

The Research

Why Gamify Your Existing Course?

For educators, change is constant. Whether it's adapting a lesson to suit different learners, updating a unit or two year by year, or changing courses or grade levels of instruction, this profession is built on the expectation that nothing is static and that educational success is dependent on a huge number of variables. Add to this a recent curriculum overhaul in British Columbia, and you have the perfect storm of change and uncertainty.

One innovative strategy that is worth exploring is the use of gamification in education. I propose that by exploring and applying chosen elements of gamification it is possible to create an overarching gamified framework that educators can apply to their existing online courses in order to increase student engagement in Distributed Learning (DL) coursework while increasing student opportunities for personalization and choice.

Getting Started: Identify a Problem

In their work "Gamification in Education: What, How, Why Bother?" Lee and Hammer (2011) tell us that in order for educational innovations to be successful, you must first start by identifying a problem, and then "design systems that fix those specific problems, develop ways of evaluating whether those fixes work, and sustain those fixes over time" (p.3).

DL teachers and students alike will tell you that working asynchronously online is not always the most engaging learning environment. There are feelings of isolation, perceived distance from the instructor, and fewer opportunities for collaborative learning (Bates, 2015). Although there are a number of design innovations that can be employed to reduce transactional distance, increase feelings of connectedness, and build in opportunities for collaboration, one of the most compelling problems that needs solving in both the DL and bricks-and-mortar classroom is diminishing student engagement.

"Interaction is critical to creating a sense of presence and a sense of community for online learners, and to promoting transformational learning" (Anderson, 2008. p.32) This research shows us that students who are engaged and connected experience deeper learning; therefore, to start addressing the issue of student engagement, we should target this problem in our design.

Addressing Student Engagement:

In a face-to-face classroom, attendance is mandatory, and can be enforced by school rules and administration. However, when it comes to an online classroom, especially one that is self-paced and asynchronous, educators have to look at methods other than mandated obligation to get their students metaphorically “in their seats” and ready to learn.

Griffiths, Sharkey & Furlong (2009) explain that student engagement is a multifaceted concept that involves complex interactions between learners and their learning environment (p.176). Although research is divided on the nominal distinctions between the different elements that interact to create student engagement, we can think of them as generally being divided into three areas: emotional engagement, behavioural engagement, and cognitive engagement (Fredricks, Blumerfeld & Paris, 2004). Appleton et al (as cited in Griffiths, Sharkey & Furlong, 2009) further refined this to include academic engagement, which references credits earned, homework completion, and time on task, while also adding a component for feelings of belonging and relationships with teacher and peers (psychological component).

The research describes a number of areas of concern that teachers can focus on when they are designing solutions to solve the problem of student engagement. For example, increasing student autonomy has been shown to increase both student achievement and student engagement (Griffiths, Sharkey & Furlong, 2009, p. 184). Griffiths, Sharkey & Furlong (2009) also report that emphasizing “relational learning” such as “credit rather than grades” can lead to “greater student engagement, interest, and enjoyment... than traditional high school classroom strategies” (p.184).

There are a number of classroom conditions that can promote greater engagement. Fredricks, Blumerfeld and Paris (2004) cite classroom structure, such as “clarity of teacher expectations for academic and social behaviour and the consequences of failing to meet those expectations” (p.77) as one of these conditions. Furthermore, ensuring that tasks are authentic, that students are provided with opportunities for choice in conception and execution of learning, that there is opportunity for collaboration, that students can display their learning in ways that showcase a variety of different talents, and that students have opportunity for fun are all ways educators can strive to connect learners in engaging ways to their learning (Newmann, 1991, as cited in Fredricks, Blumerfeld & Paris, 2004, p.79).

Perhaps one of the most powerful changes that an educator can make to try to engage students more powerfully in learning is to change the ultimate goal of the learning. “Students who adopt learning [goals] rather than performance goals are focused on learning, mastering the task, understanding, and trying to accomplish something that is challenging” (Fredricks, Blumerfeld & Paris, 2004, p.64). One of the primary aims of this gamification framework is to shift student goals away from performance onto learning, by valuing their time on task (time spent learning) and assigning more value to in-depth or concentrated study over completion of a regulated list of tasks.

Which Game Elements Should Be Used?

If we look at what the research suggests we can do in the classroom to address the problem of student engagement, several stand out as lending themselves naturally to both the gamification process and the DL classroom. Because many DL classes are self-paced and asynchronous, this framework for gamifying your existing online class builds in opportunity for collaborative learning, but does not require it, as the reality of some course instances is that there may not be any students working on a particular course at the same time.

The game elements included in this framework are described below and organized by the learning goal or classroom structure that promotes student engagement. By addressing and designing for a number of different interventions that are shown to increase engagement, it is theorized that implementation of this framework would show measurable increases in student engagement, while increasing student opportunities for personalization and choice.

Student autonomy

Gamification is a “promising tool to motivate and engage students in their learning process” (Martí-Parreño, Méndez-Ibáñez, & Alonso-Arroyo, 2016), and feeling included in the process is one way to provide students with a sense of autonomy and agency. James Paul Gee (2013) explains that one powerful way to engage students in their learning is by giving them agency, and allowing to see that they have power over the outcome of the game, or in this case, the path that their learning takes.

In this gamified framework, students can choose which lessons (or “quests”) they wish to complete to meet the required learning outcomes for the course, which quests they want to spend a long time on, which they want to spend a short time on, and what they will produce as a demonstration of their learning. Giving students the choice to select

how to accomplish learning goals for the class affords them autonomy, which in turn leads them to “become more invested in what they learn and how to approach it” (Kim, 2015, p.22).

Credit for Time on Task & Learning as the Goal

Lee and Hammer (2011) explain that the use of game elements alone isn't enough to ensure engagement (p.2). One major switch we can make as educators, which is reflected in this framework, is to assign course credits for time on task by the use of experience points (or “XP”). Students accrue XP for time spent learning, but only receive XP once their work fully demonstrates achievement of the learning outcome. In this way, they are encouraged to rework and revise their assignments, while having this time spent revising and learning from their errors credited towards course completion. We can “create an environment in which effort... is rewarded” (Lee & Hammer, 2011, p.4), while simultaneously reducing the stigma around failure by building revision into the process for all learners.

This may also help to make learning the goal rather than achievement or performance, as students will have the option to delve deeper into a particular assignment (i.e. spend more time working on it), without the worry that they will fall behind. If the goal is to spend a certain amount of time working to show the learning outcomes, how you choose to divide that time amongst a few (or many) assignments will not matter in the overall tally.

“As more emphasis is given to students’ competencies and skills than their general accomplishments in the classroom, digital badges, one of the most prominent gamification elements, will gain more popularity in education” (Dicheva, Dichev, Agre, & Angelova, 2015, p.23). Therefore, achievement badges for demonstrating particular course competencies or learning outcomes, are one way this framework can have students work towards acquiring skills and competencies, rather than acquiring marks.

Chunking of Information into Small, Creditable Units

Laurel Papworth suggests that by 2025, gamification will be redefining the workplace, breaking it down into “microjobs” that can be “measured and monitored” (Anderson & Rainie, 2014). This trend will see personal reputation being “quantified by scoring systems,” which sounds a lot like grading your performance in the work world. Similar to an episode of the Netflix show Black Mirror, in which people are ranked based on all their performances and interactions in the real world, Papworth worries that people will

become “fearful to say what they really think” because their reputation score might diminish (Anderson & Rainie, 2014).

Perhaps this ‘chunking’ of content into small, creditable units (or quests) will replace the course as the major measure of learning? (Weise, 2014). This chunking of learning into quests fits with Gee’s principle of “the right information at the right time” (2013), as students will search for the information they need when they need it to complete their chosen task.

Whether you choose to believe Papworth’s fearful thesis or not, it suggests that gamification will continue to trend into the future, and breaking learning units into smaller quests is something that may suit the culture of our students, many of whom are “video-gaming natives,” and incredibly familiar with these mindsets, as they have grown up seeing game-elements incorporated into their real lives in marketing, politics, health and fitness (Lee & Hammer, 2011).

Clarity of Expectation

Transparency of the expectations and grading online are ways you build “classroom clarity” into the online realm via gamification. This gamified framework adapts a student tracker (Luxenburg, n.d.) to track and report XP, collaboration time, portfolio marks, and independent learning skills assessment in a transparent manner. By having the XP auto-fill, students get to visualize their accumulation of credit in real-time. This brings us to the last game element included in the gamified framework developed here.

Visible Progress & Achievement

Of the top five game elements used in education, visible status is number one (Dicheva, Dichev, Agre, & Angelova, 2015). Although this can be achieved through a number of methods, the Grades sheet in the Student Tracker (adapted from Luxenburg, n.d.) which features a chart showing progress in the course, in addition to a running total of points accumulating towards the stated goal, and achievement badges are the methods selected for this online course framework.

Interestingly, not all badges are proven to increase engagement. Chee & Wong (2017) illustrate that badges for participation have a negative consequence on engagement in gamified courses, while badges for actual achievement of learning outcomes have a positive effect (p.595). For this reason, the badges in this framework will be for meeting certain learning outcomes, rather than for number of XP (i.e. time on task) accumulated.

Challenges of Gamifying Your Course

Changing your method of instructional delivery can seem daunting. As stated in the introduction, the profession is already filled with change and a certain level of uncertainty. Teachers may be wary of experimenting with innovative pedagogies because in a way it might feel like you're experimenting with your students' success. Add to this the notion of recreating the bulk your lesson material, and you might feel too discouraged to even begin.

This fear of needing to “reinvent the wheel” is a major challenge to gamifying your course. However, it is possible to add game-elements to your existing courses, whether in the classroom or online, in a way that is meaningful and engages students. For example, using the Student Tracker to accumulate XP for time on task can utilize your same lessons. Organizing your existing lessons into quest chains can reuse material in a more gamified manner.

Another major challenge is technological. For example, today's Learning Management Systems are still reasonably limited in terms of integration of game elements (Dicheva, Dichev, Agre, & Angelova, 2015, p.84). From a systemic point of view, schools need to have the right technological infrastructure in addition to the strong pedagogical framework to support the change. This would include having teachers who are technologically savvy at “adapting, and/or maintaining an appropriate supporting technological infrastructure” (Dicheva, Dichev, Agre, & Angelova, 2015, p.83-84).

Finally, we need to be thoughtful and purposeful in our pedagogy. “The mere inclusion of meaningless points, badges, and bright colours, which serve as the catalysts to engagement without full comprehension of their purpose or reason of attainment, fail to make a gaming experience fun and engaging” (Chee & Wong, 2017, p.594). Jesse Schell, a game designer, warns us that we should avoid gamification merely as a fad; we need to ensure a strong pedagogical foundation for our changes. “Adding points and badges in tacky ways, looking at ‘gamification’ as an easy way to make boring things seem interesting - that is a fad” (Chee & Wong, 2017, p.594).

Benefits of Gamification

Gamification, when well designed, supported, and implemented, has been proven to improve student engagement in learning, while offering a unique opportunity to combine

content-specific instruction with more general competencies. “Gamification, coupled with effective pedagogy, can support the acquisition of 21st-century skills” (Kingsley & Grabner-Hagen, 2015, p.52), such as digital literacy, creativity, critical thinking, communication & collaboration.

For example, using gamification in your courses supports English Language Arts skills such as “higher order thinking through complex texts, close reading, and vocabulary acquisition” while using digital tools to “produce and publish writing, draw inferences and evidence from text, and conduct research” (Kingsley & Grabner-Hagen, 2015, p.53). The increased flexibility and choice from using a quest chain (allowing students to select which tasks they want to complete from a selection) can allow students to demonstrate creativity in ways that they might not be able to in a more controlled learning experience.

Moreover, gamification can help reduce the fear of failure that many students experience in a more traditional classroom. It can allow us to maintain a “positive relationship with failure by making feedback cycles rapid and keeping the stakes low,” while also letting students who may have previously felt unsuccessful in school “try on the unfamiliar identity of a scholar” (Lee & Hammer, 2011, p.3-4). The gamified environment can be low-threat, by giving “opportunities to repeat content, complete alternate assignments, or request additional time before passing quests, allowing students to demonstrate mastery learning of the topic” (Kingsley & Grabner-Hagen, 2015, p.56).

Student motivation to learn may increase as gamification makes them more active participants in their learning (Martí-Parreño, Méndez-Ibáñez, & Alonso-Arroyo, 2016, p.663). Although accumulating points and earning badges are technically external motivators, Zichermann (2011) acknowledges that it is possible for external motivators to “convert” to intrinsic if the extrinsic motivator itself is “found meaningful, pleasurable, and consistent to a person’s worldview” (cited in Chee & Wong, 2017, p.594).

Finally, gamification can increase student opportunity for individualization, both through increasing choice in which tasks are completed, in which order, and how learning is demonstrated, but also by scaffolding instruction based on each individual’s need (Kingsley & Grabner-Hagen, 2015). Any framework that can help teachers increase personalization, while keeping grading and points accumulation uniform (and simple) has benefit for students and teachers alike.

Conclusion

The Microsoft Office 365 Framework proposed here is intended to add a “game layer” to existing online courses, allowing DL teachers to dip their toes into gamification without needing to deconstruct and reconstruct their existing courses. The addition of game elements to instructional design has the “potential to shape users’ behaviour in a desirable direction” (Dicheva, Dichev, Agre, & Angelova, 2015, p.75), helping address the issue of student engagement in online courses. Adding an “affinity space” (Gee, 2005), such as the Collaboration space in MS OneNote, where students can both work together and share their learning, can help add authenticity to the learning, as writing for an audience of peers can switch the focus away from the grades “situated within a social context with an increased focus on style, genre, and audience” (Kingsley & Grabner-Hagen, 2015, p.58).

When considering gamification, it is important to think about the design and problem that you are trying to address. We have to be careful to design experiences that are enjoyable and don’t suck the fun out of play, turning the learning into “chocolate covered broccoli”, as described by (Lee & Hammer, 2011, p.4).

It is crucial to maintain authenticity, clear expectations, and strong teacher support to help your gamification initiative succeed. It is also necessary to have “strong teaching staff able to design effective assignments, grade students’ work relatively quickly, and interact with students closely” (Dicheva, Dichev, Agre, & Angelova, 2015, p.83).

Finally, your content, your pedagogy, and your relationships with students must be good in order for gamification to succeed (Chee & Wong, 2017), just as it would need to be in any classroom. The addition of game elements is not a magic solution to the issue of student engagement in online courses, but through thoughtful application of research and strong pedagogy, it is possible to create a gamified framework that can apply to increase student engagement in Distributed Learning (DL) coursework while increasing student opportunities for personalization and choice.

References:

- Anderson, J., & Rainie, L. (2014, March 11). *Digital life in 2025*. Washington, DC: Pew Research Center. Retrieved from www.pewinternet.org/2014/03/11/digital-life-in-2025
- Anderson, T. (Ed). (2008). *The theory and practice of online learning* (2nd ed.). Edmonton, AB: AU Press.
- Bates, T. (2015). Teaching in a digital age [PDF].
- Bunchball. (2010). Gamification 101: An introduction to the use of game dynamics to influence behavior [White paper]. Retrieved from www.bunchball.com/gamification101
- Chee, C., & Wong, D. H. (2017). Affluent Gaming Experience Could Fail Gamification in Education: A Review. *IETE Technical Review*, 34(6), 593-597. doi:10.1080/02564602.2017.1315965
- Dicheva, D., Dichev, C., Agre, G., & Angelova, G. (2015). Gamification in education: A systematic mapping study. *Journal of Educational Technology & Society*, 18(3), 75-88. Retrieved from <https://search-proquest-com.ezproxy.viu.ca/docview1707773428?accountid=12246>
- Fredricks, J., Blumenfeld, P., & Paris, A. (2004). School Engagement: Potential of the Concept, State of the Evidence. *Review of Educational Research*, 74(1), 59-109. Retrieved from <http://www.jstor.org.ezproxy.viu.ca/stable/3516061>
- Gee, J.P. (2013). Principles on gaming. [Video file]. Retrieved from <https://youtu.be/4aQAjTozk>.
- Gee, J. P. (2005). *What video games have to teach us about learning and literacy*. Retrieved from <https://ebookcentral.proquest.com>
- Griffiths, A., Sharkey, J., & Furlong, M.(2009). Student engagement and positive school adaptation. In R. Gilman, E. Huebner, & M. Furlong (Eds.), *Handbook of positive psychology in schools* (pp. 197–212). New York, NY: Routledge.

- Kim, B. (2015). Gamification in Education and Libraries. *Library Technology Reports*, 51(2), 20.
- Kingsley, T. L., & Grabner-Hagen, M. M. (2015). Gamification: questing to integrate content knowledge, literacy, and 21st-century learning. *Journal of Adolescent & Adult Literacy*, 59(1), 51-61. doi:10.1002/jaal.426
- Lee, J.J., & Hammer, J. (2011). Gamification in education: what, how, why bother? *Academic Exchange Quarterly*, 15(2), 1–5.
- Luxenburg, A. (n.d.) The tracker. [Google Sheets File] Used with permission. Retrieved from <https://luxenburg.ca/>
- Martí-Parreño, J., Méndez-Ibáñez, E., & Alonso-Arroyo, A. (2016). The use of gamification in education: A bibliometric and text mining analysis. *Journal of Computer Assisted Learning*, 32(6), 663-676. doi:10.1111/jcal.12161
- Stieglitz, S., Lattemann, C., Robra-Bissantz, S., Zarnekow, R., & Brockmann, T. (Eds.). (2016). *Gamification : using game elements in serious contexts*. Retrieved from <https://ebookcentral.proquest.com>
- Weise, M. (Oct 17, 2014). The real revolution in online education isn't moocs. *Harvard Business Review*. [Web Log Post]. Retrieved from <https://hbr.org/2014/10/the-real-revolution-in-online-education-isnt-moocs>