**Introducing Gamification and Social Gaming Elements in to Education (Rough Draft)**

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**ABSTRACT**

(Skip for now based on assignment specifications)

**INTRODUCTION**

In the last decade, the use of technology has “…potentiated the emergence of learning experiences, like blended learning and distance learning” (Barata et al., 10). Technology continues to develop at a rapid pace and the classroom seems to as well. Every year schools across the country are continually adapting new methods of utilizing technology and its concepts to help provide more efficient methods of education. Remote learning, high schools with tablets and laptops, and the ability to provide a wealth of accessible information via repositories are just some of the many uses technology has in the classroom. Technology in itself can provide engaging ways of learning and interaction. However, the concern arises if merely using technology on its own is the final step. What about some other methods of conveying information to a user through technology? This is where a much more different outlook begins to shape.

The continued development of technology has also created an advancement in potential for many art forms as well. Music now sounds better than ever and films have the potential to create even more immersive worlds. Along with these advancements has birthed a new art form popularized during the early to mid 1980’s which would be video games. Video games constantly attempt to find new and creative ways to efficiently and effectively convey information to the user. While games have a stigma attached to them that they are for children or purely entertainment, this may not be the case. Many believe that the lessons from game design can be used for much more than purely entertainment. It can be argued that they can deliver more constructive methods of information conveyance than other forms of media. For example, Dr. Mary Flanagan was discussing game design and its ability to open the players’ eyes to deeper social aspects of the world. She spoke at NYU Polytechnic about game design and its ability to show players’ social values and issues. She claimed in an interview that games, “…can cause a statistically-significant shift in players’ attitudes about questions of diversity.” (Alexander, 2016) So coming from this angle provides some insight into the possibility of gaming and education.

The point of this research is to see if aspects of game design can be implemented into the classroom for a more engaging classroom experience to increase student retention. More specifically, the focus will be around adding in social aspects of game design in order to analyze what effect gamification has on the classroom. The social aspects of gaming are growing rapidly through-out the industry and has led to a dominance with releases such as World of Warcraft all the way to Farmville. Flurry Analytics, a Yahoo owned analytics company, claimed that, “The Social Gamer segment is highly engaged, younger, … more educated and more affluent” (Angry Fly, 2016). The research will be taking some of these aspects such as leaderboards, challenges, and achievements and applying these to assignments and general work within the classroom. This allows the students to interact more with others and their own accomplishments in order to find a more engaging classroom experience. The end goal is to see if gamification has the ability to create such an experience, and if so does this higher level of engagement have the ability to increase retention?

**MATERIALS & METHODS**

The specifics for this research will be split into several different categories in order to better explain the functionality and thought process behind the individual aspect of the classroom.

The first to be addressed is grading. This research was done using an 8th grade biology classroom. We needed to keep a couple factors in mind when starting. When it comes to schools, grades are incredibly important so keep in mind the following adjustments to be described are done alongside the traditional grading in order to keep in line with specifications set by the school and to not affect continuity with the students grading processes. Grading was changed to a continual progression system instead of an average that is used in traditional classrooms. Each assignment was worth a base weight of experience points, 100 for example, and the student would be awarded with the amount that they earned for the assignment, say 85. Each assignment would continue onto the previous value, so if a student earned 40/50 for the next assignment they now have a total of 85 + 40 = 125 experience points. In order to accommodate for grading weights, such as tests mattering more than homework, it was decided to make the tests be “boss levels.” This would mean the experience gain would be worth more, say a 300-point value for example, so that the validity to weights could be correctly handled while also providing the idea that a student could earn more experience points during a test compared to a regular assignment. At the end of the semester the amount of experience points could still be averaged in order to accommodate for the current grading rubric used in most classrooms.

Of course, the best part of experience points is leveling up. Leveling up would provide certain bonuses to a student. These bonuses could include further discussing a matter in the subject that they were interested in, being the team lead of a certain group for the next group assignment or class activity, or even having influence to decide from a set of class activities that would be done in future. This provides a bonus reward to doing well in class while also making sure that everyone has the ability to level up and take advantage of some of these additional perks. Additionally, there becomes an incentive to try harder on assignments as the better a student does the faster they will level up again and be able to capitalize on the next level up bonus.

The next part of the experiment is where the main breadth of focus is applied and this involves the social aspects introduced into the classroom. A portion of this focused on competition as well as student recognition. The recognition was able to come in form of achievements. Some examples of achievements are, “Best Test Grade”, “Most Improved Score”, “Most Helpful”, etc. These achievements would be worth a value. This value, the Achievement Score, were bonus points that could be earned in order to earn further level up bonuses or other perks. Keep in mind that the points here are separate from the experience points used in grading. Achievements are purely additional and provides students with small extra perks for performing well, improving, helping others, doing extra work, and more.

Competition is also a very valuable social interaction. Since this classroom was a Science classroom we decided to emphasize labs as the focal point of this competition. During certain labs, students could be working with a team or by themselves. They would earn score based on how fast and accurately a lab was completed, how precise the data was to expected results, how well kept the information was, the quality of the lab report, etc. These scores could be kept on a leaderboard in the classroom in order to see how everyone is doing encouraging competition between students. The goal is also to have this help encourage better students to assist more struggling students in their group since there is something on the line. The leaderboard is mostly just for show and has no real impact on the grade other than some other reward that could be dictated by the teacher’s discretion.

**RESULTS**

To start we wanted to measure the engagement and interest in the classroom. Just before the gamification went into effect we asked the students whether they would be interested to compete with their fellow classmates in class. This was asked across two of four class sections. At the start there seemed to be very little interest. As you can in Figure 1 there wasn’t a significant interest one way or another. After two weeks of gamification in the classroom and

Figure 1: Classroom Competition Interest Graph

several competitions amongst labs we decided to ask again to see if there was any change. There did in fact seem to be a larger increase in students wanting to compete with their fellow classmates, as shown in Figure 2. This would appear to show that students found the competition

Figure 2: Classroom Competition Interest Graph - 2 Weeks After

engaging and/or rewarding. Further we decided to see if students felt more compelled to try harder, help others more, and/or were interested in progressing their points. We found that [results coming after research finishes by the end of November].

Finally, we looked at the grades. We looked at whether or not there was a noticeable change in grades across the 2 gamified sections versus the 2 non-gamified section. We found that [results coming after research finishes by the end of November].

**DISCUSSION**

The whole purpose of this research was to see if social aspects of gamification can have positive effects on learning in the classroom. All of this was built around the idea that when students are enjoying what they are doing, they are more motivated, when they have an interest in the outcome, it is more likely that learning will take place (Griffiths and Clyne, 1995). When looking at the results from the initial competition interest to several weeks later, it does appear that there is a benefit to social gamification. Students seemed to be more interested in competition as they were provided rewards for performing better, solo and group wise. This helps breed a healthy atmosphere as students were more influenced to help the other members of their own group so they could compete with the other groups. The question could be raised though, were people more interested in helping or were the students purely driven by their own points? To ask even deeper, does that matter? Does the context of why someone is helping another truly matter? It’s also interesting to note that there were still two students in the second section that were still not interested even after the gamification. It isn’t clear as whether or not it was the same two students. However, it does appear from the research that competition in the classroom does seem to increase overall engagement. This appears to line up with previous research conclusions stating that gamification promotes, “…intellectual intensity, intrinsic motivation, positive effect and overall student engagement” (Coller & Shernoff, 2009).

[Further discussion about the results will be completed once final analysis completes].

**REFERENCES**

Alexander, Leigh. "How Can Games Contain and Convey Values?" *Gamasutra Article*. N.p., 26

Apr. 2013. Web. 18 Nov. 2016.

Angry Fly. "Mobile Social Games vs. Traditional Games." *Angry Fly*. N.p., 11 Apr. 2012. Web.

18 Nov. 2016

Barata G., Gama S., Armando Jorge J., & Goncalves D. (2013, October 2). Improving

Participation and Learning with Gamification. Retrieved October 10, 2016, from <https://www.researchgate.net/publication/259821680_Improving_Participation_and_Learning_with_Gamification>

Coller B. and Shernoff D. Video game-based education in mechanical engineering: A look at

student engagement. International Journal of Engineering Education, 25(2):308–317, 2009.

Griffiths R., & Clyne M. (1995). Games: A context and a medium for learning. In J. Wakefield

& L. Velardi (Eds.), Celebrating mathematics learning (pp. 191-195). Melbourne: The

Mathematical Association of Victoria.

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