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GAMEFUL SPACE, ACTIVITIES AND ASSESSMENT FOR GAME-BASED LEARNING

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This paper discusses the iterations of designing and implementing a graduate level course on digital game-based learning at a Western Canadian university. We critically analyze the design of the course by examining the tensions that arose between the course assessment and social practices common in playing games, and discuss activities introduced to mitigate such tension. We also consider how the use of the university library's space and resources in the second iteration provided new opportunities for the course. We explore on how "playable" the course has been and present our proposed improvements for the next iteration.

Keywords: Game-based learning; Classroom gamification; Higher education

> What I did find unique about the XP is where we chose avatars and did not know who each person was. I think this kind of thing works really well when the people in class already know most people, so it is fun to try and guess who is who… I was not having some conversations in class about certain topics because I didn't want people to find out who I was online.
>
> *Doc Claw, Reflection Paper*

In 2013, the first author designed and implemented a master's course on game-based learning, which incorporate game concepts such as experience points (XPs) and multiple battles (Sheldon, 2011), in order to provide learners with an opportunity to explore the design of digital games, associated learning principles and their uses for teaching and learning (Kim, 2014). Incorporating

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game principles into this particular course has important values in addition to the motivational aspects of game play. We posit that the teachers should be cognizant of how today's youth learn and develop. Young people are often engaged in what Thomas and Brown (2011) called, "a new culture of learning" in their social worlds by inventing and examining new ways of doing things, which is also embedded in their gaming practices. The first iteration in 2013 informed the authors to collaborate and improve many aspects of the course in 2014. For example, an avatar for XPs was introduced primarily to resolve the tension in sharing their scores (Kim, 2014) and secondarily to reframe the typical online discussion as a gaming experience (McGonigal, 2015; Ramirez & Squire, 2015). The excerpt from Doc Claw's (screen name of a student) reflection paper demonstrates that the new design comes with a new issue to be addressed. In this paper, we briefly describe the first iteration of the course, discuss how we redesigned and observed during the second iteration, and present what we propose for the third, upcoming iteration.

THE FIRST ITERATION OF THE COURSE DESIGN AND THE ISSUES RAISED

The course was intentionally positioned to allow the graduate learners to deconstruct their own learning, teaching and gaming experiences in relation to learning theories, the possibilities and constraints of game-based learning and to consider the use of both educational and commercial off-the-shelf (COTS) games in and out of classroom settings (Kim, 2014). Within a two-week intensive program, students participated as a community of learners and teachers both face-to-face and through a social networking system (Google+) to brainstorm, share, cumulate and trace evolving ideas and resources on game design and learning. The boss battle incorporated the written graduate course assignments while the mini battles included team building, sharing of project plans and developing a game design or prototype. The analogous boss battle in a video game denotes

fighting the most powerful enemy at the end of a game level, which requires players' use of various skills developed throughout the game play (Kim, 2014).

The learners were also encouraged to play games of their choice daily, write brief reviews, record their levels/progress and log their play time in order to attain the position of a super-gamer in the class. All of their online and in-class activities were part of important experience, thus reflected in their XPs, analogous to the participation grades (for more details on the structure of assessment, please refer to Kim, 2014). However, after the first day of the course, even though most of the activities were visible on Google +, sharing of XPs in class based on individual performance (as in visible numbers to account for their contribution/effort, analogous to leaderboard in video games) was not welcomed by students. The XPs eventually convert to graduate course grades, which are typically personal, and therefore joint decisions were made to keep the XPs private. The large amount of work for each day was also an issue, and the learners and the instructor made several joint decisions and amendments (e.g., expected number of game reviews). There was also mixed reaction to the course format. Assessments, particularly the breakdown of points and items for individual tasks, caused concern for some learners. This resulted in interpreting the point system as a course assessment rubric although the intention was to offer more choices to them (i.e., they do not need to complete all the items listed). Many students felt they would have enjoyed the course more had there been more time (than 2 weeks) for the course. Although the course was positioned as a game, the underlying premise of a university credit course does not entail infinite number of failures and repetition (Kim, 2014).

SECOND ITERATION OF THE COURSE DESIGN WITH MODIFICATIONS

The second iteration of the course in 2014 introduced new elements for the accumulation of XPs. Firstly, the learners could create avatars to maintain anonymity for their online activities and self-score their XPs daily for the leaderboard. Secondly, time was allocated to discuss and review daily activities of selected avatars on specific activities such as microblogging on game reviews and scoring conventions of XPs. This accommodated the element of immediate feedback often lacking in higher education. The self reporting of XPs as avatars was intended to accommodate privacy, eliminate the surprise of finding out scores from the instructor and encourage or foster learners' agency in assessing and monitoring their own performance.

The redesigned component also included use of space and the vast collection of digital games owned by the university's main library. This allowed the students to experience a variety of games and learn from peers with more experience in gaming. Having a gameplay time during the course also addressed the concern from the first iteration, where students felt overwhelmed by the various tasks to complete each day outside of the classroom. On account of these modifications the learners played games and participated in discussions to start off the session everyday. Similar to the first iteration, all of their learning activities accounted for the XPs, including sharing their groups' game design progress through microblogging on Google +. The three battles did not have any major change for the second iteration.

OBSERVATION AND RESULTS

For the summer of 2014 course, we gained consent from the majority of students for collecting diverse data (observation notes, classroom artifacts, assignments, and Google+ discussion) and using them for research purposes. The following account is our preliminary findings from the

observation. Fourteen out of fifteen students were from the same master's program cohort focusing on integrating technologies in school environment, and had worked together in their course work earlier. Their teaching experience varied and some were in their leadership roles. The setting of the class in the library was ideal for discussions and gameplay with six circular tables equipped with three computers. The library staff helped set up various gaming equipment and the space in between the two columns of tables and one side of the room were used for gaming purposes. Three walls of the room had white boards with a projection screen in front. Most sessions started with playing digital games except for the first day when an introductory game (paper-based) was played as an ice-breaker, and another day with a board game play.

Gameplay and co-reflection. From the beginning of the course, the in-class gameplay and discussion was found engaging and valuable. In the introductory game, for example, each player had to visually express (in any form) the answer to a question (framed by another player) provided at the back of a paper. The rest had to guess the answer. The player who had to act out or draw the clues could not utter a word. The questions were created by the players and were about themselves. The three teams (formed by the learners) were engaged in the game as well as the follow-up discussion: they were competitive, creative with strategies, and advocated for changing some rules to make the gameplay interesting and fair. The ensuing discussion brought out how they had to think outside the box to learn details about their classmates, which they would not have otherwise. Others noted how the strategies and the scoring system evolved during the game play and how they could self-monitor. The question that stood out however was what made them willing participants. The players felt that a game had to have certain criteria such as the ability to facilitate rapport, interest and a spirit of competition for everyone to enjoy the game. As the course progressed the learners played a wide variety of commercial (console and PC) games including classic games on

Intellivision, educational games, and social impact games. Time spent on games helped foster invaluable discussions around the reading topics.

Course structure and workload. Despite the effort to have more work embedded within the class time, in-between discussions especially towards the beginning of the course marked the surprise realization about the graduate level workload, similar to the first iteration. Some took the new rules and requirements as a new, interesting challenge whereas others found it overwhelming to read and write so much (i.e., the maximum repetition of activities were interpreted as requirements; see Figure 1) and the process of self-assessment confusing. The concept of a game leaderboard inevitably challenges the existing rules and structure of a graduate course. The discussions on the course structure, their assignments and assessment of tensions on account of the above, for multiple days, mitigated the stress, clarified the element of choice, and helped specify the guidelines together for their activities.

		Max. experience points per event	Max. # of repetitions scored	Maximum points to be earned (5000)
Checking-in	Class attendance	80	10	1000
	Daily self-reporting of XPs	20	10	
Microblogging	Prototype sharing	90	9	4000
	Article reaction/game review	150	20	
	Commenting	20	40	
	Resource sharing	20	20	

Figure 1: Learning by playing games (Experience Points).

XPs and avatars. In general, there was much less concern about sharing XPs since it was kept private but the learners had different takes on avatar use. A majority of them accepted that clarifying doubts became easier through their posts on Google + on account of anonymity. The learners also acknowledged being careful not to reveal their online identities during face-to-face

discussions in class. As we have seen in Doc Claw's example earlier, some students played the game of figuring out their peers and hiding their own identities.

Working together as a community and teams. The team formation in the second iteration was facilitated by a "game jam" activity on the first day. This new activity helped include students who were not part of the cohort to join a team based on the topics of interests. The teams were formed based on initial interests: a simulation game, a game that resembles spiral curriculum approach, a game for adult learners (especially educators), and a game connecting to physical activities. Their classroom roles emerged through their individual leadership within small groups or as a class. The latter was evident particularly during the gaming sessions when learners with expertise in certain games provided assistance on playing the game, explaining game content with analogies that helped a deeper discussion on the day's topic.

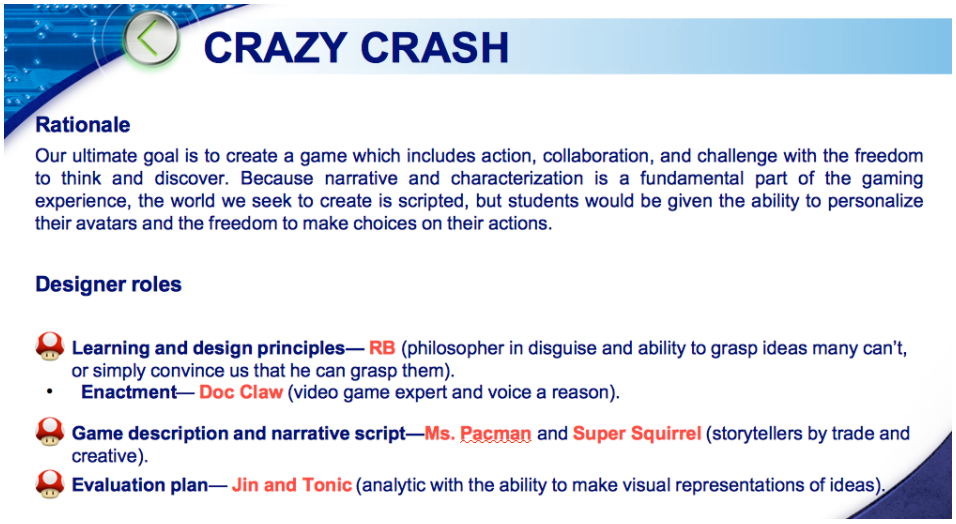

Figure 2: A slide from a team introduction.

Similar role-definition and role-playing were observed during their in-class group work. Some learners played with the game concepts to identify and build on to their strengths by calling them "super powers" and assumed different roles and responsibilities to proceed with the game design.

For example, learners with programming skills focused on game design while curriculum experts scaffolded the learning content and brought in the links to the learning outcomes. Figure 2 shows a group's introduction of their team members and their roles. Their names are replaced with their avatar names (in red). From a social perspective it became apparent that the interactions both within class and through microblogging contributed to the development of a stronger community.

THE THIRD PROPOSED ITERATION USING ROLE-PLAYING GAME MECHANICS

The third iteration of the course intends to integrate course mechanics, aesthetics, and tropes normally associated with tabletop role-playing games (RPG). The first two iterations of the course have integrated many attributes familiar to participants from digital games. Using RPG tropes will help emphasize to participants that the principles do not solely apply or come from digital games. It will also create a stronger alignment between course activities and game design principles, making in-class activities more playable. Experience points (XPs) will continue to be used and are a crucial part of the group and individual assignments. Avatars will be more fully realized as participants take on roles that define their interactions with the key game design concept cards used in the assignment. The participant roles will govern the type and quantity of concept cards they can address during the redesign and as a result also their roles in the group.

The roles or character classes to use the original mechanics language are: disciplinary (drawing up to five cards from one category), interdisciplinary (drawing two cards from two categories), and multi-disciplinary (three cards total from any combination of categories). This assignment of roles, and the particular titles used will highlight the importance of collaborative and often multi-disciplinary work that goes into a gamified classroom. The roles will offer meaningful choice for participants and help structure their group interactions. This change enriches the emerging roles

and leadership observed in the second iteration, and structurally incorporates the gaming aspect to their group work. The group course design assignment takes advantage of RPG style character record sheets to record information about individual participants, the course they are designing as a group, the individual's role in relation to concept cards, and manages the accumulation and recording of experience points. Each time they address a course concept in their course design they earn the experience points listed on that concepts card.

Figure 3: An example key concept card (front and back).

The game design concepts are organized and presented using a fan made online tool to generate Dungeons and Dragons 5th Edition spell cards (see Figure 3). Allowing for capture of key concepts and definitions, meaningful groupings with headings and colour, these cards carry point values to be attributed to their application. The concept cards will be linked to other course content, including games played during the course thus integrating the entire gaming experience. The importance of the concept determines the card value or points helping to ensure attention to such concepts. In addition, if a participant draws a card with an intent to address it meaningfully in their game design but fails, the point value of the card is subtracted from the experience points earned, re-emphasizing the importance of higher point cards.

CONCLUSION

The first and second iteration of the course design put a strong emphasis on playing digital games and making the assessments more game-like. We observed the need to make the face-to-face discussions and in-class group work more playable in which they make moves to advance their game design ideas and to develop each learner's own expertise. At the same time, as seen in the Doc Claw's example, there was a sense of disconnect between their avatar identity and the self in the classroom, even though students favoured its gameful aspects. Our design for the next iteration will focus on helping learners to develop their stance and expertise both online and in-class activities. This will include creating meaningful representations of avatars (e.g., implicitly indicating their viewpoints or expertise) and working through the in-class RPG carefully as a community of learners. From our research perspective, we would look into collecting more in-depth and rich data to capture participants' discussion beyond the observation note, in order to better understand their arguments and moves put forward as learners and players.

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