

## Gamification in Higher Education: How we Changed Roles

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**Abstract:** Squire claims that a good game encourages good learning that “enables us to become knowledge producers [which] gives us robust ideas to think with, and propels us toward participation in social practices” (2013). Inspired and intrigued by the possibilities of using game environments as learning spaces, which can lead to social changes (McGonigal, 2011), the instructional designers at the University of British Columbia ventured into the “unknown” and transformed a “traditional” online course on adult education into a role-playing game. This paper explores the notion of gamification in a higher education setting, what it means in terms of instructors’ teaching practice, and how it changes student experience.

The paper describes how game elements were incorporated into a course. The goals were to 1) engage students by creating a responsive feedback system, and 2) empower students by allowing them to customize the game experience based on their learning style and interest in the topics. The game space designed for the students enabled them to explore and try different things, and also realize that their work mattered. The paper focuses on the process and challenges of “gamifying” academic content and outlines the elements that make the game successful and sustainable. The designers purposefully avoided creating a virtual world or environment similar to an MMORPG, or investing a significant amount of funding and time into creating a space where only experienced gamers would feel comfortable. The new gamified version of the course needed to be low-tech, but enable high-social learning. The goal was to increase student engagement in the course, especially their interaction with one another, without technology getting in the way of their learning.

The course was therefore taken out of the structured and formal LMS and transferred into the more flexible and social WordPress environment. The students took on two roles: 1) the role of reporters who were required to write about adult education issues and respond to different tasks set out by their Editor in Chief, and 2) the role of readers who responded to the written articles. Together, they were contributing and building the newspaper “Adult Educator Weekly”. The design of the course enabled students to receive timely feedback from their peers, which made the students feel their writing was relevant and purposeful. Based on the students’ feedback, the gamification of the course contributed to their increased interest in the topics, engagement with the course, and understanding of the issues from different perspectives.

**Keywords:** gamification, higher education, role-playing, engagement, empowering

### 1. Theoretical background

There have been many definitions and theories of game and play, from Huizinga, a Dutch cultural historian who connected games to culture in 1938, to current game theorists, like Sutton-Smith (1997), Salen and Zimmerman (2004) or James Paul Gee (2005). Deriving from those definitions, an American game designer, Jane McGonigal (2011), identifies four broadly accepted elements of game: a clearly defined goal, rules, feedback mechanism and voluntary participation. Having a defined goal with desirable outcomes, which are what the player hopes to achieve by playing the game, provides a sense of purpose for the player. Rules are to limit how she can achieve the goal. This confinement makes the player rely on her creativity and strategic thinking in exploring the environment to produce the desired result. While the person is trying to achieve the goal within the limitations of the rules by testing different strategies, the feedback tells the person what worked and what didn’t work. Finally, players in the game knowingly and willingly participate in it, accepting the goals, the rules and the guidance of the feedback.

The term “gamification” means applying game mechanics and game design techniques to non-game environments in order to help people achieve their goals. Gamification has become popular in the last decade. It has been used by companies (e.g. airline companies, retailers, etc.) to attract customers and it has gained traction in education. Kapp (2012) outlines the design process of incorporating elements of a game into teaching instruction. He discerns two types of gamification: a gamification of content, and structural gamification.

Gamification of content means altering the content to make it more “game-like”—for instance, overlaying the content with a storyline and characters, or incorporating music, sound, or graphics into the game. Structural gamification, on the other hand, is applying game elements to guide learners through the content without changing the content. Structural and content gamification can complement each other quite well and be used together to create an engaging experience, which is what the instructional designers did in the redesign of the UBC course.

While McGonigal advocates for games in everyday life to “make us better, and change the world” (2011), Gee explores the principles embedded in game design that can help us improve educational practice. He notes, for example, the importance of immediacy in the feedback system. The quick feedback allows the players to see the effects of changing one aspect of the strategy. This either motivates them to continuously modify different elements based on the results until they achieve the goal, or rewards them with instant gratification when they succeed right away. Gee claims that by applying this principle in an academic setting, the learning experience becomes more engaging for the students. Linking assignments more closely with various types of feedback will enable students to recognize where improvements can be made and implement them right away.

### 1.2. Why does gamification matter in education?

Dr. Kurt Squire (2013), from Wisconsin University, describes an experiment in which he studied the effects of gamified learning on students’ test scores. Squire hypothesizes that gamified learning leverages the concept of Preparation for Future Learning (PFL), where meaningful and engaging learning experiences better prepare students to learn additional concepts (Bransford & Schwartz, 1999). That is, well designed game play can engage students with a topic on a deeper level by driving them to internalize the material, and thus to understand it better. This type of learning prepares the students to absorb new relevant content better than if they had not had this deep experience with the subject matter.

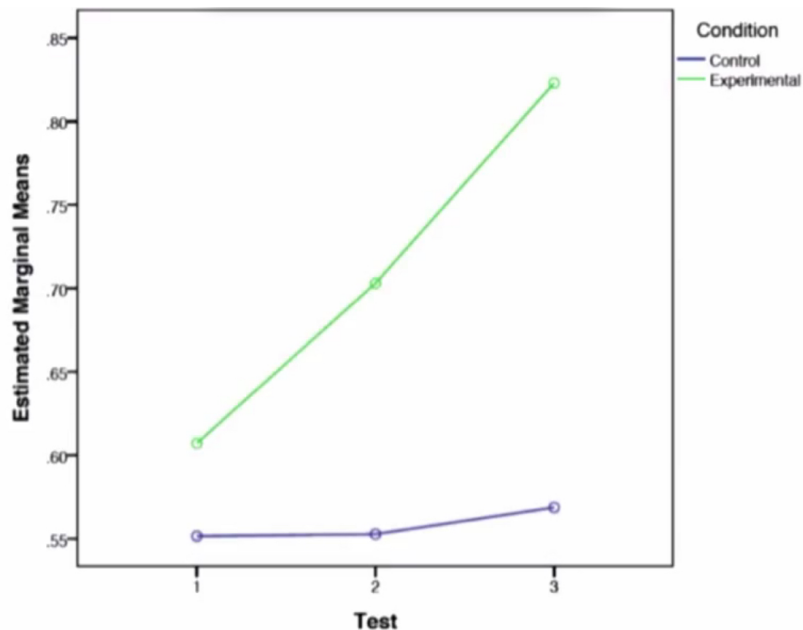
In Squire’s control experiment study, the variable is whether students have played the game *Citizen Science*, and how this impacts test scores. In the game, the player is a young adult who becomes concerned about the health of a local lake threatened by eutrophication, and the goal of the game is to restore the lake (Games Learning Society, 2013).

On Day 1, both groups took a pre-test. On Day 2, students in the control group had a “traditional” experience where they read about the lake and lake beautification. The information was derived from the game and presented in a narrative way with text and graphs. Meanwhile, the experimental group played the game. Both groups were asked to take a test immediately after they had finished reading the packet or playing the game. On Day 3, the groups were exposed to new information in a reversed manner, where the control group played the game and the experimental group read the packet, then both groups were tested again (Figure 1: Structure of the PFL experiment).

Preparation for future learning					
	Day 1	Day 2	Day 2	Day 3	Day 3
Control	Pre-Test	Packet	Mid-test	Game	Post-Test
Experiment	Pre-Test	Game	Mid-test	Packet	Post-Test

**Figure 1:** Structure of the PFL experiment

Squire observed that PFL indeed seemed to have been a factor (Figure 2: PFL effect on test results). The experimental group performed better with each new test, compared to the control group, which performed relatively the same in all three tests. Furthermore, through naturalistic observation, Squire noticed that students in the control group were simply not very interested in the material when reading the package compared to more enthusiastic students in the experimental group playing the game.



**Figure 2:** PFL effect on test results

## 2. Context

Inspired by contemporary research on games in education, the instructional designers from the Faculty of Education at the University of British Columbia (UBC) proposed to gamify an existing online fourth-year undergraduate course on adult education. The model for this transformation was Jane McGonigal's online game *Urgent Evoke, a Crash Course in Changing the World*. *Urgent Evoke* was an alternate reality game that used the real world as the platform, and its storyline was based on real-life problems. In *Urgent Evoke*, players earned points by taking on the role of agents. They completed a mission and quests every week for ten weeks by taking part in real-life activities. For example, players could choose to participate in a mission called "Food Security" and gain points by completing tasks such as building a community garden or helping a neighbour set up a backyard garden. Between March and May 2010, over 19,000 people from over 150 countries played this game, and completed thousands of tasks (Gaible & Dabla, 2010). This means that a game has the power to motivate impactful positive actions in the real world and encourage people to combat serious problems.

The designers were curious to see if adding this extra layer of gamified content and structure would change student engagement in and perception of the course. They wanted to create a "good" game that would "provide... possibility spaces in which we get good at doing new kinds of things and become new kinds of people" (Squire, 2013) and encourage good learning that "enables us to become knowledge producers [which] gives us robust ideas to think with and propels us toward participation in social practices".

## 3. Process

The designers first identified a successful game model (*Urgent Evoke*). Next, they established an overarching goal, which was to foster good learning through a game. Then the planning and designing process began. At that point, there was no clear format for the gamified course, nor was there a chosen hosting platform, but three critical criteria were identified for the gamified course to fulfil. It needed to:

1. empower and engage students
2. be easy to play  
and
3. be sustainable

The next step was to select a course. A three-credit undergraduate course entitled *Overview to Adult Education* was a good fit for a number of reasons. It was already structured similarly to *Urgent Evoke*. The duration of the course was 13 weeks, but the students had ten assignments to complete in 10 weeks. They needed to respond to a variety of topics in writing, either by researching them, or by taking an action and reporting on that action. The modular format seemed suitable to translate into distinct game missions.

In addition, the students registered in this course were usually from various disciplines, ranging from nursing to business, with diverse academic backgrounds and life experiences. This often meant a lively discussion with a multitude of perspectives, which was an excellent basis for good interaction and an enjoyable game environment. Another crucial element to get the project off the ground was the eagerness of the instructor to try the gamified format. In this case, she was also very experienced in incorporating role-playing into her teaching.

Since there was no expertise in the course development team, a graduate student game designer was hired to assist with building the game space. The consultations and brainstorming lasted for a few weeks, with continual reference to the identified three criteria throughout. The final result was a fictional newspaper called *Adult Educator Weekly*.

### **3.1 Adult Educator Weekly (AEW)**

Students took on the dual roles of a reporter and a reader in *Adult Educator Weekly*. As reporters, they had to choose to report on three out of ten topics. The “journal articles” were made public and read by everyone in the class. As readers, the students reviewed the articles and posted their comments. They also cast their votes for the best written article of the week. At the end of the course, the articles with the highest number of votes were published in the final edition of the newspaper. The instructor took the role of an editor in chief who gave the reporters their weekly assignments.

## **4. Meeting the criteria**

### **4.1 Empowering and engaging students**

Gee (2013) outlined 13 learning principles that games use to engage people. The guiding principle is to empower the learners; when they choose what to learn, they have control over their learning and they feel what they do matters. In the course, this was achieved by allowing the students to choose 3 out of the 10 possible assignments. They were able to interact with topics that they had deeper personal interest in, or that were more related to their work. The role-playing aspect of the course transferred the students into a different reality. Taking on a different identity—being journalists—gave students the flexibility to write in a more conversational tone, and move away from a traditional academic writing style, which was a requirement of the original course. At the same time, the students were still accountable for the information they provided, so the rigorous research component was still present, as were professionalism and expertise. Having their peers as an attentive audience, as opposed to submitting an assignment only to the instructor, increased their personal responsibility towards the public for which they were writing.

The students were also given control over the design of their own grading. Each student decided the relative weight of each assignment and where he wanted to put the most effort. Each learning activity was worth between 15-30% of the final grade, and the student could distribute the weight of each assignment as he wished, as long as all the assignments added up to 100%. The assignments varied in type, ranging from writing an article for the newspaper as a journalist, to responding to the articles as a reader, to doing a final presentation. This meant that students who preferred to create original work could place a higher percentage on the assignment that required them to write a story, and a lower percentage on providing reader feedback. Students were able to re-negotiate the weightings up until the assignment was submitted. This flexibility in the grading system was powerful, because it gave the students the key to designing their own version of success in the course. The more effort they decided to invest in the coursework, the more they had to gain. Because of the clear distribution of weight, it was very easy for each student to know exactly where he stood at any point of time in the course.

Another element that contributed to student awareness of progress was the immediate feedback that they received daily, either from the instructor/editor in chief, or from readers/classmates. Juul (2008) and Bogost (2007) talk about the compelling impact of immediate feedback. Games with a well-designed feedback system

encourage the player to use different approaches to solve the problem, leading to final mastery even after numerous trials and errors. A simple game, such as Tetris, has a very responsive feedback system. As you try different ways to solve the problem (make the falling blocks disappear), you get instantaneous feedback through multiple channels on how well you are doing: from the points you are racking up, from the visual feedback (lines getting higher or disappearing), and from the sound (lines crumpling, when you do particularly well). These simultaneous types of feedback may be one of the reasons why Tetris is so engaging to play. Through trying different ways to solve the problem based on the feedback, the player becomes better at solving the problem. Once the problem is solved, she is presented with a new problem, and the cycle continues.

Similar to Tetris, by sharing the assignments with the entire class, and waiting for classmates to respond to written articles, the journalist was in constant expectation, and reception of, feedback. As the readers required time to digest the information and compose a response, the feedback loop could be very long, and not as immediate. In some cases, the feedback to the articles was not in abundance. To compliment the feedback that represented a deeper analysis, but was occasionally low in frequency, a voting system was added: not everyone could write a critical comment, but everyone was able to cast one vote per story. To increase the motivation for writing a good article, the article with the most overall votes in a week was published as the featured article at the end of the course.

#### **4.2 Easy to play**

Students needed to be comfortable with the platform right away, so instead of a robust and complex Learning Management System, the designers decided to use WordPress. The blog format made the learning environment less formal, was easier to customize to look like a newspaper, had a gentler learning curve, and was accessible on mobile devices. Since the course was a university credit course and had a very defined time frame, the students needed to understand the rules of the game immediately. The designers didn't want students to struggle with learning how to navigate a virtual gaming environment, such as Second Life, for example, or to spend hours creating an avatar. A blog was an ideal platform, as many students were already familiar with it, and they felt comfortable working in it. The blog also allowed students to interact with the content and each other seamlessly and instantaneously.

#### **4.3 Sustainability**

The project was initiated without a special grant, but small amount of money was approved from the unit's research and development budget. It started as an innovative pilot experiment with the idea to make the course delivery sustainable after the first few offerings, if proven successful. For the course to be sustainable, the following needed to be fulfilled:

- The platform needed to have good interface with no need for extra graphic design, as there was no funding for it.
- The instructor needed to be able to update the content easily as new topics came up, without re-design or special modifications

WordPress is very user friendly and does not require any programming knowledge to update a page or create a post. The platform also makes it relatively easy to copy an instance of the game forward for each new term. UBC has its own instance of WordPress installed on its server, and a team of programmers who can create customized plug-ins (such as the voting system mentioned earlier). This team offers its services across campus to all Faculties, and provides support in customization. The instructional designer provided some initial training for the instructor until she felt comfortable in the environment, and ongoing support proved unnecessary.

### **5. Results**

#### **5.1 Instructor's perspective**

In 2014, after the first offering of the gamified course, the instructional designers interviewed the instructor and one of the students who took the course to hear their thoughts about their experience.

The instructor found the most rewarding aspect of the course to be the student-generated critical dialogues, which were fostered by the responsive feedback system. Publishing the articles enabled multiple readers to provide comments which gave timely feedback to the journalists. In addition, when the journalist's article was posted, she could see how many people were engaged in the discussion and "[seeing] there's a response

ma[de] it very dynamic and I think that that is really engaging and motivating for the students” (Instructor 2014, per. comm., 14 January).

*[T]he dialogue that I see everybody creating, sort of as a learning community, is one of the most rewarding aspects of this course and this gamified environment (Instructor 2014, per. comm., 14 January).*



**Figure 3:** Comments and discussions in the blog

Furthermore, the instructor indicated that the blog format which showed all the comments related to the article on the same page (Figure 3: Comments and discussions in the blog), was more accessible and user friendly than the traditional discussion forum in a Learning Management System. As a result of this responsive and engaging feedback system, “many of [the students] [did] more than the minimum required [posts] because they [were] so engaged with each other” (Instructor 2014, per. comm., 14 January), which further enhanced the exchange of ideas.

Another observation from the instructor was that the gamified flexible learning path proved to be challenging for some students at the beginning. Those were the ones who wanted more structure and needed specific and direct instructions.

Nevertheless, the instructor indicated

*... even in cases they felt a little uncomfortable maybe at the beginning, with maybe being a little unstructured, maybe having too much freedom, by the end of the course, they really thought that it was the best way and they learned more that way. Having to take charge of their own learning was very empowering to them.*

The third observation made by the instructor was about the voting system. The possibility of being published (Figure 4.: Featured article in *Adult Educator Weekly*) as a featured article seemed to be a minor motivator for the students.

## Featured Articles



Your votes are in!

The article with the most votes is [An Increase in Plagiarism – Fact or Fiction?](#) by [redacted]  
 Congratulations [redacted]

Honorable mentions:

- [Compare and Contrast: Philosophy + Education](#) by [redacted]
- [From The Past to the Present](#) by [redacted]
- [Follow the Historical Road: Past to Present](#) by [redacted]
- [Dear Editor, Response to Funding for Northern Lights College](#) by [redacted]
- [A Postmodern Look at Adult Education](#) by [redacted]

**Figure 4.:** Featured article in *Adult Educator Weekly*

According to the instructor, the voting system provided more of a “social context”: the space that everyone would visit, rather than a motivation for high-quality work. Perhaps as a result of this, only a small percentage of the students cast votes during the duration of the course. Another reason for the low number of votes could be the fact that they had no impact on grades, and therefore there was no incentive for students to vote. The instructor was hesitant to integrate the voting results into the grades because of two factors. The first was that the articles with the top votes might have been the most popular ones, but not necessarily the best-written, and the other was that the voting mechanism didn’t ensure honesty in any way. For instance, students could have agreed to consistently vote for each other.

Despite the lack of impact of voting on student grades, the designers and the instructor felt that it should remain in the course. It had its function in the course, similar to comic relief in a drama, adding a fun element to an academic requirement. In addition, for some students, having a featured article published was an acknowledgement of their work.

### 5.2 Student perspective

*[The ability to structure your own learning] gave you some sense of agency... And that was really motivating to feel like I was in charge of my own learning.* (Student 2014, pers. comm., 13 January)

Three aspects of this course made lasting impressions on the student. The first was that she was provided with the “rules” on how to succeed in the course. Within those rules, she was given the freedom to explore and conduct research on issues she felt passionate about. This translated into a deeper connection with the activity, and the creation of a sense of self and purpose when writing the articles. This more profound understanding of the topic, together with the ongoing public feedback, created a sense of community, which was the second aspect of the gamified course that the student would remember. This was because the discussions brought together journalists and readers who were both passionate about the same topic. The students were exposed to various insights and perspectives, which opened an avenue for them to make new



connections with others in the class. Finally, as mentioned by the instructor as well, the fact that the articles and comments were read by everyone in the class motivated the students to produce high quality work.

The student acknowledged that the role-playing aspect of the course was challenging at first:

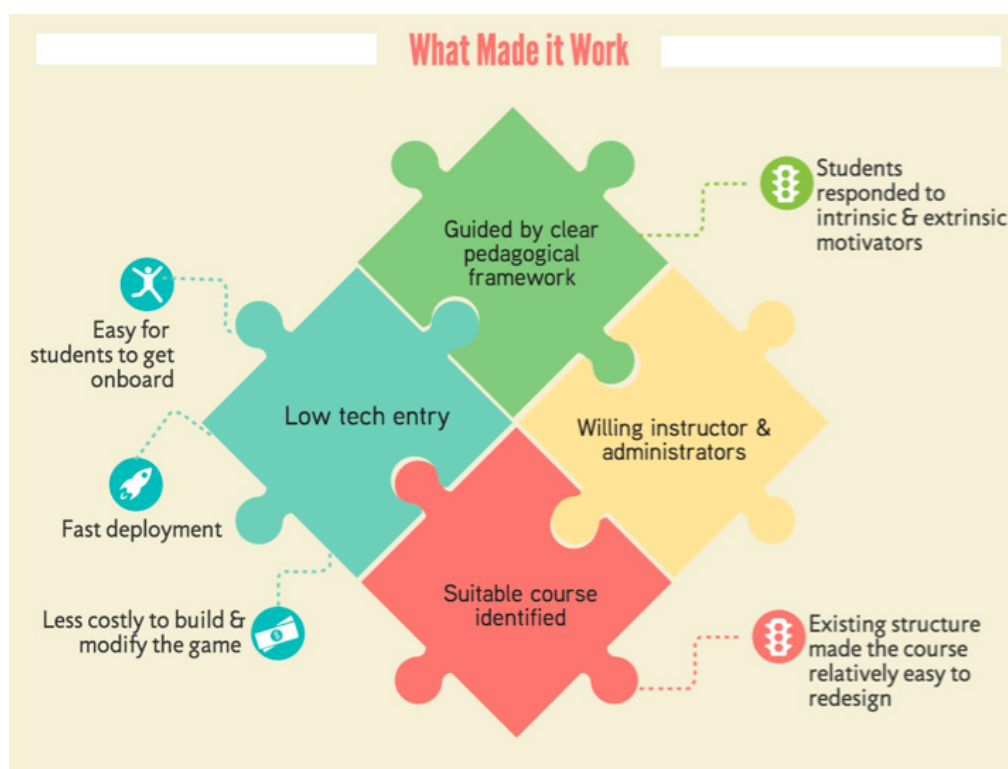
*I was a little bit outside of my comfort zone for a brief moment [...] But once I got used to it, and adapted to the idea that I'm not necessarily playing someone else - I'm just changing the capacity that I'm presenting my work in, [...] that reinforced my ability to do other things, rather than just be a student presenting in a completely structured way.*

Role-playing was important. Seeing themselves as journalists, the student were compelled to synthesize and present information in a manner that would allow someone else to understand it easily. As the student pointed out, the ability to articulate and to educate others on a topic, rather than write just for self-understanding, was one of the most important processes of learning.

## 6. Conclusion

In this gamified course on adult education, students took on the roles of journalists and readers of a newspaper, and they were given the autonomy to create their own learning experience and define what success meant to them. They engaged and interacted with the content they were most passionate about and their enthusiasm was evident in the high quality work that was produced. An important component of this environment was a responsive feedback system that let students know, in a variety of ways, how close they were to achieving the goal. The responsive and robust feedback also made students feel their efforts were acknowledged and made an impact on others, which provided further incentive to continue the work. Based on the feedback, this gamified course was indeed a successful way to engage and motivate students.

The successful gamification process was a result of taking into consideration and combining four major aspects: good pedagogical principles, the suitable course, the instructor who was ready to take risks and a platform that was accessible and user-friendly. They all had to fit like puzzle pieces (Figure 5: What made the gamified course work) in order to create a learning environment in which the students could reach their highest potential.



**Figure 5:** What made the gamified course work



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