

Exploring Gamification Techniques for Classroom Management

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Abstract: A variety of gamification techniques from the literature are used in two college courses. Some techniques, such as an experience point-based system and leaderboards, proved confusing or frustrating, while other techniques, such as adding a meaningful narrative layer and allowing students to create their own learning paths, engaged students more deeply. In this article, the techniques used and the effects of each are explored and suggestions are provided for instructors considering adding game layers to the classroom.

Introduction

Over the last few years, several guides to using gamification for classroom management have been published. Best known is Lee Sheldon who presents many concepts from online roleplaying games in his book *The Multiplayer Classroom: Designing Coursework as a Game* (2012). The app *Superfunner* was designed to help teachers give students experience points and badges for different classroom activities. At Deterding's workshop on gamification during the 2012 Games+Learning+Society 8.0 educators' symposium, workshop attendees shared a variety of techniques for gamification in the classroom, many of which centered on points, levels, leaderboards, badges, and achievements (Deterding, 2012). Kapp's book, *The Gamification of Learning and Instruction*, covers all of the above and expands the discussion to include concepts of serious games and facilitated learning experiences.

During the Fall 2012 semester, I incorporated many of these game-based techniques into two college courses. One of the courses, *Meaningful Gamification*, was online asynchronous and was open to both undergraduates and graduates. The other course, a campus-based course on public speaking and design, was a required course for undergraduate students. In each class, I introduced different game layers on top of classroom content, monitored the students as they engaged with the systems, and led the students through reflections about the value of each system. Some of the systems worked while others failed; some of the systems were changed mid-semester and others were adapted along the way. The results will guide those considering adding gamification for classroom management toward making more appropriate choices for their students.

Gamifying Gamification

The concept of meaningful gamification is that the primary use of game layers is not to provide external rewards, but rather to help participants find a deeper connection to the underlying topic. This is done through game elements that focus on concepts of play, that provide information and choice, and that encourage reflection (Nicholson, 2012). Without a good understanding of reward-based gamification, however, students would not fully understand how meaningful gamification is different. Therefore, the goals for the meaningful gamification course were to first teach students about reward-based gamification and then explore meaningful gamification.

The Plan

In order to ensure that students had a shared reward-based gamification experience, the course first focused on reward-based gamification techniques. Students created a character for the *Quest for Mount Gamification*, where their elevation (points) gained would take them up to higher levels and better grades. Students earned points for many different things in the class, such as posting on the discussion boards and bringing in outside articles. There were achievements to be earned and challenges issued with unknown rewards. A leaderboard using the students' character names tracked weekly progress. During the first six weeks of class, readings were selected that were supportive of reward-based gamification, and the lectures covered aspects of points, levels, leaderboards, badges, achievements, and operant conditioning.

After six weeks, the plan for the class was that students would be given a choice to continue with the course as it was going, or to get rid of the gamification layers and start from a blank slate. If the class voted to get rid of the existing layers, then the students would be put in groups and have a few weeks to create their own syllabus and gamification systems for the last month of class. The class would then vote on which syllabus they liked, and I would facilitate the gamification system the students created for themselves.

What Happened

At the beginning, students were engaged with the reward-based gamification system. Many of them wrote lengthy backstories about their characters in the first week. About half of them left into the point-based system by working on many different types of class activities. A few students contacted me directly with concerns about this system, and I suggested that they just trust me and engage with what was happening.

After the novelty wore off, the initial energy faded for many of the students. At the core of this fading was the class leaderboards. A few students continued to keep a frenetic pace and were fighting to be on top of the leaderboard, while other students stopped engaging in the class altogether. These students later reflected that the leaderboards were a demotivating factor; once the gap grew between the leaders and the rest of the class, there was little reason to pursue more of these points. One student said “I did all right, but as weeks passed I began to slip more into the lower-middle part of the group.... my mind somehow dissociated the points from my grade. I didn’t calculate how many points I needed, or what points equaled what grade; I just saw that I was doing good enough and left it at that. So, strangely enough, these game elements actually made me view this class as less of a class (and therefore as less of a priority). In this class, I had an okay position on the leaderboard and very little chance of upwards mobility. I guess my brain couldn’t cope with that and sort of shut down about this class.”

Figure 1 shows the cumulative points earned in the gamification system through class discussions; one can see by looking at the number of flat lines during weeks 4-6 that most students in the class had stopped working these points. While leaderboards helped the strongest students, they demotivated the other students in the class. This leads to an important lesson for those adding game elements to a classroom: game elements should help the weaker students in the class succeed.

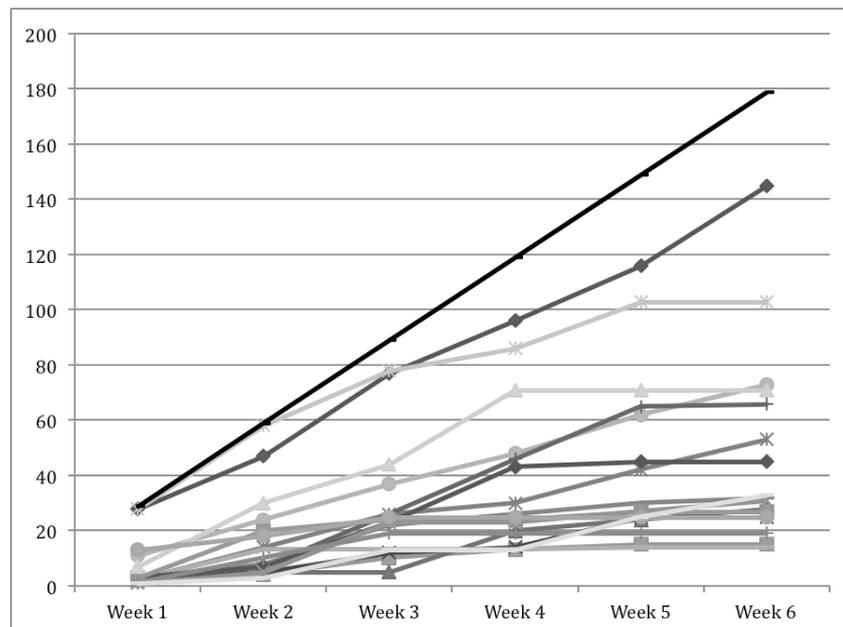


Table 1: Cumulative class participation scores of students

After six weeks, the students received a video inspired from their mad wizard guide offering them a *Matrix*-style choice – to choose red and start a completely different adventure that they would help create, or to choose blue and everything would go on just the way it was. All of the class except for

one person (the top performer on the leaderboard) voted to change the class. Several of the other top performers admitted that they felt it would be better for them to keep the class the way it was, but wanted to see what else might happen, so voted to change the class.

When the students logged into the class Monday morning, the old syllabus and scoring systems were gone, and students were greeted with the challenge to create a new syllabus, assignments, and gamification system that would run for the last month of class. The next week of class was spent debriefing the experience and letting students vent and discuss the old system. Over those next few weeks, the class focused on concepts of meaningful gamification in order to guide the students in how to create something that would engage them at a deeper level. The syllabi were presented to the class, and the class voted on each area of the syllabus. The class ended up liking different pieces from various syllabi, so I brought different pieces together into their syllabus for the remainder of the class.

One of the challenges was how to deal with the first six weeks of class. In our debriefing, I learned that many students were going to drop the class as they were so demoralized about being low on the leaderboards with no way up. One student reflected: "I had the opportunity to earn just as many points as everybody else, so it was my fault I was still at level 1, but that didn't mean it wasn't really discouraging. The more opportunities for earning points I missed, the more I felt disengaged and resentful, even if it was my choice to miss them." Another student responded: "I had essentially the reverse behavioral reaction of hers. I'm a points hound. I have been for years. If I know there are points to be had, I crave them. It may be I want them for the sake of having earned them, but I do think I was conditioned as a child with continuous external rewards to earn points." I also contacted the students who had dropped the class, and one of them felt that the gamification system was ridiculous and demeaning.

They were also frustrated about the mismatch between the narrative and the activities in the class; their characters served as nothing more than pseudonyms for the leaderboards. The students who had worked hard during the first six weeks wanted credit for their efforts, while the students who had fallen victim to bad gamification still wanted a chance to earn a good grade.

One group came up with an excellent solution: students would assess what they had done in the class, set their own goal grade, and then create a set of assignments (taken from a very long list generated by another group) that enabled them to reach their goal. I negotiated with each student to ensure that the workload was fair given what he or she had done during the first half of the class. Students were allowed to re-do these projects until the work was satisfactory. Some students wrote long papers while others created videos, games, or annotated presentations. In the end, every student except for one succeeded in all steps of their own plans.

The tone of the class changed through a new narrative proposed by one of the groups. The students became lab rats attempting to escape the maze put forth by a mad scientist; the entire *Quest for Mount Gamification* was just an experiment they were finished with. They were put into Rat Packs for support and course discussions, and could visit the Ratskeller to toast each other's accomplishments with student-created achievements. To escape, each student would have to complete his or her personalized set of experiences, and then leap into the Big Dark Place with a paper, video, or presentation on the Future of Gamification in a setting of his or her choosing.

Much to their amusement, I embraced the role of the mad scientist, donning a lab coat and creating weekly videos from their vantage point in a looming maze as I talked to an offscreen nurse about their progress. We all engaged with the narrative and it enhanced the remainder of the class by providing a sense of light-heartedness that was needed after the emotionally difficult beginning. The resulting experience was customized to each student, created peer support groups, and encouraged students to attempt difficult challenges as it allowed for failure. As one student said, "I'm convinced I couldn't have properly understood gamification and pointsification and lots of aspects of motivation unless we'd been experimented on this way. Not knowing we were being subjected to the structural elements we were learning about ahead of time made it more meaningful when it was revealed later. It gave me a personal connection with the content because I'd just lived it."

This success is predicted by Deci & Ryan's Self-Determination Theory (2004). In this theory, learners require three things – autonomy, competency, and relatedness. Participants perform better when

they have control over what they are exploring; and in this class the students got to set their own paths of learning. Participants benefit when they feel they are gaining competence; likewise, the students got to re-do assignments until they reached a satisfactory level. Participants have a better mental state when they can connect to other people and the world around them; likewise, students were engaged with other students in small discussion groups and then applied gamification to a topic area of interest. This theory is at the base of meaningful gamification with the hopes of using game elements to help people engage more deeply with non-game settings.

Gamification for Non-Gamers

Another class that I taught was an undergraduate course on Information Reporting and Presentation. This required course drew students from several different departments. What made this course different from many of the courses that have used gamification techniques is that it is not a gaming course and many of the students did not self-identify as gamers.

For this course, I tried using several of the methods for gamification presented in Sheldon's *The Multiplayer Classroom* (2012). I started the students at 0 points (F) and let them improve that grade by earning points, and I gave them a variety of required and optional assignments and the ability to re-do assignments to earn those points. I also had an "achievement" system that provided surprise kudos for good contributions. There was an overarching narrative to the class. Finally, I used a variable ratio reward structure for in-class activities, where students did not know when points would be rewarded, as this is purported to be the most effective reward structure for bringing about a behavior (Zichermann & Cunningham, 2011).

During this semester, some of these aspects worked well and other aspects worked poorly. In order to get an idea of what the students felt about these different aspects of the course, I did a survey where I asked questions about each aspect. I also had an assignment where students were put into groups and asked to re-develop the syllabus for this course. This gave me two different perspectives from the students about these gamification elements.

Using a Story for Engagement

One of the successful aspects of the class was using a narrative layer over the course that gave the students control. As students walked in on the first day, I greeted them as The Boss, and invited them, one-by-one, to come up to the front of the class to select a topic from a basket and videotape their one-minute introduction and discussion of the topic. After all of the videos were done, I handed out the syllabus, the front page of which was a memo welcoming each student as the new Head of External Communication for "the company".

After this, I then introduced myself and ran the more typical first-day class, but dropping the students into the narrative from the beginning helped them get involved. Students were then able to pick what real-life company they were working for, and all semester the assignments were communication activities related to the company. The final project had the students being hired as adjuncts to teach this class, so they had to create a their own syllabus.

Students got engaged in the assignments as they were able to take on the role of working for Microsoft, the NBA, or Disney. It created a professional-level standard for assignments that took students beyond the "earning an A" concept; I could remind students that they were representing their company in their communications. As the semester went on, some students really got into their roles as representing companies; one student brought a case of Coca-Cola to go along with a presentation, for example.

Using Rewards to Increase Participation

Two of the aspects of the class that worked to increase participation were the achievements and the in-class activities. When students contributed in class in a meaningful way, I thanked them for their contribution and handed them a small plastic ring and advised them to bring it with them to class. I didn't explain anything further, so the mystery of the rings intrigued some of the students. Later in the class, those students with rings were the leaders for a group project, so the achievements allowed me to track students who might be appropriate for these leadership roles.

The in-class activities also worked to bring students to class. This technique is one that instructors have used for years with pop quizzes and other unannounced assessments. Some of these activities

were more mundane, such as quizzes, while others were more playful, such as improvisational games that rewarded students for participating. This concept was presented on the first day of class, as students were rewarded for creating their first-day video. While I had hoped that students would choose to be engaged with class and do suggested readings, I was finding that some were not; once I started using these in-class activities to test class preparation, I found that the students did prepare more for class.

The Failures of the Grading System

Where this gamification system failed in this class was for grading. The first problem came with the inverted grading system. According to this system, students were not eligible for a D until they had earned about 60% of the available points and the optional activities meant that students did not earn points at the same pace. Therefore, when mid-semester reports came out, it was difficult to determine how to assign a grade fairly. The larger problem was that students did not know how they were doing in the class. Those students who were comfortable with gaming understood how to look at the larger system and see how they could continue toward an A, but many of the students weren't used to looking at point systems.

One way of solving this would be to provide students with "future predictions" through a spreadsheet where they could fill in values for future assignments to see where they would fall. The reality of this system, however, is that it is a shallow redistribution of a traditional point structure. Many of the students were not comfortable with the idea of starting at 0 and working up, and the confusion it created was not worth it. I took a vote in class, and only about 15% wanted to stay with this structure, so the class was shifted to a more traditional grading structure.

Another failure came in the use of optional assignments. The class was designed so that students could choose the grade they wanted to pursue by selecting how many optional assignments they chose to take. In order to avoid students producing a flood of optional assignments at the end of the class, there were five opportunities during the class where students could turn in one of the optional assignments. Between the required assignments and the in-class activities, students could earn an 80%; the reality was that students only doing the required assignments would have some troubles and end up with a C. Many students chose to not take on the optional assignments, especially early in the class. As one student commented, "I found that I would put off the optional assignments in this class to work on required assignments for other classes."

As the class went on, I tried to help the students realize that if they wanted an A or a B, they needed to do some of the optional assignments. Some of the students got the message, while others still did not. Before the last few weeks, I laid out final grades for the students and added additional opportunities to submit an optional assignment. Some students still chose not to take on the optional work. One student said that "I encouraged students in the class to be lazy by not requiring them to turn in all of the assignments."

In the surveys, over 90% of the students said that they did not like the structure with optional assignments, and on the syllabi that student groups created for future classes, only one out of eight had an optional assignment structure. A number of the students said the optional assignment structure was unfair: "Since I got an A on all of the required assignments, I should get an A in the class." When the students were working on their syllabi assignment, they were given 4 other syllabi from other sections of the same course, and I pointed out that to earn an A in any of the classes required same amount of work; the only difference is that I allowed them to do less work if they wanted to pursue a lower grade.

I hypothesize one of the reasons the optional assignment structure failed was that this was a required course that many of the students did not want to take. If this was a course on a topic that students had more of an intrinsic interest in, I predict they would have been more interested in taking on these optional challenges. Another problem was the use of the word "optional"; many students think of "optional" as "valueless" or as "extra credit" (meaning they can still get an A without doing this optional work).

One resolution for this, especially in a required course, is to give students a choice of assignments, but still require an assignment to be turned in. This would still have the benefits of giving students

agency in what they take on, but it makes it clear that the students should turn something in if they want to get a good grade in the class.

Through these grading failures, I realized one of the problems with an overly flexible gamification system is that it does not provide the encouragement that weaker students need. Students who are self-driven will succeed in a space with optional or required activities, but students who are not as self-driven will be more likely to fail in a system with too much freedom. This problem is made worse when students are engaging with a game-based system that is unfamiliar to them and in a course that they aren't very interested in taking in the first place. For my future gamification attempts in the classroom, I plan to focus on gamification elements that are designed to help the weaker students to succeed. Stronger students will still find the space to explore, but the underlying system needs to ensure that the weaker students get the support that they need.

One grading element based on play-based concepts that was successful is that of allowing students to re-do an activity. One of the concepts behind play and games is that they are based in failure; learning occurs by trying something, failing, reflecting, and trying again. In this class, students were allowed to re-do assignments on specified dates. This worked quite well, as it gave weaker students the support needed to help them achieve in the class while not getting in the way of the stronger students. Students re-doing an assignment always improved, and it was encouraging to see the students grow and improve.

The growth through this failure-safe space was so encouraging that it is the centerpiece for one of my current courses. For each assignment, students will earn a Gold badge, a Silver badge, or no badge. If the assignment is of the level of quality that it would be acceptable in the workplace, it will receive a badge. If not, the student will have one week to re-do the assignment to attempt to earn the badge. This way, students can focus on re-doing assignments until the badge is earned. The gold and silver qualification will be used at the end of the semester to determine final grades. This concept could be replicated in a traditional grading structure by offering only the grades of A, B, or re-do, but students may be frustrated that they can't just earn a C and move on to another assignment. The badge concept makes it easier to enforce a minimum level of quality for these assignments.

Creating a failure-safe space based in the concept of play allows students to feel more comfortable taking on difficult projects. By setting a high bar and encouraging students to try something challenging, many students are rising to the expectations. The quality of the submitted work under these new systems is higher than it was under the older systems. Few students need more than one re-do attempt to accomplish their tasks. However, this has created a much heavier grading and administrative burden. At any point, I am dealing with a combination of both new submissions and re-dos from different classes, so there is a never-ending stream of grading.

Conclusions

Much of the advice on adding a game-layer to classroom management is coming from instructors teaching a game-related course. The students in these courses are going to be comfortable with game mechanisms and understanding game-based systems. When applying these game layers to a non-gaming course, instructors need to realize that not all students are able to quickly understand a new scoring system. In these cases, the types of gamification selected should be that which is most likely to change behavior and raise engagement without also introducing confusion. Game elements should be selected that support and encourage the weaker students in the class, as the stronger students do not need as much assistance.

Adding a narrative element to a class, especially if the students have some agency in creating their part in the story, can create motivation for students. On the other hand, using a narrative that doesn't support the concept of the class and feels "tacked on" will lose its charm quickly and can get in the way of learning objectives. Using unexpected rewards that are designed to highlight desired behavior can help more students adopt that behavior; however, relying too heavily on rewards can make students less interested in engaging in that behavior when that reward is absent. Badging systems can be useful for students to conceptualize specific hurdles to reach, and allowing students to create passion badges for things they are proud of and achievements for other students can encourage a more supportive environment.

Giving students choices can empower them in creating their own classroom experiences, but giving them options to not do work will create opportunities for weaker students to fall through the cracks. Non-traditional grading systems should be used only if there are true benefits for doing so that outweigh the confusion they create. Using a failure-based model where students can re-attempt work can allow weaker students to learn, improve, and gain confidence. Allowing students to create their own path for learning in a negotiated personal contract can be quite empowering for the student and result in very positive results.

No matter what gamification systems are used, it is important for the instructor to realize that they increase the administrative overhead for a course. Each of these aspects adds something new that an instructor must track, something different that must be explained (multiple times), and extra time in the classes for negotiation and re-attempts of assignments. Because of this, instructors should implement only those gamification elements that are most likely to be meaningful to the students and have a positive impact on their learning.

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