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Using Digital Storytelling and Game-Based Learning to Increase Student Engagement and Connect Theory with Practice

ABSTRACT

Research shows that high levels of engagement help students learn more effectively, feel better about their learning, and improve retention rates. One reason why students report low engagement is a perceived disconnect between theory (what they learn in class) and practice (what happens in the outside world). This paper reports on the results of a small-scale SoTL experiment that increased engagement in a first-year journalism course through the creation of a bespoke interactive web series composed of short videos and choose-your-own-adventure games that immersed students in real-world scenarios. It also offers reflections on the opportunities and challenges of using digital games and storytelling for learning and opportunities for engaging students as partners.

KEYWORDS

game-based learning, digital storytelling, student engagement, first-year students, journalism

INTRODUCTION

Inquiry based on student learning is the first principle of good practice in the Scholarship of Teaching and Learning (SoTL); embedded in this principle is the notion that learning "should be understood broadly to include not only disciplinary knowledge or skill development, but also the cultivation of attitudes or habits that connect to learning" (Felten 2013, 122). Therefore, it is easy to appreciate why research on student engagement has become one of the field's most popular areas of focus (Aparicio, Iturralde, and Maseda 2021). The concept of "student engagement" is used widely in higher education but carries a variety of meanings, often depending on whether it is used by administrators, instructors, or students (Zepke 2015). Generally, student engagement is best understood holistically, as a meta-construct that associates behavioral, emotional, and cognitive engagement with learning (Fredricks, Blumenfeld, and Paris 2004). Behavioral engagement refers to the actions students take, such as their willingness to attend classes and participate in learning activities. Emotional engagement considers how students' feelings about and attitudes toward what and how they are taught, as well as their feelings towards their instructors and peers, affects their learning. Cognitive engagement "draws on the idea of investment; it incorporates thoughtfulness and willingness in order to exert the effort necessary to both comprehend complex ideas and master difficult skills" (Aparicio, Iturralde, and Maseda 2021, 541). It is accepted in the literature that there may be some overlap among these categories—for example, a student's level of interest in learning may be considered emotional or cognitive engagement depending on the study (Ainley 2012).

There are two major theories of student engagement that are applicable to SoTL work: engagement theory and self-determination theory. Although both theories were initially developed with respect to school children, they have since been successfully applied to post-secondary students and share an understanding of engagement as a meta-construct. Engagement theory is posited as a way to examine and improve student learning outcomes, particularly in terms of high school graduation and admission to post-secondary education for at-risk students, with a focus on actions that improve retention (Finn and Zimmer 2012). Self-determination theory, on the other hand, is rooted in psychological motivation theory, focused on students' personal development within the context of the classroom and with respect to their basic need for relatedness (i.e., a sense of connection and belonging), competence, and autonomy (i.e., self-determination and a desire to be their authentic selves) (Skinner and Pitzer 2012). While they employ different approaches and use different focuses, these theories share the same fundamental ethos: "Engagement is the active verb between the curriculum and actual learning," which makes a compelling case for why student engagement should be central to SoTL research (Skinner and Pitzer 2012, 23).

Investigating ways to improve student engagement is a valuable undertaking at any stage of an academic program, but it is particularly valuable in the first year of studies. This is a critical time when students learn how to succeed outside of the highly regulated secondary-school system to which they are accustomed (Picton, Kahu, and Nelson 2018). This makes it the ideal time for pedagogical interventions that seek to engage students and keep them from changing programs or even dropping out before they find their feet. As Tinto suggests, "the more students are academically and socially engaged with academic staff, and peers, especially in classroom activities, the more likely they are to succeed in the classroom" (2012, 5). One reason why students report low levels of engagement is a perceived disconnect between theory (what they learn in class) and practice (what people *do,* or what happens, in the world outside of the classroom). Thus, one way to engage students is to provide them with "authentic, real-world tasks" that are complex and defy easy answers, which let them "vividly and concretely see the relevance and value of otherwise abstract concepts and theories" (Ambrose et al. 2010, 83). In my experience, this is particularly important to consider in professional programs in which students learn a combination of skills and theory simultaneously. In my first-year news writing and reporting class, for example, there is a clear distinction between lectures and assignments that students find engaging—e.g., learning how to interview people for news stories and then conducting interviews in the community—and those they do not—e.g., learning and writing exams about the research and theories that underpin our understanding of the challenges of highly concentrated news media ownership. (Note that I will use the first person in much of the writing that follows, which is common in SoTL and higher education research as a way to emphasize the unique, reflexive nature of my study and my own lived experience of teaching a particular class, in a particular place, with a particular group of students [Sword 2019]). Of all the factors that contribute to student engagement, the one that is most relevant to SoTL work and most open to intervention by instructors relates to course content and pedagogical approach. Using curriculum design to foster engagement in introductory-level courses can play a significant role in improving students' sense of satisfaction as well as their retention (Bovill, Bulley, and Morss 2011). It is noteworthy that while "institutional support for curricular change is important…its absence does not prevent curricular innovation," making curriculum design a more viable type of intervention for individual instructors than other, broader types of action that require, for

instance, a significant investment of personnel or funds by the institution (Bovill, Bulley, and Morss 2011, 206).

A growing body of research suggests that using digital games and storytelling as part of a course's curriculum is an effective way to increase student engagement. This is different from "gamification," in which an entire course, its assessments, and learning activities are transformed into a game, as will be described in more detail below (Scholz, Komornicka, and Moore 2021). At heart, all games are stories in which people can participate as opposed to passively reading, watching, or listening. They are able to play along and exert some degree of agency within the rules and structures of the game. "Play is the paragon of enjoyable, intrinsically motivated activity, associated with a wide range of positive effects on experience, motivation, social interaction, learning, and well-being" (Deterding 2016, 101–2). Playing games has been shown to have a positive effect on student engagement and learning in terms of the skills and knowledge they acquire as well as their motivation and how they feel about the learning process (Nadolny and Halabi 2016). Digital games are particularly valuable for fostering engagement because they can "create active and experiential constructivist learning environments, which support problem-solving and collaboration, and create a forum for practice and learning through failure" (Whitton 2012, 249). In my experience, this feels particularly apt for first-year courses, when students who are new to university grapple with a host of major life changes, including, for many of them, living on their own and caring for themselves for the first time in addition to increased academic expectations. They are faced with a uniquely high level of uncertainty about almost everything in their lives, inside and outside of the classroom, for which digital games are well-suited as a place in which to confront that feeling constructively:

> *the reality is that we are faced with uncertainty throughout our lives—and that much of our effort is devoted to managing and ameliorating that uncertainty. Is it any wonder, then, that we have taken this aspect of our lives, and transformed it culturally, made a series of elaborate constructs that subject us to uncertainty—but in a fictive and nonthreatening way?* (Costikyan 2013, 2).

Studies have shown the effectiveness of using digital games and storytelling to foster student engagement across a variety of disciplines, from arts to accounting to agriscience (Nadolny and Halabi 2016; Taylor et al. 2018; Webb 2015). This includes so-called serious games, which are designed "with the intention to entertain and to achieve at least one other goal," which is often broadly educational in nature and could include teaching a particular skill, increasing civic engagement, or cultivating empathy and greater social awareness (Dörner et al. 2016, 3). Serious games are used in a range of contexts, including advertising and marketing and health and wellness, and are also popular in higher education (Löffler et al. 2021; Westera et al. 2008; Whalen et al. 2018).

PROJECT GOAL AND PEDAGOGICAL CONTEXT

The goal of this small-scale SoTL project was to investigate how the creation and use of a bespoke narrative-driven digital game could enhance student engagement and help students make stronger connections between theory and practice in a first-year, undergraduate introduction to a news writing and reporting course. I have taught this course annually for about eight years, and it is the required, introductory-level course for a four-year, undergraduate honours program. The course is unique in two noteworthy ways: first, it is open to non-majors, which is uncommon among professional programs. It is

a popular elective, which means that non-majors often account for more than half of all students in the class. Second, while most introductory-level news reporting courses in Canada and the United States focus explicitly on skills training, this course is also designed to introduce students to important research and theory about critical issues in Canadian journalism, such as racist mainstream news coverage of Indigenous peoples, issues, and communities. The thinking behind this approach is that students who only learn the skills of news writing and reporting are likely to produce the same kinds of problematic journalism we see in mainstream news today, whereas students who learn about the research and theory critiquing contemporary journalism will be able to produce better reporting that is, for example, less racist, sexist, and overly reliant on government sources.

As mentioned earlier, the pedagogical challenge with this approach is that students inevitably find the skills portion of the course (e.g., learning how to conduct interviews) far more interesting than reading and analyzing scholarly critiques of the news media. In addition, and somewhat surprisingly, most students who enroll in the course are not close followers of the news or current affairs, so they often lack a useful context with which to understand the skills or theory introduced in class. This being the case, I have tried for years to find a way to better contextualize the course material and make it more engaging and relevant to students who arrive with limited exposure to, or interest in, journalism. Certainly, there are some excellent American films based on the work of real journalists with well-known actors, such as *Spotlight,* starring Michael Keaton, Rachel McAdams, and Mark Ruffalo, about the team of *Boston Globe* reporters who revealed decades of child abuse by Catholic priests that had been covered up by the church (McCarthy 2015), and *Shattered Glass,* starring Hayden Christensen and Peter Sarsgaard, about the revelation of writer Stephen Glass's string of fabricated stories for *The New Republic* magazine (Ray 2003). But my students found the experiences and expectations of these reporters too far removed from their own to be relatable. I then tried to find a game that might provide some sort of narrative engagement, such as a board game or digital game that simulates real-world experiences (Robinson and Goodridge 2021) but was unable to find a suitable title. I also explored the possibility of using digital or in-person simulations but quickly realized that the start-up and continuing costs associated with doing so were prohibitive (Whitton 2012).

It was at this point that I began thinking about creating my own content. If I could not find an engaging film or game that suited my purposes, why not create my own? Although this felt daunting, the more I thought about the usefulness of having a game that was perfectly aligned with my course material and learning objectives, the more committed to it I became. In 2017, I used a proposal for this project as part of my application to become a university teaching fellow through my institution's teaching and learning office and was awarded a $10,000 (Canadian) grant with which to develop it.

GAME DESIGN AND DEVELOPMENT

The first step in the design and development process was to decide what type of game would be most useful. I wanted the game to be story-driven, and in order to complete the project in 12 months and on budget, the amount and complexity of programming required needed to be limited. In my research, I was introduced to Twine, a free, open-source tool that students in my program were already learning in a cross-media storytelling course. Twine requires no coding experience or programming skills to use and publishes directly to HTML, making it a relatively simple, low-cost option. It was designed for "telling interactive, nonlinear stories," sometimes known as branching narratives or choose-your-own-adventure stories (Klimas 2009). A branching narrative in which students could make choices in a story

and then experience the consequences held great appeal for me, but I worried that it would not be interesting enough to engage students, especially if it involved reading a lot of on-screen text. That led me to think about the cutscenes that often introduce and conclude levels and punctuate major achievements in mainstream video games. These are short animations of scripted dialogue and action that play at key points in the game's plot and do a lot of the narrative heavy lifting in terms of providing context for a new task or chapter. I like seeing how the character I have been playing comes to life in a more filmic way during cutscenes, so I started to think about how I could incorporate something similar in my own game. In the end, I decided on a hybrid approach that incorporated both a strong narrative and a high level of interactivity in hopes of maximizing students' interest.

The result was Brantford Newsroom, an interactive digital game whose plot unfolds over 10 weekly episodes, starting in the second week of the course. Each episode features a five- to seven-minute live-action video—all filmed and edited by a professional production team over two days, featuring two student actors and one faculty actor, and hosted on YouTube—and is followed by an interactive, text-based digital branching narrative that takes between seven and 10 minutes to play. Both the video and interactive element follow the experiences of Frankie, a student intern at a small community newspaper. The story is fictional, but the challenges and choices Frankie faces are based on real experiences that undergraduate journalism students face in similar circumstances. Each week, students begin by watching a video, which establishes the plot. When the video ends, a hyperlink appears for students to start playing through the text-based, digital branching narrative. In the game, students assume the role of Frankie as the plot picks up from where it ended in the video. There are three acts, or decision points, in each episode's game, and each episode is designed to end on a cliff-hanger of sorts to create an element of suspense that leaves students looking forward to continuing the story the following week.

Designing the game was challenging, particularly in terms of developing the plot and writing scripts for the video and game elements. Having trained and worked in journalism, with a focus on magazine and feature writing and editing, I understood something about narrative structure in non-fiction, but I had never written a video or game script before and was not sure how to tell a cohesive story in this way, nor was I able to find examples of the type of hybrid video and branching narrative game I envisioned to use as a model. For storytelling advice, then, I turned to *The Screenwriter's Bible, 6th Edition* (Trottier 2014), one of the most popular guides for film and television writers. It clearly explains how to tell a story episodically and the seven major plot points that a narrative arc requires in order to build and maintain interest and suspense: the backstory, the catalyst (an incident early in the story that presents a problem, goal, or desire for the main character), the big event (a major change in the main character's life that occurs as a result of the catalyst), the midpoint, the crisis (the main character's low point, which leads to her making a consequential decision), the showdown (or climax, in which the character addresses her problem, goal, or desire head on), and the realization (or denouement, when the viewer realizes how much the character has changed) (Trottier 2014, 26). While this was helpful, I still felt apprehensive about having to create a story that would unfold over 10 episodes; I am accustomed to deciding the most effective way to tell a story only *after* doing research and interviewing subjects. After a few false starts, I had an important realization: I did not have to develop the story from scratch, waiting for inspiration to strike, because I had my course material, learning objectives, and outcomes to guide me. I already knew what I hoped my students would learn from my course—all I needed to do was fit them together like puzzle pieces using Trottier's narrative template. This is not to suggest the process

was quick or simple, but it felt much easier to accomplish once I let my learning objectives and outcomes drive the narrative.

The resulting story begins with Frankie, a final-year, undergraduate journalism student, realizing that she needs to enroll in one additional course in order to graduate on time (backstory). She agrees to take on a copyediting internship at the local newspaper, despite her lack of self-confidence in being well-suited for a daily news environment, because it is the only way to graduate on time (catalyst). Because of budget cuts and layoffs at the newspaper, she is forced to become a reporter, covering major news stories in the community (the big event). As she takes on reporting projects, she encounters a range of challenges common to new reporters, and her confidence grows as she identifies stories that she feels are important, such as residents of one neighborhood lobbying city leaders to install sidewalks in their community for the safety of children and the elderly (midpoint). She reports to work one morning halfway through her internship to find a lock on the newsroom door and a notice explaining that the newspaper has been closed by its corporate owners, effective immediately. This imperils Frankie's chance of graduating on time as well as her desire to continue reporting on important stories that are no longer being covered because there are no more local media in the city (crisis). She decides to start her own local news website, Brantford Newsroom, to continue the kind of reporting she was doing for the newspaper and obtains permission to count this work toward the completion of her internship (the showdown). The game ends with Frankie reflecting on her internship, the success of her website, and the importance of local news, particularly in communities where there are few or no local news media left. She then announces that she has arranged for her news website to be taken over by the journalism school as a project for future students to continue (the denouement).

Once I had developed the narrative arc of the game, I divided it among the 10 episodes and decided which plot elements would be better shared as part of the video or the interactive branching narrative; typically, the videos shared context and set up Frankie's next challenge, leading into the playable branching narrative. Then, I outlined the subplot for each episode, each of which has three main acts or decision points, based on the course's learning objectives. In each act, players are faced with a decision and three options. When students choose an option, they move through a branch of the story that reveals the consequences of their choice. In the early episodes, the choices are designed to be straightforward to help students learn the game environment and build their confidence. For example, in the first episode, players must decide how to arrive for a job interview on time: should they leave very early, leave with just enough time to arrive on schedule, or leave 10 minutes late and hope for the best? As the semester and the game progress, the decisions become more challenging, moving beyond clear good and bad choices to those that are a range of less-than-ideal choices, based on real-world limitations, such as tight deadlines and being short-staffed. For example, in one episode, players must decide if and how to vet a suspicious social media post about local drinking water contamination before publishing a story about it on the newspaper's website. In other episodes, they must decide if and how to approach a colleague about racist and sexist details in his work, and how to respond to a local landlord who tries to pressure Frankie into not publishing a story about his questionable rental practices with the threat of a lawsuit.

In all cases, there is one preferred, if not perfect, choice, the consequences of which lead players into the next act of the episode. When students make either of the other two choices, they move into a short narrative branch that describes the consequences of their actions: e.g., they arrive late, miss the job interview, and fail to obtain the internship; they are fired for not verifying information in a hoax tweet

before publishing it as news; or they, along with their colleague, are sanctioned by their editor for allowing sexist, racist details to be published in the newspaper. After arriving at these narrative dead-ends, players are automatically redirected to the beginning of the act, where they may make a different choice in order to progress through the episode. This way, students can learn as they play the game and have the opportunity to explore choices they may already realize are "wrong" (e.g., showing up late to a job interview, not verifying information in a social media post before publishing it as news) in order to discover the possible consequences of those actions in a safe environment.

To keep the story as focused as possible, I embraced the limitations of my budget to help drive the narrative. For example, I knew that I did not have enough funding for more than two days of shooting with a professional video crew. I also wanted to keep the videos between five and seven minutes long to keep students interested. Both factors influenced my decision to center the story on Frankie and frame the videos as the reflective logs she is required to keep as part of her internship. Thus, many of the videos are simply Frankie speaking to the camera, explaining and reflecting on the challenges she faces. For visual interest, they were shot in locations designed to look like her residence room, the newsroom, a parked car as she prepares for an interview, and in parks and food courts between assignments. She is occasionally joined by other characters—a newsroom mentor, portrayed by my research assistant, and her professor, played by me. Limiting the action in this way and situating the videos as Frankie's reflective logs created a suitable narrative reason for the action to be so focused on her and shot in an amateur, on-the-go, vlog-style.

The final decision to make concerned how the game would be assessed. Originally, I had conceptualized the game as a conventional type of assessment, akin to asking students to watch a film, so thought that I would require them to complete a quiz to demonstrate that they had successfully completed each episode. After consulting with a colleague who is a game studies scholar and game-maker, however, I changed my mind. He argued that using a quiz to assess the completion of a game or assigning marks for making the "best" choices robs games of their inherent playfulness; they cease being fun and instead become one more assignment that involves study and stress. Upon further reflection, I also realized that evaluating the game like any other assignment would negate the benefits of using a digital branching narrative—namely, to provide students with a risk-free environment in which to learn, experiment, and make mistakes, as Costikyan suggests (2013). Thus, I decided that my students would earn 10% of their final grade simply by playing the game (1% for each episode, due weekly); at the end of each episode, they followed a link to an online survey in which they entered their name as a means of documenting their participation.

THE TEAM

With the teaching fellowship grant, I hired three undergraduate students to assist with the project. One was a fourth-year digital media and journalism student who took on the lead role of Frankie in the videos and offered feedback on the scripts. The other two were third-year game design and development students, one of whom programmed all the branching narratives using Twine and the other who play-tested all the completed games, offering feedback on which elements could be fixed or improved, and added extra visual and sound effects. Two of the three students had taken the course for which the game was designed, which meant that they could provide feedback on the content, suitability, and engagement of the game. The third student, who had not taken the course and was not a digital media and journalism major, was able to offer a fresh perspective on the game, which was also valuable. The teaching

fellowship grant also allowed me to hire a local video production company to film, edit, and produce the videos. As will be discussed in more detail under conclusions, I do not think this was necessary to create a successful game, but because I had funding and was producing this game as a proof of concept, I wanted to produce the highest-quality product possible.

EVALUATION AND FINDINGS

The goal of this small-scale SoTL project was to investigate how the creation and use of a bespoke, narrative-driven digital game could enhance engagement and help students make stronger connections between theory and practice. The project's methodology and survey questions were preapproved by my university's Research Ethics Board (project #10007232). The effectiveness of the project was evaluated through an online survey that students were invited to complete at the end of the semester, after finishing the game, in December 2018. Students who chose to complete the survey were awarded two bonus marks on their final grade in the course for their participation. Students who did not wish to complete the survey were offered an alternative way to earn two bonus marks (i.e., writing a short reading reflection), but none opted for this choice. Both options were preapproved by my university's Research Ethics Board. Students who wished to participate in the research study had to read, sign, and submit an informed consent form in hard copy beforehand. The informed consent forms were distributed and collected in class by my research assistant and were not linked to students' surveys in order to ensure their anonymity. For the same reason, all the data collected from the online surveys was anonymized and accessible only to the primary investigator and research assistant. I did not review the informed consent forms or any of the survey data until the end of the semester after I had submitted the final grades to the registrar's office.

In the class of 46 students, 34 submitted surveys for a response rate of 73.9%. Twenty-five students in the class were majors taking the course as a requirement of graduation, and 21 were non-majors taking the course as an elective. Participants accessed the survey through Qualtrics, an online data collection tool. The first part of the survey collected quantitative data using a short set of matrix table questions, each with five to eight sub-questions that prompted students to gauge their responses using Likert scales, while qualitative data was gathered through three open-ended questions (Kember and Ginns 2012). According to these findings, the game succeeded in meeting both of its goals. In terms of engagement, 82.36% of students who completed the survey agreed that the game was interesting, engaging, and made a valuable contribution to their learning. Similarly, 88.23% of respondents agreed that watching and playing the game made the course more engaging, and 74.71% agreed that they enjoyed watching it and playing it every week. The second goal of the project was also successful based on the survey results, though to a lesser degree. According to the data, 73.53% of respondents agreed that the game helped them strengthen the connection between what they learned in class and what happens in the field. Similarly, 87.88% agreed that the series helped them understand what it means to work as a journalist, while 67.65% agreed that the game helped them develop a set of values related to being a journalist.

Table 1: Student Responses to Quantitative Survey Responses

Question	Agree strongly	Agree	Neutral	Disagree	Disagree strongly
The series was interesting and engaging.	17.65%	64.71%	11.76%	5.88%	0%
I enjoyed watching and playing the series every week.	14.71%	50.00%	29.41%	2.94%	2.94%
The series made a valuable contribution to my learning.	14.71%	67.65%	11.76%	2.94%	2.94%
Watching and playing the series made the course more engaging.	32.35%	55.88%	8.82%	0%	2.94%
The series helped me make connections between what I learn in class and what happens in real newsrooms.	23.53%	50.00%	23.53%	2.94%	0%
The series helped me understand what it means to work as a journalist.	30.30%	57.58%	12.12%	0%	0%
The series helped me develop a set of values related to being a journalist.	14.71%	52.94%	32.35%	0%	0%

The second part of the survey collected qualitative data through three optional, open-ended questions that prompted written responses, which were between 50 and 120 words each. Using a constructivist-grounded theory approach, I analyzed the responses for common themes and created a coding memo that categorized the major themes (Charmaz 2006). I then asked my research assistant to use the coding memo to do his own independent analysis of the responses, and we discussed our findings. Any disagreements were resolved through discussion (Braun and Clarke 2006; Charmaz 2000; Maguire and Delahunt 2017). We used Cohen's kappa to assess the proportion of agreement between our coding as a measure of inter-rater reliability. Kappa ranges between 0 and 1.00, with zero being no agreement and 1.00 being perfect alignment; ideally, a kappa will be over 0.60, suggesting substantial agreement among raters (Landis and Koch 1977).

The first question asked students what they liked most about the game and was answered by 32 of the 34 (94.1%) respondents. Inter-rater reliability for coding of these responses was moderate, with Cohen's $\kappa = .44$, $p < .01$, which I was able to resolve through discussions with my research assistant. We attributed this lower-than-ideal rating to the fact that we were only assigning one code to each answer, and these responses were the longest of the three questions and often contained two or more ideas, and it was sometimes difficult to decide which theme was most prevalent. Students' responses to this question could be grouped into three main themes. First, students reported that they enjoyed the serialized nature of the game, unfolding week by week over the semester. They noted its novelty, compared to the conventional academic coursework they were expected to undertake in most of their classes, and described a sense of anticipation that was created between one episode and the next. For example:

> *To have a weekly regular rhythm is good because it creates a link between the spectator and the girl. Which is better to learn and be interested.*

> *It was something to look forward to, it was better then [sic] just having readings to do.*

> *The story was fun to follow.*

Second, students said that they appreciated how the content of each week's episode aligned with that week's readings, lecture, and learning activities. This alignment helped them connect what they were learning in class and in their readings with the experiences and expectations of journalists in the field:

> *I really enjoyed how the narrative unfolded alongside the class. I made a point to always do the week's brantford newsroom [sic] as soon as it came out, and it really helped with my understanding of the class when I recognized points made during the lectures that had been covered during the Brantford Newsroom videos and games.*

> *I liked how easy it was to access the Brantford Newsroom, and how easy it was to make connections to everyday life. Seeing the theories we learned in class, in practice, was very useful and made the learning more interesting and relatable.*

> *It was a first hand [sic] view about what a real news room would be like. Many of us might end up in an internship at some point so it was nice to see what it could be like.*

Third, students reported that they liked that each episode of the game was short, easy to navigate, and featured relatable characters. Some respondents also said they appreciated how the game engaged their sense of play, providing them with the option to explore different paths and choices without being penalized for making the "wrong" choices:

> *How easy it was to complete and how it had an actual effect on the marks. Liked how the game was designed on completion and not looking for the right answers.*

> *I liked the short but to the point episodes and the characters were relatable.*

> *The thing I liked best about Brantford Newsroom was how engaging it was with the 'choose your own adventure' storyline option.*

The second open-ended question asked students how they thought that the game could be improved in future iterations. Twenty-seven of the 34 respondents (79.4%) offered suggestions, and inter-rater reliability for coding of these responses was substantial, with Cohen's κ = .71, p < .001. Students' responses to this question could be grouped into three main themes. First, many respondents suggested that the game could be made more engaging by introducing more characters as way of providing different perspectives and points of view. They said that spending so much time focused on one character's experiences felt less engaging as the game went on, especially if they did not personally relate to Frankie's experiences. For example:

… She looks completely stressed almost until the end of the videos. I know it's on purpose because the aim is to [describe] the internship but I'm not sure that it's the best way.

Having more characters to show a more diverse set of experiences for journalists, even if it is just a subplot or only covered in one episode.

Second, they suggested increasing the interactivity of the game by adding more subplots to explore (through characters besides Frankie) that have a greater impact. In particular, respondents said that they would like to have the opportunity to follow the "wrong" choices farther to see their outcome before being looped back to the decision point:

The games didn't seem to have much choice or player agency involved, as the next week would essentially be completely independent from any choices I made in the game. I understand the constraints involved, and that you needed to tell a fairly linear narrative, but if there is a way that the in-game choices could be made to feel more impactful, it would greatly improve the effectiveness of the games...

I would prefer the game if it were to follow through when you make the wrong choice, at least for that game, so that you are dealing with the consequences of a wrong choice instead of letting you restart right after.

The third theme that emerged among the suggestions was a desire to increase the production value of the videos and games. For the videos, students suggested more sound and transitional effects, as well as tighter writing and editing to make them shorter. For the interactive branching narratives, students suggested adding music, animations, and graphics. They also recommended decreasing the amount of time between when a new page of text appears, and the choices become available to players:

I think Brantford Newsroom can be improved by editing the videos a lot more. I felt the videos were boring at times and I believe sound effects, transitions and more actors would improve the overall production of the video.

The final open-ended question asked if respondents had any other feedback that they would like to share about the game, and 16 out of 34 students (47.0%) made suggestions. Inter-rater reliability for coding of these responses was substantial, with Cohen's κ = .64, p < .01. Of those responses, 11 were general, positive comments that said the game was unique, engaging, and useful. The other five responses mostly echoed the themes described above that emerged from the second question, focused on improving the technical aspects of the game. Only one suggestion arose that did not emerge from the other answers, which highlighted a perceived misalignment between the plot of the game and what was taught in class:

There was a bit of a disconnect between the sort of dour mood during lectures about some aspects of journalism, specifically the concentration of news media ownership, and the positive ending that

Brantford Newsroom had. While a positive ending isn't necessarily a bad thing, the disconnect made the ending of the series seem a bit campy.

DISCUSSION AND CONCLUSION

Based on the survey data, the bespoke digital game was successful in fostering student engagement and helping students make stronger connections between what they learned in the classroom and what happens in the field. In particular, creating a playable narrative to bring course content to life worked well, and students appreciated the opportunity to explore different choices and consequences in a risk-free environment without being assessed on making the "right" or "wrong" choices. Students' feedback also suggested a number of ways in which Brantford Newsroom could be improved in future iterations that other instructors-cum-game-designers may also find useful in creating their own games.

First, students did not have a scheduled time to debrief after playing the game, which in hindsight feels like a missed opportunity. I often asked in class if students had questions about any of the issues that arose in that week's episode, but that only sparked discussion a handful of times. Even if students do not raise questions, I can see the value in holding space for them weekly to share their reflections with a peer or small group as a way to help transform the individual experience of playing the game into something more shared and communal, thereby deepening their learning experience. As Dieleman and Huisingh explain, debriefs provide students with a valuable opportunity to share and compare their experiences, and

> *… as they express their 'learnings' and listen to the 'learnings' of others, they will realize that people learn very different things from performing the same activities. Reflections on the differences in perceptions and emotions that are elicited via the games are extremely valuable. Such debriefing sessions are essential to also help the participants to reflect on how they may use the lessons they learned in their personal and professional lives… (2006, 846).*

Similarly, I think it would be useful to update the interactive branching narratives so that at the end of each week's episode, students have the option of anonymously recording their responses, feelings, and reflections via an open-ended survey question. This would provide more timely insight into their reactions to and questions about the material and issues addressed in each episode, only some of which arises later in classroom discussions. Because students may play the digital games whenever they choose over the course of one week, those who play early on may have to wait a week before they are able to discuss it in class, by which point they may have forgotten their initial reactions, so it makes sense to provide a way to document them whenever students play the game. These initial reactions, feelings, and reflections would be valuable qualitative data for analysis and further insight into the game's effectiveness.

One example of this type of feedback appeared in one student's answer to the final open-ended question in the survey, which noted a perceived disconnect between the ending of the game's narrative, in which Frankie starts her own local news outlet in response to the newspaper being closed by its corporate owner, and the lecture I was delivering about the precarious state of the Canadian news industry as a result of the country's high degree of media ownership concentration. As Whalen et al. (2018) note, games have the potential to foster misunderstandings, so in the case of serious and

educational games, it is important to ensure that the same lessons—in terms of content *and* tone—are shared in class as in the game. In this case, having a scheduled debrief or an opportunity at the end of the episode for students to submit anonymous reactions would have brought this disconnect to my attention sooner. As it was, learning that the student felt there was a misalignment between the positive ending of the game and the "dour mood" of my lecture was surprising but enlightening. To be sure, the high degree of news media ownership concentration in Canada is a serious concern in terms of the long-term viability and availability of independent local news, as well as job prospects for journalism students (Couture 2013; Lindgren, Corbett, and Hodson 2020). But there is also an increasing number of small, often regional, independent news outlets launching across the country that should make Canadians feel hopeful about the future of local news ("Canada's National Observer" n.d.; "The Discourse" n.d.; "The Narwhal" n.d.; "The Pointer" n.d.). After reflecting on the student's feedback, I have updated my lecture to make this clearer in class so this optimistic tone is the same there as in the game.

Finally, much of the student feedback centered on wanting more content in the games—in particular, a greater variety of characters with different perspectives and points of view and more room to explore the consequences of the less-than-ideal choices. As Dörner et al. (2016) note, there is always a tension in designing a serious game that is engaging and fun as well as educational, and finding that balance is challenging. Much of the student feedback suggested that the game was fun because it was low-stakes and enjoyable, which echoes the anecdotal feedback I often hear in class. I worry that adding to the cast of characters and narrative branches students may explore would make the episodes significantly longer, which would sap the game of its sense of fun. Adding more characters would also increase the production costs in terms of hiring more actors and likely adding to filming, editing, and production time. It is a difficult balance to achieve. One solution I envision involves creating a sequel game, which students would play later in their education, perhaps in their final year of studies, to help prepare them for the transition from school to the field. Designed for an audience of players with more knowledge and expertise than first-year, first-semester students, it could introduce a new cast of characters working through more complicated and sophisticated challenges, drawing on students' four years of learning. I think it would be particularly valuable to engage more students in creating such a sequel, inviting them to incorporate their own experiences as interns, freelance writers, and reporters into the game.

Overall, I feel that the results of this experiment make a strong case for why instructors, particularly in professional programs that teach skills and theory simultaneously, should explore opportunities to use games as part of their curriculum. Although I was able to hire a professional video production crew to film, edit, and produce the videos for Brantford Newsroom, I do not think this would be necessary to the success of other games. Certainly, the professional quality of the videos gave them some credibility among students, but given their brevity and the fact that students watch them in a small, YouTube-shaped box on an internet browser, I think the same effect could be achieved by hiring students with video production experience using smart phones or digital single-reflex lens (DSLR) cameras and editing software, such as Adobe Premiere Pro. Additionally, players spend more time working through the interactive branching narrative than watching the videos, and this project shows that student game designers and programmers are able to create high-quality, engaging games using free, open-source software such as Twine. Finally, because it can be challenging to find an existing game that suits one's needs, instructors should consider developing their own bespoke digital games that align with their courses as much as possible. While this study offers one example of how to design and assess an

engaging, interactive narrative based on a particular course's learning objectives and outcomes, more research is required in order to develop a set of best practices that would be useful to instructors and game designers across a range of disciplines.

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NOTES

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