Gamification Learning Outcomes in Communication Classes

Kay L. Colley
Texas Wesleyan University

Abstract

Learning through active games in journalism and public relations courses showed positive results, with students reporting improved technical skills and increased confidence levels and had a lasting impact on self-perception and self-actualization such that students felt that they were prepared for professional practice.

Introduction

For three years, the Mass Communication Department at a small, liberal arts university in the southwestern part of the United States has staged crisis simulation events using game-based learning, for students to practice their communication skills. Students in three classes have taken on the roles of reporters, editors and public relations communicators as the university has been inundated with zombies in year 1, superheroes in year 2 and students who were protesting in year 3. The students in each of these classes have created podcasts that review their participation in the crisis events immediately after, but no further assessment of how these games have impacted students and improved their skills has been undertaken. This study provides such an assessment from the perspective of game-based learning theory and experiential learning.

People play games because they experience the elements of challenge and fun. Research shows that there is a strong relationship between fun and engagement in a gamified learning experience, making gamified educational tools even more attractive as a way to capture and hold the attention of students (Bisson

& Luckner, 1996; Chatterjee, 2010; Kapp, 2012; Parsons & Taylor, 2011; Sailer, *et al.*, 2017). As faculty seek more ways to attract and hold the attention of students to improve learning, integrating a gamified experience into the classroom may become more attractive as well.

Literature Review

The process of education in a university setting allows students to try and fail before undergoing real-world tests. In mass communication education, this process often happens in a public forum through student media. The student media experience is more akin to what is termed experiential learning, "the process whereby knowledge is created through the transformation of experience" (Kolb, 1984, p. 38). Experiential learning can be painful in journalism and mass communication since mistakes are publicly viewed, which leads some students to avoid the student media experience. Some students may also miss the experiential learning offered by student media because of limited opportunities. To create a similar environment, can provide an additional opportunity for students to experience a

Keywords: Gamification, Learning Outcomes, Journalism, Crisis Communication

real-world setting through a gamified simulation.

Gamification, a term coined by Nick Pelling in 2002, involves "using game-based mechanics, aesthetics and game thinking to engage people, motivate action, promote learning, and solve problems" (Kapp, 2012, p. 10). By the time students are 21, they will have played nearly 10,000 hours of video games, so it seems students are primed for a gamified experience in the classroom (Dwyer, 2011). Gamification in education has generally focused on the elements of games that create engagement among students, foster intrinsic motivation and improve student achievement and attitudes toward class content (David, 2016; Yildrim, 2017). Gamers spend hours playing games by solving problems and moving through levels through the process of trial, error, failure and success. It is this engagement that educators seek to harness when employing gamification. Studies show that increased engagement and motivation do occur in gamified educational settings (Banfield & Wilkerson, 2014; Dominguez *et al.*, 2013; da Rocha Seixas, Gomes, & Melo Filho, 2016; Yildrim, 2017). Educators also use gamified learning experiences to elevate learning retention or improve student achievement (Barata *et al.*, 2013; Dominguez et al., 2013; Yildrim, 2017).

In a systematic review of literature, Subhash & Cudney (2018) found that gamification and game-based learning show improved student attitude, engagement and performance as the most significant benefits. Attendance in classes, student confidence and interest also increased, hence gamification is gaining acceptance as a learning method. Bakan & Bakan (2018) performed a systematic review of literature that spanned 12 years from 2005 to 2017 and found that game-based learning methods were more effective tools in terms of learning, student achievement and retention.

Current studies in gamification and game-based learning have focused mostly in the Science Technology Engineering and Math fields in higher education (Subhash & Cudney, 2018). Business was the second area with the most studies published after 2012. Veltsos (2017) looked at how gamification was added to a business communication course, focusing on the elements of simulation and role playing that were added to her gamified course. She found that adding these game-based elements made instruction more enjoyable, improving her own engagement. Two multimedia and social media undergraduate classes at Ryerson University introduced gamified elements to classes or completely gamified classes (Bajko *et al.*, 2016). Researchers found that students were more engaged with the content of the classes, even seeking additional work. Students also appeared to be spending more time on task during class and reported less stress in class, more fun and a more positive view of working in teams. Further, student engagement and motivation improved.

Criticisms of current gamification studies are that the majority of studies have not addressed the question of how gamification motivates, and most studies have treated the concept as a monolithic, singular concept (Sailer *et al.*, 2017). While the term gamification has been defined within this paper, among researchers, there is still no universally accepted definition (Deterding, *et al.*, 2011; Seaborn & Fels, 2015; Werbach & Hunter, 2012). Among researchers, there is some consensus on what gamification includes or what are generally known as game design elements. Game design elements may include: use of avatars, narrative context, immediate feedback, competition, teams, badges, leaderboards, points and performance graphs (Kapp, 2012; Werbach & Hunter, 2012). Game design also includes parameters within which players operate, otherwise known as rules (Kapp, 2012; Smith-Robbins, 2011). These parameters are an important aspect of the game experience and help motivate players by giving the game direction. Other game elements that are necessary to improve motivation are a sense of fun and purpose that lead players to a flow state.

The flow theory of motivation (Csikszentmihalyi, 1990) posits that motivation is impacted by perceived skill and perceived motivation. If something is too hard or too easy, it will impact flow negatively. When gamers are in a flow state they often report a feeling of being "in the zone" where time and consciousness disappear, seeing goals clearly with extreme concentration on the task at hand (Fullagar, C. & Kelloway, E. K., 2009). It is this flow state that makes for a truly enjoyable gaming experience, and one that impacts motivation (Kapp, 2012). Unfortunately, most gamified experiences in classes reviewed within the literature show that gamification elements that create the least flow-like experiences and the least motivational results for students are the elements that are added to courses the most: leaderboards and badges (Hanus & Fox, 2015; Kapp, 2012; Sailer, *et al.*, 2017). Hanus & Fox (2015) found that adding these two elements in a quasi-experiment resulted in lower motivation, sat-

isfaction, empowerment and lower final exam scores for students in their 16-week gamified course as compared to their non-gamified class during the same time frame. Kapp (2012) suggests that these elements of gamification are the easiest to implement, which may explain why they are generally the first gamification elements added to a course, but additional research on reward systems in education suggest that these easy to implement elements of gamification may actually have a negative impact on student learning and motivation (Deci, Koestner, & Ryan, 1999; Deci, Ryan, & Koestner, 2001). The gamified crisis simulation reviewed in this paper used the gamification theory posited by Nick Pelling in 2002 as a basis for its creation whereby students are thrown into a "game" where they are asked to engage with people and solve problems with the intention of stimulating learning and motivation (Kapp, 2012).

Rules of the Game

In the first year of the gamified crisis simulation reviewed in this study, there were limited rules to the game. Six professionals—four journalists and two public relations practitioners—served as moderators for the students, following them around as the zombie apocalypse unfolded. These practitioners were not allowed to answer questions from student participants and were only supposed to be observers, but when no students attended the first press conference during the event, the professionals took over, acting as members of the press at the event. Faculty members had determined an order of events and timeline for the event prior to the beginning. Students were told to arrive at 9 a.m. for breakfast. The event began at about 9:15 with the first reported sightings of zombies across campus for the first event. The last zombies were contained at 11:30 a.m., with a final press conference following. Student editors were the last group to finish by 12 p.m. with the final story and social media posts. After lunch, the professionals critiqued the students and offered suggestions for how to improve in the future.

Because of the free-flowing nature of the first gamified crisis simulation, more rules were put into place each year so that students were allowed to ask five questions of the faculty members and professionals in attendance. Students surrendered a "Ram Card" to ask a question, and professionals were able to give students additional cards if they found that a student was doing a good job during the crisis simulation.

Each year, faculty create a flexible schedule of events or timeline so professionals and faculty who are participating know what is happening throughout the event. Real-life situations are sometimes introduced into these scenarios allowing for some flexibility of timing, but each year, the gamified crisis simulation begins with a rules of the game breakfast at 9 a.m. and ends with a critique by professionals after lunch. So for approximately three hours, students are immersed in the gamified crisis simulation. A cohort of faculty members across campus has served as confederates for these simulations since the beginning. These confederates have also provided our student security task force who help bring the event to a close every year by capturing zombies, coming up with cures on the spot, and serving as foils for "the bad guys" as well as spokespeople at the press conferences. Students do not know what the crisis will be until it begins; however, faculty prepare students for the types of possible crises in class discussions and pre-event assignments.

Research Questions

The current study was undertaken to review the effectiveness of the first three years of a simulation game that brought together three classes for a three-hour crisis scenario. Interviews were used to gauge student perception of their experiences before, during and after the crisis simulation game. The research questions are:

RQ1: Did student participation in this simulated crisis event, based on game-based learning theory, achieve its stated learning outcomes?

RQ2: How did students feel about participating in this gamified simulated crisis event?

RQ3: Were there any additional learning outcomes from participating in this gamified simulated crisis event?

Methodology

A mixed methods approach was used in this study. Participants in this study were students who participated in the crisis simulation event in 2016, 2017 and 2018 in the classes MCO 2345 Integrated Media Reporting, MCO 3320 Digital Design and Editing, both required courses in the Mass Communication degree program, and MCO 4346 Public Relations Campaigns and Programs, an elective course in the degree program. Participation in the gamified crisis simulation event was required in each class. In 2018,

the researcher sought and received Institutional Review Board approval to conduct an assessment of student learning outcomes of this event using a directed interview technique. The directed interview technique, semi-structured interview, (Treadwell, 2017), or focused interview (Merton, Fiske, & Kendall, 1990) is a technique used to pose broad questions that direct the purpose, tone and focus of the interview, but allow for the flexibility of follow-up questions to provide fuller responses to the most important questions (Treadwell, 2017). The directed interview was chosen as a data gathering tool to understand how the gamified crisis simulation had impacted students in terms of learning and overall confidence in their skills.

A list of students in each of the three courses was compiled including 24 students from 2016, 22 from 2017 and 20 from 2018 classes. Across the three years, 16 students participated two of the three years. No one participated all three years, although one student did participate in 2016 and again in 2018. Of the 50 students, eight did not respond to multiple inquiries. Questions from the directed interview are in Figure 1 below.

Students were interviewed in person or by telephone. One former student submitted answers in a written format. Interviews in person and by telephone were recorded. Interviews were edited to cut extraneous information in preparation for transcription. The interviews were transcribed using the service ©Rev.com. Transcripts were reviewed by the researcher and edited to correct transcriber errors. An analysis of the transcripts was conducted using grounded theory to discover themes across all transcripts. Grounded theory is a research methodology used to generate hypotheses rather than test them (Auerbach & Silverstein, 2003). Unique topics discovered in the transcripts were assigned a code. Analysis continued until new categories no longer emerged. Common themes were identified and categorized into higher order themes. An additional analysis was performed using the themes to code the transcripts that had emerged to triangulate the data. When a comparison of coding disagreed, a fourth review of data occurred. Coded data were then analyzed using descriptive statistics to gather overall trends across the three years of the gamified crisis simulation. Descriptive statistics were used to analyze the data after it had been coded into themes.

Participants

Participants in this study were predominantly Mass Communication majors. The university is designated a minority-serving institution and is located in an urban setting. During the crisis simulation, students were either journalists or public relations practitioners. Students were sophomores, juniors and seniors. In 2017, seven students who participated had also participated in 2016. Ten students who participated in 2018 had also participated in either 2016 or 2017. Across the three years, 16 students participated two of the three years. No one participated all three years.

Teaching and the Game

Introducing gamification into the three designated classes in 2016 began the year before with approval from administrators, obtained through a series of meetings. Prior to these meetings, a proposal was created. The overall goal in the original proposal was: "To create a live event where students practice the skills they are learning in courses in real time and learn how to critically evaluate the situation as it unfolds by producing and editing media that help explain the situation to a variety of audiences in a variety of platforms (journalism focused) and managing the crisis to solve the problems created by the situation and

Figure 1: Directed Interview Questions

➢ Describe your participation in the crisis event or events at Texas Wesleyan University. What classes were you in and what was your role?
➢ How long ago was that?
➢ Do you remember how you felt at the time of the event?
➢ Looking back, how does it make you feel when you think about the event?
➢ At the time did you think your skills as a PR person, reporter or editor were good enough to undertake such an event?
➢ Looking back, was that true?
➢ What did this event teach you about PR, journalism or editing?
➢ What did participating in this event tell you about yourself?

Table 1: Intended Student Learning Outcomes for Gamified Crisis Simulation

Student Journalists	Student Public Relations Practitioners
Practice the news gathering process in real-time using social media and online modes of disseminating news	Create a timely, accurate and appropriate public relations crisis response to a real-time crisis
Practice the editing process in real-time	Work with media during a crisis situation to inform the public of the situation and protect brand image
Create appropriate convergent journalism pieces to effectively tell a story in real-time	Create any public relations-related collateral material in a timely manner for a real-time public relations crisis
Create accurate and informative stories to assist individuals on how to handle a crisis	Work with a team to plan, direct and respond to a crisis situation as it develops
Practice working with public relations teams to gather information during a crisis	Learn to adapt a crisis plan to real-life events as they happen
Practice the behavior needed to gather information during a press conference	Practice working within the public relations team to gather information during a crisis
Apply rules of ethical communication in a real-time, crisis situation	Practice how to remain calm and composed during a press conference
Apply critical questioning to ascertain when information is fact and when it is rumor	Apply rules of ethical communication in a real-time, crisis situation
Work with a team to plan, direct and edit news in appropriate formats during a real-time crisis	Apply critical questioning to ascertain when information is fact and when it is rumor and when to release information

work to maintain a good public image (public relations)." Specific learning objectives were created from this general description and were aligned with course objectives, thereby aligning the gamified experience with the outcomes from each of the three courses. The objectives were separated based on whether the students were acting as journalists or public relations practitioners. Table 1 contains these objectives.

Aligning the outcomes of the gamified experience with the educational outcomes helps make the gamified experience a more effective strategy (Kapp, 2012; Kapp, 2014; Yildrim, 2017). Previous studies in gamification show that case-based learning was most frequently used in simulation-style games (Bakan & Bakan, 2018). This was also how the simulation-style game was created in 2016, 2017 and 2018. In 2016, zombies invaded infecting people across campus, including some reporters. In 2017, the campus was destroyed after superheroes and supervillains battled. In 2018, two groups of protesters clashed about their right to be happy or angry. The roles students performed during these simulations were based on the classes they were enrolled in and instructor choice when the students were enrolled in more than one course.

After approval, a learning plan was prepared that allowed students to practice the skills they would need to be successful during the game prior to the actual game. Bringing in professionals to speak about the roles the students would be taking was an important part of the curriculum as was having professionals available the day of the game. In 2016, professionals were not allowed to assist students. In 2017 and 2018, professionals were allowed to give students direction and offer feedback during the game without restrictions. Changes in the game mechanics or rules were made based on student feedback and recommendations from Kapp's (2012) exploration and implementation of game mechanics.

To help alleviate student pressure and anxiety, students received participation points. Buckley, Doyle, & Doyle (2017) found in their research that students who had higher stakes were less open to a gamified approach to the content. Following the game, stu-

dents created individual and group podcasts that also resulted in participation points. Keeping the stakes low and giving students participation points instead of a grade allowed them to concentrate on learning without the fear of failure. The Science Education Resource Center (2019) at Carleton University suggests this strategy on its website.

Results

RQ1: Did student participation in this simulated crisis event based on game-based learning theory achieve its stated learning outcomes? Learning objectives for this gamified simulation were previously identified in Table 1. During the gamified crisis simulation, journalism students played the roles of reporter and editor. Students who played the roles of the crisis communications team members were public relations practitioners. An assumption of **RQ1** is that the learning outcomes for the game were skills students would need to effectively play the game. In the directed interview, students were asked if they believed they were prepared to play the roles they were assigned. The results show that 23 of the 42 students or 55 percent thought they had the requisite skills to play their role, while 15 students or 36 percent thought they did not have the skills needed. After the gamified experience, 31 students or 74 percent thought their skill assessment was accurate, while 11 students or 26 percent thought their assessment was inaccurate. Eleven students or 26 percent also thought the gamified experience improved their skills.

A third question from the directed interview was also used to answer **RQ 1:** What did this event teach you about PR, journalism or editing? General themes were categorized into soft skills and job-related skills based on a recent survey from Cengage (2019). Soft skills included time management, adaptability, team work, critical thinking, attention to detail and working well under pressure. Job skills included the ability to see how all aspects of mass communication are interconnected as well as the importance of accuracy and role definition. Overall, students identified 55 soft skills and 44 job skills learned during the gamified experience.

In comparing the data from Questions 1, 2 and 7 from the directed interview to the student learning objectives, it is clear that all learning objectives were met during the gamified crisis simulation. The required components of the game, a news website and a crisis communication website, required students to practice job-related skills and focused on many of the learning objectives. The soft skills and job skills students identified as part of the gamified crisis simulation were also within the stated learning outcomes.

RQ2: How did students feel about participating in this simulated crisis event? To answer this question, a review of directed interview Questions 1, 2, 3 and 4 was undertaken.

Overall, 35 of 42 students or 83 percent remembered their roles in the events without being prompted. After prompting, 40 of the 42 or 95 percent of students remembered their roles. Among the 42 students, 15 students or 36 percent had participated in two of the three events, and 12 of the 15 remembered both roles without being prompted; after prompting, 100 percent remembered their roles during both gamified crisis events. When asked to recall how long it had been since participating in the event, 30 students or 71 percent were able to recall the correct semester and year without prompting. After prompting, seven additional students remembered the time frame, while six did not answer the question. In reviewing how students felt the day of the gamified crisis simulation, 29 students or 69 percent said they had positive anticipation prior to and during the simulation. Twelve students or 29 percent noted negative anticipation prior to or during the simulation. Fourteen students or 33 percent felt overwhelmed or confused the day of the simulation, while seven students or 17 percent reported feeling calm or relaxed. Four students indicated they had feelings related to a state of flow during the game (Csikszentmihalyi, 1990; Kapp, 2012). Table 2 (page 20) shows the exact numbers based on categories of participation. Since some students participated in more than one gamified crisis simulation, the totals line is greater than the number of students who participated in this study.

In looking back on their experiences, only one of the 42 students who participated said the gamified crisis simulation was a bad experience. Ten students or 24 percent said they had both positive and negative experiences, while 31 students or 74 percent recalled their experiences as positive. Students generally had a positive experience with the gamified crisis simulation, and the vast majority of students, 95 percent, correctly recalled their participation during the game, including the dates of participation.

RQ3: Were there any additional learning outcomes from participating in this simulated crisis event? This research question was an exploration into the unin-

tended outcomes from the gamified crisis simulation. To answer this question, a review of directed interview Questions 7 and 8 was undertaken to ascertain themes developed across all participants. A previous analysis of Question 7 for **RQ 1** categorized student responses to the question into soft skills and job skills needed to be journalists and public relations practitioners. Soft skills learned during the gamified crisis simulation included time management, adaptability, team work, critical thinking, attention to detail and working well under pressure. Job skills needed also included the ability to see how all aspects of mass communication are interconnected as well as the importance of accuracy and role definition. In total, 55 instances of soft skill transmissions were determined, and 44 instances of job skills transmissions were determined.

Analysis of the themes generated from Question 8 of the directed interview revealed that students primarily learned about the training they used during the gamified crisis event, which showed them the skills they still lacked. Twenty-eight students or 67 percent fell into this category, while 23 students or 55 percent gained confidence in their skills through participation. Nineteen students or 45 percent said they learned that they were able to handle the pressure and stress associated with the game, and some of those students expressed surprise by this realization. Thirteen students or 31 percent expressed a new level of self confidence after completing the crisis simulation, and eight students or 19 percent said their career goals had either been confirmed or changed based on their participation. Additional learning outcomes from the gamified crisis simulation included insight on areas where students still needed to improve their skills and a level of confidence in their skills, how they handled themselves in a crisis and overall confidence in themselves.

Discussion

The additional learning outcomes students said they received from participating in the gamified crisis simulation were the most important discoveries in this study. Increased self confidence and increased confidence in handling pressure and stress are two of the soft skills that employers say they want (Cengage, 2019), but are difficult to teach. These are also two of the outcomes discovered in using gamified learning in classes (Subhash & Cudney, 2018). By putting students in the middle of a simulated crisis, they had to perform or flee, which boosted their confidence in their skills and themselves. Adding the component of public performance, two websites and social media, and including professionals to assist and critique, upped the ante for students. Dialing up the pressure by including public performance requirements can cause some backlash, but reviewing how often students referred to their game experience as "fun," 50 times by 19 students, seemed to suggest that a backlash didn't occur. Instead, this study shows that at least four students experienced a state of flow during the game, and only one student found the experience to be negative. Game elements that are necessary to improve the motivational aspect of games are a sense of fun and purpose that lead players to a flow state. One reason the elements of fun and flow may have existed in this gamified crisis simulation was that despite ratcheting up the pressure during the game through public performance, students' overall grade wasn't affected by their performance. Students received participation points. By keeping the stakes low in terms of grades, the focus has remained on learning outcomes.

Table 2: How Students Felt the Day of and Prior to the Gamified Crisis Simulation

	positive anticipation	negative anticipation	overwhelmed or confused	in a state of flow	calm or relaxed
Double journalism	3	2	2	1	0
Journalism only - editor	4	1	3	0	3
Journalism only - reporter	10	3	2	0	0
Journalism/PR	4	1	2	0	2
PR/Journalism	4	2	3	1	1
PR only	4	3	2	2	1
Totals	29	12	14	4	7

During interviews, the vast majority of the 42 students, 95 percent, correctly recalled their participation during the game, including the dates of participation, and 31 students, 74 percent, recalled their experiences as positive. Some of these students had participated more than two years prior to the interview, which says something about the experience of participating in this event. Some student responses, in their own words, are included in Table 3.

With these types of comments, it's clear that this gamified crisis simulation had a positive impact on many of its participants by improving technical skills, increasing their confidence level and showing them that they were prepared to act as professionals. Eleven students or 26 percent said that participating in the gamified experience improved their skills, which was an overall learning objective. While not a stated learning objective for the simulation game, one of the researcher's goals was to increase students' comfort in responding to a crisis before they actually faced one, and the results from the directed interviews seem to indicate that this objective was achieved.

Conclusion

The gamified learning experience did more than achieve the stated goals for this exercise. While learning objectives were associated with the required skills for reporters and editors, through the analysis of data, it was clear that students gained confidence in participating in this exercise. For so many students who are first generation college students, a lack of confidence is one of the biggest hurdles they face when interviewing for jobs or even internships. This game experience showed the students that yes, they did have the skills they needed to act as a professional, but more importantly, they were able to practice those skills under pressure in a "real-life" crisis situation. An interesting phenomenon was how vividly students remembered their roles during the gamified crisis simulation. Some of the students had been out of classes

for almost two years, but they recalled the events of the day vividly, even talking about how they felt in the moment as the event was happening. The impact of this gamified learning experience in the moment may create motivation for students who are not highly engaged in the classroom, but for all of the students interviewed for this study, this experience had a lasting impact on self-perception and self-actualization so that students felt as if they could be practicing journalists.

Limitations

The type of interview used in this study varied. Different types of interviewing affected the ability to ask follow-up or clarifying questions. The researcher's relationship with the students as a former professor may have skewed their responses to questions. Two students' inability to be physically present during one of the games affected their participation in and perceptions of the event.

Further Research

A comparison of student interviews and immediate feedback following participation in the simulation may shed some additional light on the learning outcomes from this gamified crisis simulation. Comparing student perceptions within journalism roles and public relations roles may offer further insight into experiences with the gamified crisis simulation. Testing skill levels before and after the gamified crisis simulation might also provide a better indication of skill acquisition. Looking at the preliminary data from this study, including additional learning outcomes, and comparing to subsequent years may provide a longer view of how this gamified experience might impact students over time.

Table 3: In Their Own Words: Looking Back

"It makes me smile for sure."
"Now I feel very, very confident."
"I don't want to sound too cliche, but kind of proud of myself."
"It makes me feel like it prepared me."
"It makes me feel really good, honestly. It kind of gave me a bit of confidence."

References

Auerbach, C.F. & Silverstein, L.B. (2003). *Qualitative data: An introduction to coding and analysis.* New York University Press: New York and London.

Bakan, U. & Bakan, U. (2018). Game-based learning studies in education journals: A systematic review of recent trends. *Actualidades Pedagogicas, 72,* 119-145.

Bajko, R., Hodson, J., Seaborn, K., Livingstone, P., & Fels, D. (2016). Edugamifying media studies: Student engagement, enjoyment, and interest in two multimedia and social media undergraduate classrooms. *Information Systems Education Journal, 14*(6), 55-72.

Banfield, J. & Wilkerson, B. (2014). Increasing student intrinsic motivation with self-efficacy through gamification pedagogy. *Contemporary Issues in Education Research (Online)* 7(4), 291.

Barata, G., Gama, S., Jorge, J., & Goncalves, D. (2013). Engaging engineering students with gamification. Games and virtual worlds for serious applications (VS-GAMES). *2013 5th International Conference on (pp.1–8).* IEEE.

Bisson, C. & Luckner, J. (1996). Fun in learning: The pedagogical role of fun in adventure education. Perspectives. *Journal of Experiential Education, 19*(2), 108.

Buckley, P., Doyle, E., & Doyle, S. (2017). Game on! Students' perceptions of gamified learning. *Educational Technology & Society, 20* (3), 1-10.

Cengage (2019, January 16). New survey: Demand for 'uniquely human skills' increases even as technology and automation replace some jobs. Retrieved from https://news.cengage.com/upskilling/new-survey-demand-for-uniquely-human-skills-increases-even-as-technology-and-automation-replace-some-jobs/.

Chatterjee, P. (2010). Entertainment, engagement and education in e-learning. *Training & Management Development Methods, 24*(2), 601-621.

Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience.* New York: Harper & Row.

David, L. (2016, Jan. 26). Gamification in education, in *Learning Theories.* Retrieved from https://www.learning-theories.com/gamification-in-education.html.

Deci, E. L., Koestner, R. & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin, 125*, 627-688.

Deci, E.L., Ryan, R.M., & Koestner, R. (2001). Extrinsic rewards and intrinsic motivation in education: Reconsidered once again. *Review of Educational Research, 71*, 1-27.

Deterding, S., Khaled, R., Nachek, L., & Dixon, D. (2011). Gamification: Toward a definition. Paper presented at the CHI 2011, Vancouver.

Dominguez, A., Saenz-De-Navarrete, J., De-Marcos, L., Fernandez-Sanz, L., Pages, C., & Martinez-Herraiz, J. (2013). *Computers & Education 63*, 380-92.

Dwyer, L. (2011, Dec. 7). How gaming is changing the classroom. Retrieved from https://www.good.is/articles/how-gaming-is-changing-the-classroom.

Fullagar, C. J. & Kelloway, E. K. (2009). Flow at work: An experience sampling approach. *Journal of Occupational & Organizational Psychology, 82*(3) 595-615.

Hanus, M.D. & Fox, J. (2015). Assessing the effects of gamification in the classroom: A longitudinal study on intrinsic motivation, social comparison, satisfaction, effort, and academic performance. *Computers & Education, 80*, 152-161.

Kapp, K. (2012). *The gamification of learning and instruction: Game-based methods and strategies for training and education.* Pfeiffer: San Francisco, CA.

Kapp, K. (2014, March). Gamification: Separating fact from fiction. *Chief Learning Officer.* Retrieved from http://www.CLOmedia.com.

Kolb, David A. (1984). *Experiential learning: Experience as the source of learning and development.* Prentice-Hall, Inc., Englewood Cliffs, N.J.

Merton, R. K., Fiske, M., & Kendall, P .L. (1990). *The focused interview: A manual of problems and procedures.* Second Edition. New York: The Free Press, 1990.

Parsons, J. & Taylor, L. (2011). Improving student engagement. *Current Issues in Education, 14* (1). Retrieved from http://cie.asu.edu/.

da Rocha Seixas, L., Gomes, A. S., & Melo Filho, I. J. (2016). Effectiveness of gamification in the engagement of students. *Computers in Human Behavior, 58*, 48-63.

Sailer, M., Hense, J. U, Mayr, S. K., & Mandl, H. (2017). How gamification motivates: An experimental study of the effects of specific game design elements on psychological need satisfaction.

Computers in Human Behavior, 69, 371-380.

Science Education Resource Center. (2019). Grades and games. Retrieved from https://serc.carleton.edu/introgeo/games/grading.html

Seaborn, K. & Fels, D. I. (2015). Gamification in theory and action: A survey. *International Journal of Human-Computer Studies, 74,* 14-31. http://dx.doi.org/10.1016/j.ijhcs.2014.09.006.

Smith-Robbins, S. (2011). This game sucks: How to improve the gamification of education. *EDUCAUSE Review, 46*(1), 58-59.

Subhash, S. & Cudney, E. A. (2018). Gamified learning in higher education: A systematic review of the literature. *Computers in Human Behavior, 87,* 192-206.

Treadwell, D. (2017). *Introducing communication research: Paths of inquiry.* Third Edition. Thousand Oaks: Sage Publications, Inc.

Veltsos, J. R. (2017). Gamification in the business communication course. *Business and Professional Communication Quarterly, 80*(2), 194-216.

Werbach, K. & Hunter, D. (2012). *For the win: How game thinking can revolutionize your business.* Philadelphia: Wharton Digital Press.

Yildrim, I. (2017) The effects of gamification-based teaching practices on student achievement and students' attitudes toward lessons. *Internet and Education, 33*, 86-92.

Dr. Colley is a professor of mass communication at Texas Wesleyan University and department chair of the Mass Communication Department. Her research includes a focus on alternative teaching techniques and assessment in mass communication. She teaches journalism and public relations at Texas Wesleyan. She was named the SPIG Teacher of the Year in 2011 and the Earl Brown Distinguished Faculty Member that same year. She has been named an Engaging Educator at Texas Wesleyan twice.