiddenagenda.com
12. EnerCities Case Study, Paladin Studios (2011), http://www.paladinstudios.com/cms/case-studies/enercities