

Give Gaming a Go! Enhancing learning through gamification

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Teaching and learning legal research in the law school classroom can often be challenging for both the teacher and the student, especially when the content is technical or complex. As legal research teachers, we are continually striving to increase student engagement, learning, and retention. One method that has gained popularity recently is gamification. This involves utilising game mechanics, such as points, levels or rewards, to encourage involvement and motivation. Gamification can take many forms, and coding skills are not needed to create a simple game. The Librarians and Learning Skills Advisers at the Monash University Law Library (MULL) have recently used gamification to teach two topics of importance for law students; researching legislation and academic integrity.

The games were developed using different techniques and have different teaching methods. One is used within the classroom and is led by the teacher to help students develop legislative research skills. The other is a component of a broader Academic Integrity for Law online

module, and is designed to be played individually in the online environment.

This paper explores the theory behind the use of gamification in education, the process of developing these games, the challenges and opportunities that gamification provides, and reports on local user experiences. Overall it is shown that, with the right audience and context, gamification can be a useful technique in a Librarian or Learning Skills Adviser's teaching toolbox.

Background and Context

What is Gamification

Gamification is widely defined as the 'use of game design elements in non-game contexts'.⁴ While this idea has been in use across a range of areas such as organisation marketing and mobile apps, it is a relatively recent area of academic study.⁵ It is arguable that gamification has been present for some time, particularly in education settings as 'game-based learning', in the 'intentional use of digital or non-digital games or simulations for the purpose of fulfilling one or more specific learning objectives'.⁶ The opportunities afforded through online and digital media used for eLearning have expanded the application of gamification and therefore academic interest.

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⁴ Sebastian Deterding et al, 'From Game Design Elements to Gamefulness: Defining "Gamification"', (Paper presented at MindTrek '11, Tampere, 28-30 September 2011) 10 <<https://doi.org/10.1145/2181037.2181040>>.

⁵ Joey Lee and Jessica Hammer, 'Gamification in Education: What, How, Why Bother?' (2011) 15(2) *Academic Exchange Quarterly* 1.

⁶ Bradley Wiggins, 'An Overview and Study on the Use of Games, Simulations, and Gamification in Higher Education' (2016) 6(1) *International Journal of Game-Based Learning* 18, 19.

Gamification relies on the inclusion of game ‘dynamics, mechanics, and components’⁷ within a context where games would not normally be present. Essential here is the distinction of games as opposed to “play”. While play is important in performing the game, this is structured through the necessary rule systems and goals that define the game itself.⁸ Rules provide important boundaries for the players to explore and progress through the game. This is crucial for cohesion and equity amongst players.⁹ Goals are usually present through rewards such as points, progress through levels, or attainment of a final prize. These act as a motivating force to engage the player, creating competition to succeed and tempering failures as “trial and error” to try again.¹⁰ The MDA Framework¹¹ provides further useful explanation and background about game design by relating game mechanics to dynamics (users’ behaviours and experiences such as progression, competition and cooperation) and aesthetics (users’ emotional responses such as narrative, challenge, discovery and fellowship).

Why Use Gamification

In education settings, gamification is highly useful in its alternative opportunities for engagement and learning. Wiggins states that the various applications of gamification in teaching incentivises learning through rewards, particularly where traditional modes have been ineffective.¹² This is also argued to suit current trends in flipped classrooms and blended learning designs.¹³ The game engages players in its content through a different context that seeks to enhance their experience. This often involves an emotional connection such as competitive motivation or enjoyment through choices, solutions and storytelling that supplements their cognitive skills in problem solving or knowledge application; a combination that creates heightened learning opportunities and knowledge retention.¹⁴ Additionally, the “freedom to fail” not normally afforded to students in conventional learning models facilitates considerable learning through reflection and practice. A game context provides a ‘safe environment’ for exploration and experimentation that ‘reduce[s] the sting

⁷ Ibrahim Yildirim, ‘The Effects of Gamification-based Teaching Practices on Student Achievement and Students’ Attitudes Toward Lessons’ (2017) 33 *Internet and Higher Education* 86, 87.

⁸ Sebastian Deterding et al, above n 1; Scott Nicholson ‘A RECIPE for Meaningful Gamification’ in Torsten Reiners and Lincoln Wood (eds), *Gamification in Education and Business* (Springer 2015) 1.

⁹ Patrick Buckley, Elaine Doyle and Shane Doyle, ‘Game On! Students’ Perceptions of Gamified Learning’ (2017) 20(3) *Educational Technology & Society* 1.

¹⁰ Juho Hamari, Jonna Koivisto and Harri Sarsa, ‘Does Gamification Work? – A Literature Review of Empirical Studies on Gamification’ (Paper presented at 47th Hawaii International Conference on System Science (HICSS), Waikoloa, Hawaii, 6-9 January 2014); Michael D. Hanus and Jesse Fox, ‘Assessing the Effects of Gamification in the Classroom: a Longitudinal Study on Intrinsic Motivation, Social Comparison, Satisfaction, Effort, and Academic Performance’ (2015) 80 *Computers & Education* 152; Karl M. Kapp, *The Gamification of Learning and Instruction: Game-based Methods and Strategies for Training and Education* (Wiley, 2012).

¹¹ Robin Hunicke, Marc LeBlanc, Robert Zubek, *MDA: A Formal Approach to Game Design and Game Research* (Northwestern University, [2004]) <<https://www.cs.northwestern.edu/~hunicke/MDA.pdf>>

¹² Wiggins, above n 3, 20.

¹³ Yildirim, above n 4.

¹⁴ Karl M. Kapp, *The Gamification of Learning and Instruction: Game-based Methods and Strategies for Training and Education* (Wiley, 2012); Scott Nicholson ‘A RECIPE for Meaningful Gamification’ in Torsten Reiners and Lincoln Wood (eds), *Gamification in Education and Business* (Springer 2015) 1.

of failure'.¹⁵ However, the incentivisation of learning through rewards is equally approached with caution as overuse may devalue personal motivation to learn or instill a flippant attitude to content.¹⁶ As a result, studies have widely concluded that gamification is not a “silver bullet” for effective teaching and learning. Rather it requires mindful application in education that considers audience and purpose carefully in its design and application.¹⁷

Previous teaching by MULL mostly followed conventional methods of information delivery with student understanding reviewed through question and answer or quiz assessments. While effective for certain settings and content, this mode of delivery did not necessarily achieve the knowledge or ability levels set out in the learning objectives for first year law students, and retention was commonly low. Gamification was considered as an alternative format for students to engage with the required content, incentivise learning of important content, and improve knowledge retention.

Incorporating Humour

Another concept linked to increased student engagement is the use of humour in the classroom. This has been the subject of separate studies, concluding that

There is some general empirical evidence that the judicious use of appropriate, relevant and inclusive humour can help create a friendly, unthreatening learning environment, which can in turn increase student engagement and participation. In addition, and perhaps more importantly, the literature also suggests that humour can have a significant positive impact on students' retention of material.¹⁸

Students are technology savvy, and intuitive visual communicators, image-oriented and craving interaction,¹⁹ making gamification a perfect means to incorporate humour. Humour captures and maintains students' attention.²⁰ Although 'humour is not traditionally associated with teaching and learning at law school',²¹ there are numerous examples of amusing cases and

¹⁵ Kapp, above n 10, xxi.

¹⁶ Patrick Buckley, Elaine Doyle and Shane Doyle, 'Game On! Students' Perceptions of Gamified Learning' (2017) 20(3) *Educational Technology & Society* 1; Michael D. Hanus and Jesse Fox, 'Assessing the Effects of Gamification in the Classroom: a Longitudinal Study on Intrinsic Motivation, Social Comparison, Satisfaction, Effort, and Academic Performance' (2015) 80 *Computers & Education* 152; Joey Lee and Jessica Hammer, 'Gamification in Education: What, How, Why Bother?' (2011) 15(2) *Academic Exchange Quarterly* 1.

¹⁷ Wendy Hsin-Yuan Huang and Dilip Soman, 'A Practitioner's Guide to Gamification of Education' (Research Report Series: Behavioural Economics in Action, Rotman School of Management, University of Toronto, 10 December 2013) <<http://www.rotman.utoronto.ca/-/media/files/programs-and-areas/behavioural-economics/guidegamificationeducationdec2013.pdf>>; Joey Lee and Jessica Hammer, 'Gamification in Education: What, How, Why Bother?' (2011) 15(2) *Academic Exchange Quarterly* 1.

¹⁸ Kate Offer, Natalie Skead and Angelyn Seen (2017) "You Must be Joking": the Role of Humour in the Law Classroom, *The Law Teacher* 1-2 <<https://doi.org/10.1080/03069400.2017.1379182>>.

¹⁹ Ronald A. Berk, 'Humor as an Instructional Defibrillator' (2007) 24(2) *Journal of Health Administration Education* 97, 100.

²⁰ Offer, above n 15, 22

²¹ *Ibid* 1.

law-related cartoons and video clips (for example, *The Simpsons* and *Rake*) with which to illustrate a teaching point. Incorporating humour into games in the classroom can only help to further strengthen engagement and, therefore, retention.

Gamification in Practice

Initial experimentation by MULL staff using games in class began with Kahoot!²² This is a quick and simple way to test student preparation and understanding using multiple choice questions that students can access using a mobile device. The upbeat music and bright colours, along with game mechanics of points, levels and rewards, combine to start the class on a humorous and fun note.

Staff also investigated other existing examples of academic gamification. Quitch²³ is an app which pushes out quizzes to keep students engaged and learning after class; the use and study of Quitch has shown evidence of a 'positive correlation between students' scoring highly on the app and achieving higher academic grades.'²⁴ Another example is the use of game based mechanics to create a diagnostic tool for Monash Talent,²⁵ a new service which matches Monash graduates with suitable employers. These are both quite sophisticated examples of gamification, requiring funding and expertise. Keen to extend student

engagement using game mechanics, staff decided to design and build a simple game internally.

Using the theories discussed above as a basis for the project, two games were initially developed to support teaching. Initial preparation involved determining target audiences and learning objectives to inform game design, as suggested by Huang and Soman.²⁶ The games were storyboarded by Librarians and Learning Skills Advisers working collaboratively, then built using H5P software, and finally reviewed by Subject Librarians and the MULL Manager. The prototypes were then tested by casual MULL staff, with revisions made to create the final versions. H5P was selected as the principal software because it fulfilled all the necessary requirements to meet this project's goals; it is free, open source, and easy to use. This software enabled staff members to create simple games without requiring any additional funding, high-tech coding skills, or external game developer's input. Games could be quickly created and edited, and embedded in any website. The build time, once all storyboarding was completed, took approximately two hours per game.

Legislative Research Game

The first game developed by MULL was a legislative research game.²⁷ This game was built for first-year law students to consolidate their research skills during class. Library research classes

²² <https://kahoot.com/>

²³ <https://www.quitich.com/>

²⁴ Ekaterina Pechenkina, et al, 'Using a gamified mobile app to increase student engagement, retention and academic achievement' (2017) *International Journal of Educational Technology in Higher Education* 1 <<https://doi.org/10.1186/s41239-017-0069-7>>

²⁵ <https://www.monashtalent.com.au/>

²⁶ Huang and Soman, above n 13, 7.

²⁷ <https://h5p.org/node/146147>, created by Michelle De Aizpurua.

are embedded into a core first-year law unit, Public Law and Statutory Interpretation, with enrolment of approximately 500 students. Librarians first taught the students how to research legislation using legislative databases and government websites, covering authoritative versions of legislation, amendments, commencement dates, Bills and extrinsic material. In the second class, the Librarians facilitated the research game on the screen, while students worked together to answer the questions. The game was also provided online through the University's Learning Management System for students to revisit after class and continue practicing their skills.

The premise of the game is that the players' puppy has been stolen. Players must use their legislative research skills to solve puzzles and find clues to save their puppy. This cooperation between players creates a social aspect to the game that players enjoy.²⁸ Other incorporated game mechanics include time/urgency, storyline, goals, freedom to fail, and reward. Integrating this combination of game elements into the class activity, increased students' intrinsic motivation

to learn.²⁹ Time was incorporated in each section of the game by embedding a countdown timer on each level. This instilled a sense of urgency in the players to answer each question and move on to the next stage – it was a motivator for action.³⁰ This sense of urgency also mimics the real world scenario where lawyers or students in clerkships may be under time pressure to produce an answer for a client or law firm.

Storytelling and the freedom to fail are two of the four key game mechanics that have been found to consistently lead to success when used in learning environments.³¹ Weaving the legislative research questions into the “save the puppy” storyline and creating a quest with a clear goal added purpose and focus to the game.³² The narrative ‘provides relevance and meaning to the experience’ which engages and motivates the player.³³ A benefit of this game design is that it also allows students the ‘freedom to fail without penalty’, so that they can experiment without fear of repercussions.³⁴ This encourages exploration, curiosity and leads to an increase in engagement.³⁵ The low stakes create a positive relationship around failure which

²⁸ Kapp, above n 10, 32.

²⁹ Scott Nicholson, ‘A RECIPE for Meaningful Gamification’ in Torsten Reiners and Lincoln Wood (eds), *Gamification in Education and Business* (Springer, 2015) 1; Bradley E. Wiggins, ‘An Overview and Study on the Use of Games, Simulations, and Gamification in Higher Education’ (2016) 6(1) *International Journal of Game-Based Learning* 18.

³⁰ Kapp, above n 10, 32.

³¹ Andrew Stott and Carmen Neustadter, *Analysis of Gamification in Education* (Simon Fraser University, 2013) <<http://clab.iat.sfu.ca/pubs/Stott-Gamification.pdf>>

³² Kapp, above n 10, 28.

³³ Kapp, above n 10, 41.

³⁴ Wiggins, above n 3, 21.

³⁵ Michael D. Hanus and Jesse Fox, ‘Assessing the Effects of Gamification in the Classroom: a Longitudinal Study on Intrinsic Motivation, Social Comparison, Satisfaction, Effort, and Academic Performance’ (2015) 80 *Computers & Education* 152; Karl M. Kapp, *The Gamification of Learning and Instruction: Game-based Methods and Strategies for Training and Education* (Wiley, 2012); Joey J. Lee and Jessica Hammer, ‘Gamification in Education: What, How, Why Bother?’ (2011) 15(2) *Academic Exchange Quarterly* 146.

enhances learning; 'failure is not seen as an end, but as a step on the journey to mastery'.³⁶ The trial and error involved in the game leads to eventual success through practice and learning.³⁷

In addition, the game also employs reward structures.³⁸ Rather than providing badges or a leaderboard, when all the questions are answered correctly the class is able to save the puppy as their reward. The final screen of the game (see Figure 1) emphasises this reward to increase player satisfaction and sense of achievement.³⁹ Research shows that rewards are effective when teaching skills

that have a practical application, such as research skills, because the real-world benefits of the skill will provide players with intrinsic motivation after the rewards from the game cease.⁴⁰ A puppy was chosen for the storyline and reward due to its universal popularity. The instinctive affection many feel towards a cute baby animal⁴¹ meant interest in the game and motivation to 'save the puppy' amongst the players would be high.

Humour was added as an element to the class through the verbal "performance" of the game. Teachers are often 'hesitant to test the humour



Figure 1 – Final screen of the legislative research game (reward)

³⁶ Buckley, above n 6, 2.

³⁷ Ibid.

³⁸ Karl M. Kapp, *The Gamification of Learning and Instruction: Game-based Methods and Strategies for Training and Education* (Wiley, 2012), 33-4; Scott Nicholson 'A RECIPE for Meaningful Gamification' in Torsten Reiners and Lincoln Wood (eds), *Gamification in Education and Business* (Springer, 2015) 1.

³⁹ See Figure 1

⁴⁰ Nicholson, above n 10, 3.

⁴¹ Marta Borgi et al, 'Baby Schema in Human and Animal Faces Induces Cuteness Perception and Gaze Allocation in Children' (2014) 5 *Frontiers in Psychology* <<https://doi.org/10.3389/fpsyg.2014.00411>>.

waters because of feelings, such as: “I’m going to fail” or “I’ll get embarrassed.”⁴² However, for the game to work it was important for the librarians to play a role and show exaggerated enthusiasm to save the puppy. Students generally ‘want you to succeed and will feel badly if you don’t do well’⁴³ and this was borne out in our classes. Hearing laughter, or even an amused chuckle, from the students at the appropriate points in the game is a reward for the teacher!

Academic Integrity Game

The second game developed by MULL was a ‘choose your own adventure’ style game. The aim of this game is to teach first-year law students about the consequences of academic integrity,

both at university and in their professional lives. The game is to be played independently online and is embedded on a publicly accessible website, as part of a wider “Academic Integrity for Law” online tutorial.⁴⁴ The game mechanics utilised in this activity include storyline, role-play, choice and replay. In the game, players take on the avatar of a student who has to make different choices along their path from law student to practicing lawyer. Depending on the choices the player makes for their avatar, different outcomes occur (see Figure 2). Providing these meaningful choices puts the player in control of the game and gives them a sense of autonomy and agency.⁴⁵

The character’s story arc may see them face the university discipline committee and fail a unit

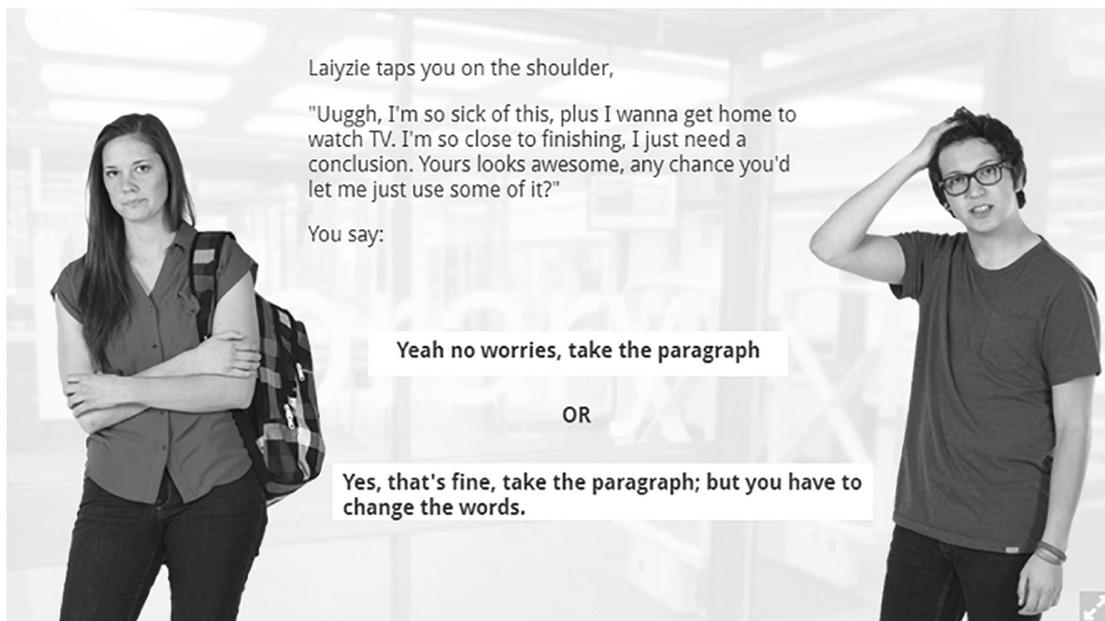


Figure 2 – Academic integrity game provides players with different dialogue choices

⁴² Berk, above n 15, 110.

⁴³ Ibid.

⁴⁴ <https://www.monash.edu/rlo/assignment-samples/law/law-academic-integrity>

⁴⁵ Nicholson, above n 10, 9.

or be dismissed from their traineeship after university, and ultimately they may or may not be admitted to the legal profession by the Legal Admissions Board. This story helps to ‘add meaning, provide context, and guide action’ in the game.⁴⁶ Not only does this engage players, but it helps them to vicariously learn the desired thinking patterns around academic integrity. By involving the player in the story, the lessons become more powerful and memorable.⁴⁷ In addition, by creating a narrative that mirrors the real-world and shows potential outcomes for behaviours, players can make more informed decisions should they face similar situations.⁴⁸

This story mechanic was achieved through inbuilt branching logic in each section of the game. Every choice a player selects takes them to a different screen in the game, thus creating a unique game experience for each player. There is only a limited number of options to take, however players can replay and make different choices to see what effect their academic integrity decisions may have in the real world. The freedom to fail, as discussed above, is especially important in this game design, enabling players to explore multiple options and place their character in deliberate “danger” to

see the different outcomes and learn from the experiences.⁴⁹

Analysis

Notably, the audience for both these games is first-year students. According to research, larger groups of undergraduate students are more likely to engage with, and be motivated by games in comparison to a smaller post-graduate cohort.⁵⁰ The positive effects of gamification greatly depend on the implementation context and types of players.⁵¹ It is therefore important to understand the target audience and broader context to ensure the success of a new program such as this.⁵² For example, by considering what the ‘pain points’ were for first-year students doing legislative research, MULL was able to design a game that attempted to overcome those issues.⁵³ Previous iterations of the classes had shown that many students found legislative research somewhat overwhelming and dull. Therefore, by breaking the research skills down into different game stages and injecting humour and play into the class activities, this concern could be addressed.

⁴⁶ Kapp, above n 10, 41.

⁴⁷ Ibid, 42.

⁴⁸ Nicholson, above n 10, 7-8.

⁴⁹ Kapp, above n 10, 48.

⁵⁰ Buckley, above n 6.

⁵¹ Juho Hamari, Jonna Koivisto and Harri Sarsa, ‘Does Gamification Work? – A Literature Review of Empirical Studies on Gamification’ (Paper presented at 47th Hawaii International Conference on System Science (HICSS), Waikoloa, Hawaii, 6 – 9 January 2014) <<http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=6758978>>

⁵² Patrick Buckley, Elaine Doyle and Shane Doyle, ‘Game On! Students’ Perceptions of Gamified Learning’ (2017) 20(3) *Educational Technology & Society* 1; Wendy Hsin-Yuan Huang and Dilip Soman, ‘A Practitioner’s Guide to Gamification of Education’ (Research Report Series: Behavioural Economics in Action, Rotman School of Management, University of Toronto, 10 December 2013) <<http://www.rotman.utoronto.ca/-/media/files/programs-and-areas/behavioural-economics/guidegamificationeducationdec2013.pdf>>.

⁵³ Huang and Soman, above n 13.

Feedback on the legislative research game was very positive. Staff members who facilitated the sessions commented on the enthusiasm of students and their engagement with the game. Students could be heard cooing when first shown the puppy they must save, and laughing at the humorous sections of the game, such as when the puppy refuses to leave its captor until it knows of any current Bills. Students cooperated to answer the questions and move forward in the game as a class, bringing a sense of camaraderie and achievement when the game was won. After the classes, students provided feedback via a digital form and although the response rate was low, the data indicates the success of the game. Of the 31 respondents, 81% agreed or strongly agreed that the game helped them to practice the research skills they learnt in class. In addition, 74% of the respondents agreed or strongly agreed that they were more engaged in learning during the game, than through other class activities.

Implementation of the game in class, however, required some experimentation in terms of pace and timing. Each class of students differed in the time required to find the answers and understanding of the research processes previously learned. Students requested the methods used to find the answers, so these were posted onto Moodle (the Monash Learning Management System) after the classes. Playing the game as a group in a timed situation also made it difficult to see who was not following along. For this reason, the game was made available on the unit's Moodle site so that students could try it on their own.

Analysis of the Academic Integrity for Law game has proved more difficult as it is available on a public access website. Statistics show 514 views by 438 users over the period from January to April 2018, spiking in March when first year students are encouraged to view it. The online tutorial was embedded into the first year unit, Foundations of Law, and lecturers have made it a requirement for students to work through it before their class which deals with this topic. Future analysis may take the form of a survey within this unit.

Future Directions and Conclusion

Gamification is increasingly being used as an innovative solution to a number of problems at universities. The Law Library team's implementation of gamification is at a fairly basic level, taking small steps to improve engagement in teaching and learning. Using simple applications of existing software such as Kahoot!, and internal development of class activities using open access H5P software, we have been able to harness existing staff knowledge and capability. As Kevin Bell, Pro Vice Chancellor (Digital Futures) at Western Sydney University, writes: 'students don't want their education to spill over into their social lives. They are, however, happy to say, "Give it a go. Give me something vaguely interesting that speaks to me and that shows that you have made an effort to meet me halfway".'⁵⁴ So, we will continue to use elements of gamification where there is a fit with learning objectives to create a more engaging and effective learning environment; with the aim of helping our law students become well prepared for law school and, thereafter, the work environment.

⁵⁴ Kevin Bell, *Game On! Gamification, Gameful Design, and the Rise of the Gamer Educator* (John Hopkins University Press, 2018) 187.