2014-05

A Graduate Course as a Game to Learn About Digital Game Based Learning

Kim, Beaumie

University of Calgary

A GRADUATE COURSE AS A GAME TO LEARN ABOUT DIGITAL GAME-BASED LEARNING

Beaumie Kim

University of Calgary

Recognizing the motivating aspects of games (e.g., points, levels), it is becoming more and more widespread to incorporate game-like elements into everyday practices (e.g., exercising). In education, experimental schools are set up to engage students in "quests" for their learning. Some higher education instructors, especially those who teach courses related to games, are attempting to incorporate game principles into the course activities and assessments. This paper discusses how the author designed and conducted a master's level course on Digital Game-Based Learning to immerse participants into its concepts and practices, and what lessons were learned from its first implementation.

> "Welcome to the first class of the semester. Everyone in this class is going to receive an F."
>
> *(Sheldon, 2011, p. 3)*

Lee Sheldon opens up the first chapter of his book, "The Multiplayer Classroom: Designing Coursework as a Game," with the above statement, describing how he introduced his course as a multiplayer game. Such an opening aroused some of the positive emotions that game players often experience, such as surprise and curiosity (Bateman, 2009), which would focus students' attention on what Sheldon was about to say. In the NMC Horizon Report: 2014 Higher Education Edition, games

and gamification are highlighted as digital strategies, which transcend conventional learning activities and are likely to drive technology-related decision-making in higher education in the two or three years (Johnson, Adams Becker, Estrada, & Freeman, 2014). In this paper, I introduce the design of the master's level course, Digital Game-Based Learning (DGBL), during which students are required to play digital games and share their educational game ideas. The course design used the game concepts, such as experience points and multiple battles for their learning tasks to immerse students into the concepts and practices of GBL (Johnson et al., 2014; Sheldon, 2011). The participants were assumed to start from "0" score when they first stepped into the classroom, similar to how we earn scores throughout a gameplay. In the following I first introduce some recent efforts to incorporate game concepts in schools and universities, and then discuss the course I conducted in the summer of 2013. This reflective account includes how I designed activities and assessments for the students to gain experience (and points) in digital game-based learning, and what lessons I learned from implementing it.

LEARNING AS QUESTS

Recognizing the motivating aspects of games (e.g., rewards, points, levels), game-like elements are now widely incorporated into our everyday social practices, which people call "gamification." Through business gamification, customers are encouraged to become regulars of an airline or a coffee shop in order to upgrade and sustain their status, and receive rewards. In education, an experimental school called *Quest2Learn* (q2l.org) in New York City has been designing and implementing "quests" for all their lessons since 2009 in order to better engage students (Salen, 2011). Following the lead and success of Quest2Learn, *Chicago Quest Schools* (chicagoquest.org) are expanding their grade offerings, and *PlayMaker School* (playmaker.org) was started in Los Angeles with sixth graders in 2012.

In higher education, some instructors, especially those who teach game-related courses, have attempted to incorporate principles of games into their courses. Sheldon's multiplayer classroom experimentation (gamingtheclassroom.wordpress.com), initiated in 2009, set out a prominent example for instructors. The course starts with the assumption that students will earn their experience points (XP as in games) by embarking on quests and participating in guilds (collaboration) in order for them to eventually receive grades beyond F (Sheldon, 2011). Inspired by various efforts mentioned above, some universities and researchers have started exploring how their Learning Management System (LMS) can support "gameful" activities and assessments. Kaplan University, for example adopted Badgeville's business and training gamification system for their LMS and reported seeing changes in students' behaviors (Badgeville, 2013). The team of educational researchers at the University of Michigan has developed GradeCraft, exploring how grading system within traditional higher education can become gameful (Holman, Aguilar, & Fishman, 2013). Queso, on the other hand, is an LMS developed from a game designer's perspective on how learning can be organized like a game (Ewing, 2013).

COURSE DESIGN: DIGITAL GAME-BASED LEARNING

The course was designed to give all of the participants, including the instructor, an opportunity to think of a course from a gaming perspective and to enable them to consider (digital) game-based learning as one of the various learning designs. The intention was to explore and discuss the designs for digital games, their learning principles, and their uses for teaching and learning. The course was organized around topics, starting from broader issues of how learning happens with any types of games and how society perceives and influences games and vice versa. Topics became more focused on educational use of games, including how COTS (commercial off-the-self) games and social games can be used for learning, how researchers have developed games for learning, and how teachers and learners may create digital games for learning or make learning activities more game-like. Each day (a 3-hour

session) was similarly structured: 1) discussion on readings and game play, and brainstorming on design principles; 2) sharing of game design tools (e.g., storyboards, game design components); and 3) time for group work.

Learning Tasks and Assessments as Experience Points and Boss Battles

I positioned this course as a chance for the participants to deconstruct their current learning, teaching and gaming experiences, to examine how learning theories unfold in the play of good games, to explore the possibilities and constraints of learning with games, and to consider the use of educational and commercial games in the classroom and out-of-class settings. In order to immerse themselves into such experienced discourse and examined practices, I emphasized participating fully in the course as a game, through which they score for experience points (XPs).

XPs were designed to earn through the everyday activities throughout the 2-week intensive course time. They came to the 3-hour session everyday in order to collectively develop and articulate design principles for learning and games, informed by theories and practices. They were also participating in the community of designers (teachers) to exchange and develop ideas. This was not only happening face-to-face, but also in the online community (Google+ in this case) to share, cumulate, and trace evolving ideas and digital resources. Most importantly, it was essential for them to engage in the group's design brainstorming for their projects. These activities were articulated as learning tasks and experience points they should earn (see Figure 1).

"Boss battles" are how I (as well as many other pioneering instructors who turned their courses into games) positioned their written assignments. In video games, a boss battle happens at the end or climax of a level in order to move on to the next level. It requires a player to use all the skills learned along the way and is the most challenging part of the level. For the game-based learning project, I

suggested three battles: forming the team, sharing the project plan, and developing the game design as seen in Figure 1 below.

Students could receive 100% or less of the maximum points for the attempted items, based on the level of expertise: Superhero (100%), Master (90%), Expert (80%), Experienced Novice (70%), and Novice (60%). The course and the scoring mechanism were being explored together with the students and hence, could be modified together. The total of maximum points (10,000) was used so that it would be comparable to the grading conventions (i.e., 100%). In order for them to receive the perfect grade point value (4.0), they needed to gather 9000 or more points. In the next two sections, I will talk about XPs and boss battles in more details as to how this design was actualized and modified in the class.

Learning by playing games (Experience Points)		Maximum XP per event	Max. scored repetitions	Max. points to be earned (5000)
Checking-in	Class attendance	90	9	990
	Daily game play survey	20	9	
Microblogging	Prototype sharing (Group)	90	9	4100
	Article reaction/game review	100	25	
	Commenting	20	50	
	Resource sharing	20	20	
Boss Battles (GBL group project)				Max. points to be earned (5000)
First battle	Forming and introducing your team			100
Second battle	Poster sharing on your project plan			1000
Final battle	Your game-based learning project - Extended team rationale - GBL project document - Individual reflection			150 3000 750

Figure 1: Points in the DGBL Course

EXPERIENCE POINTS: LEARNING BY PLAYING GAMES

In addition to coming to class everyday for full participation, I asked the students to play games of their choice, submit their reviews on them, and log their play (which game they played, how long they played, how many levels they progressed, and whether or not they recommend the game for others to play). I made an online survey form for this activity, and named it SuperGamer. The intention of this everyday survey was to collect data and provide the tally back to them similar to a leaderboard in order

to give them additional motivation to play games. All the digitally mediated activities used Google+ community page as a portal as seen in Figure 2.

Microblogging within the Google+ community page had multiple purposes. They include: 1) prototype sharing (any stages of the group's work); 2) reaction to the reading(s) and game review; 3) commenting on the classmates' entries; and 4) resource sharing. For each activity, I prepared and shared some guidelines as exemplified in Figure 3.
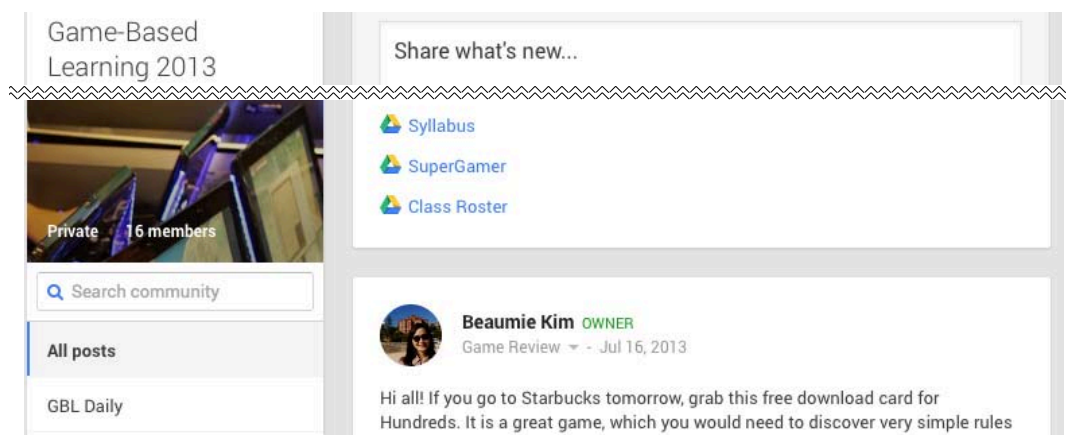

Figure 2: Google+ Community Page

	Full Experience Points	Warning!
Checking-in: Class attendance (90 each)	You will easily score the full experience points every day if you fully participate in the class activities.	• Answering your phone or having a longer break than others will not give you the full experience. • Having no voice or dominating the conversation may not give you the full experience of the class, either. • The only time you lose your previously earned experience points is when you do not let us know you are not coming.
Microblogging: Resource sharing (20 each)	Sharing a relevant resource with a short annotation will also give you extra scores.	• Make sure that the resource you are sharing is not already shared by me or others. • You can share as many resources as you wish until the end of the term, but maximum repetition for scoring is limited to 20.

Figure 3: Guideline Examples for Earning Experience Points

Modifications and Observations

On the second day, I displayed the XPs of students based on their participation in day one, to give them a sense of how they would be accumulating their points. The points were quite dispersed between those

who got on with microblogging and those who could not. The activities were all visible to everyone, but putting them into numbers had a different association (i.e., grades) and created some resistance. The XPs remained private for the rest of the course.

As the university course instructor, I also needed to navigate through these conflicting frameworks between the game and the university assessment. In retrospect, I was expecting students to do well in both experiencing the course as a game and doing a graduate level work of reading and writing. Considering the intensity of the course, both students and I were being challenged to keep up with all the activities. Some may learn to play this "game" of getting more points, which raised concerns for those who might take advantage of it. We made multiple joint decisions on XPs, including limiting the number of game reviews, getting commenting XPs for their overall performance, and so forth.

For class attendance XPs, I was used to being generous on students coming late or looking at the computer screens during the discussion in my other graduate courses. I was unable to make a transition from my previous practices to what I had written into the guideline (see Figure 3). If you do not pay attention to what is going on during a game play, you may actually lose the game. The constant discourse on the course design may need to be part of everyday activities in order to co-reflect on how the learning activities and assessments compare with game elements.

Even though I designed the course to work like a game, I also needed to go through the process of accepting students' drive to accumulate as many XPs as possible. I initially felt uncomfortable that many of them successfully exceeded course requirements, even though game-based learning should aim for that. Students also had mixed reactions to the course format: many students were initially comparing the course with other graduate course formats, but some were transforming the way they were seeing the course itself, creating strategies to keep up with their progresses.

BOSS BATTLES: LEARNING BY DESIGNING GAMES

Three battles (forming the team, sharing the project plan, and developing the game design) align well with regular graduate courses assignment. The main difference might be how forming the team itself was considered as a recognized, important battle in this course. Through this activity, they had to recognize the strengths of the team members and pay attention to how the team members could complement each other. Sharing of their project plan gave them a chance to test out their ideas and receive feedback for the final battle. Given the choices for the format of their final project, three groups chose to develop a new game design blueprint, while one group decided to develop a proof-of-concept (actual making of a game). I also provided a guideline on how they could earn points for the components in these battles. Figure 4 includes some parts of the guideline, which was intended to give them choices since the sum of the points with all items would go over the maximum points they could earn.

Battle	Points that can be earned during the battle
1. Forming and introducing your team (100)	• Introducing your team to the community on time (20) • Demonstrated understanding of team members' interests and skill sets (50) • Demonstrated understanding of how members might contribute to the team's collective goal (30) • Creating/sharing a representation(s) for the team (e.g., team name, a photo taken together, logo, etc.) (20)
3. GBL project: Individual reflection (750)	You may decide reflect more on particular components and sometimes they might be all interrelated. No matter what, you can decide what would be meaningful for you to write about. • Thoughtful reflection on everyday gameplay (100) • Thoughtful reflection on design activities and the project work (100) • Thoughtful reflection on online and in class conversations (100) • Thoughtful reflection on the format of the course (100) • Thoughtful reflection on microblogging (100) • Thoughtful reflection on what gaming and learning mean to you (100) • Other areas of course experiences you identify (100) • Thoughts on your next battle in the area of game-based learning (100) • Self-assessment on the project (100) • Good length (40) • No spelling and grammatical errors (40)

Figure 4: Guideline Examples for Boss Battles

Modifications and Observations

The task of sharing their group work, preparing project document, and writing a reflection was similar to the usual graduate course assignment. As a result, the guideline in Figure 4 was interpreted similarly as course assessment rubric. We decided that group project sharing would be a presentation with short game play, and that points would be based on overall assessment of the presentation rather than point-based items I listed. More often than not, these items were taken as required components. The course was positioned as a game, but premise behind remains a university credit course with which one does not get infinite chances to fail and repeat.

CONCLUSIONS

Overall, students seemed to appreciate their learning experience through the course and were able to take away many ideas for their own classrooms. They especially valued the time for the group work, appreciated what group members brought to the table, and were very proud of their designs and what they were able to accomplish within two weeks. As a next step, I plan to redesign the course rethinking the point system, which, in my opinion, was only successful in engaging few students in the gameful experience.

References

Badgeville. (2013). Case Study: Kaplan University. *Badgeville: The behavior platform*. Retrieved February 22, 2014, from http://badgeville.com/customer/case-study/kaplan-university

Bateman, C. (2009). *Beyond Game Design: Nine Steps Toward Creating Better Videogames*. Boston, MA, USA: Cengage Learning.

Ewing, C. (2013). Welcome to Queso! *Queso: Learning Management system for gameful classroom*. Retrieved February 22, 2014, from http://class.conque.so/

Holman, C., Aguilar, S., & Fishman, B. (2013). Designing a Game-Inspired Learning Management System. Presented at the Games+Learing+Society Conference 9.0, Madison, WI, USA: University of Wisconsin-Madison.

Johnson, L., Adams Becker, S., Estrada, V., & Freeman, A. (2014). *NMC Horizon Report: 2014 Higher Education Edition*. Austin, TX, USA: The New Media Consortium.

Salen, K. (2011). *Quest to learn: developing the school for digital kids*. Cambridge, Mass.: MIT Press. Retrieved from http://mitpress.mit.edu/books/quest-learn

Sheldon, L. (2011). *The Multiplayer Classroom: Designing Coursework As a Game*. Boston, MA, USA: Cengage Learning.