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# Leveling up Instruction: Action Research Evaluating the Impact of Gamification on the Intrinsic Motivation and Academic Performance of Students Disaffected From High School English Language Arts

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# LEVELING UP INSTRUCTION: ACTION RESEARCH EVALUATING THE IMPACT OF GAMIFICATION ON THE INTRINSIC MOTIVATION AND ACADEMIC PERFORMANCE OF STUDENTS DISAFFECTED FROM HIGH SCHOOL ENGLISH LANGUAGE ARTS

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# ABSTRACT

The purpose of this action research was to evaluate the impact of gamification on the intrinsic motivation and academic performance of students disaffected from high school English language arts (ELA). Three questions guided this study: (a) how does gamification affect the intrinsic motivation of students disaffected from high school ELA, (b) does gamification affect the academic performance of students disaffected from high school ELA, and (c) what recommendations can students offer after reflecting on their experiences with gamification?

The game elements of challenge, narrative, role-play, and teamwork were incorporated into the design of a five-week instructional unit focused on research and argumentative writing skills. Participants ($n$=19) were purposefully selected from the teacher-researcher's 12$^{th}$ grade ELA courses based on their disaffection relative to their peers. Utilizing a convergent parallel mixed methods approach, data were collected through the Intrinsic Motivation Inventory (Ryan, 1982), focus group interviews, and a teacher-made assessment of student learning (i.e., Argumentative Research Skills Assessment). Quantitative data were analyzed using descriptive and inferential statistics and correlation tests. Qualitative data were analyzed inductively using constant comparative methods. The results revealed a significant increase in participants' intrinsic motivation and academic performance after exposure to gamification. While significant associations were found between participants' feelings of intrinsic motivation and

competency, no significant associations were found between gamification and academic performance.

These findings indicated that while gamification affected the intrinsic motivation of participants through supporting their feelings of autonomy and relatedness, its greatest impact came through supporting their feelings of competency. Moreover, while participants' academic performance increased after exposure to gamification, the lack of significant associations rendered it impossible to say whether gamification itself resulted in this increase. Participant recommendations, implications, and limitations to the study are provided.

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ARSA ..... Argumentative Research Skills Assessment

CSD ..... County School District

ELA ..... English Language Arts

EvsD ..... Engagement versus Disaffection

IEP ..... Individualized Education Plan

IMI ..... Intrinsic Motivation Inventory

LMS ..... Learning Management System

NCES ..... National Center for Education Statistics

PSAT ..... Preliminary Suite of Assessments Test

SHS ..... Southern High School

SCCRS ..... State College and Career Readiness Standards

SDE ..... State Department of Education

SDT ..... Self-determination theory

# CHAPTER 1

# INTRODUCTION

## National Context

Learning does not occur in isolation; rather, it is always inextricably bound to specific situations and uses (Brown, Collins, & Duguid, 1989). This is not a new concept. Dewey (1902) argued that learning is a natural process in which the learner's mind "is given to doing the things that the situation calls for" (p. 125). Freire (1975) advocated dialogic, problem-posing education wherein teachers and students worked together to read the world and the word. Lave and Wenger (1991) described learning as increasing involvement in and identification with a community of practice. The more recent findings of social psychology and cognitive science (e.g., Clark, 1997; Smith & Semin, 2004) have only added scientific evidence to what many have already known: one's learning environment matters. It is imperative, therefore, that educators design authentic, engaging, and democratic learning environments and experiences. Failure to do so only perpetuates the injustices of the world as it is.

Learning, of course, occurs everywhere. It is not confined to the walls of the school building or the classroom. Students learn from parents, employers, friends, family, media, technology, etc. The most common formal learning environment for the majority of students in the United States, however, is the classroom. This is also one of the relatively few spaces designed intentionally for learning. While teachers may not and should not be able to control the learning environments occurring elsewhere, they can and

should help shape the learning environments in their own classrooms. The question is how they are doing in this respect so far? How are schools in general doing in this respect?

The evidence seems to indicate that students do not particularly enjoy school. Engagement decreases with each successive year students are enrolled in school (Brenneman, 2016; Wang, Chow, Hofkens, & Salmela-Aro, 2015). A 2015 Gallup Poll of 867,454 students found that half reported being unengaged in school. Research has indicated intrinsic motivation to be a strong predictor of engagement (Walker, Greene, & Mansell, 2006); however, it too declines with successive years of schooling (Lepper, Corpus, & Iyengar, 2005; Scherrer & Preckel, 2019). While educational researchers have long touted the benefits of project-based (Grant, 2011; Halvorsen et al., 2012) and problem-based (Brush & Saye, 2008; Savery, 2006) learning, many teachers struggle to implement these engaging and authentic forms of instruction in their classrooms (Cook & Weaver, 2015; Ertmer & Simons, 2006; Tamim & Grant, 2013). Moreover, the implementation of such instructional approaches can often vary significantly in terms of rigor (Edmunds, Arshavsky, Glennie, Charles, & Rice, 2017).

The implications of the school engagement cliff (Busteed, 2013) and dearth of consistent and effective authentic learning experiences are dire. Student engagement and motivation are strongly correlated with academic performance (Fan & Wolters, 2014; Greene, Miller, Crowson, Duke, & Akey, 2004; Hughes, Luo, Kwok, & Loyd, 2008; Putwain, Symes, Nicholson, & Becker, 2018) and graduation rates (Fall & Roberts, 2012; Fan & Wolters, 2014; Fredricks, Blumenfeld, & Paris, 2004; Rumberger & Lim, 2008). In comparison to students who complete high school, students who drop out may face a

plethora of adverse conditions such as lower employment rates (Rouse, 2007), poorer health (Tyler & Lofstrom, 2009), less civic engagement (Gaby, 2017), and higher rates of incarceration (South Carolina Department of Corrections, 2018; Harlow, 2003) and substance abuse (Hirschfield & Gasper, 2011; Li & Lerner, 2011). Students without a robust portfolio of diverse learning experiences may be ill-positioned in the 21st century economy to compete for increasingly scarce jobs that afford a middle-class lifestyle (Gee, 2004). Students from low-income households, who are more likely to enter school without the home-based head start of more affluent children, may be particularly susceptible to an education bereft of rich learning experiences (Bomer, Dworin, May, & Semingson, 2008; Gee, 2004). This, in turn, will likely continue to grow our nation's already immense educational debt to vulnerable and historically disadvantaged groups (Ladson-Billings, 2006).

Prominent scholars such as James Paul Gee (2004, 2007) and Kurt Squire (2011) have argued that one cause of students' increasing disengagement with school is that modern technology affords students with better learning experiences outside of school than they receive in school. Specifically, Gee, Squire, and others (e.g., Malone & Lepper, 1987) have advocated that educators examine and apply the intrinsically motivating and highly effective learning principles of video games to school learning environments. Accordingly, interest in gamefully designed instruction, popularly referred to as gamification, has garnered increasing attention recently in the field of educational research (Dicheva, Dichev, Agre, & Angelova, 2015; Nacke & Deterding, 2017). While this type of educational innovation is far from a unitary construct—it takes on as many forms as there are methodological and ideological viewpoints among

educational practitioners—good gameful design, Gee (2011) argues, is at its essence "situated, embodied, problem-based learning" (p. ix).

## Local Context

This study takes place at Southern High School (SHS), which is a large public high school in County School District (CSD), a suburban district in the southeastern United States[1]. According to the National Center for Educational Statistics (NCES) and State Department of Education (SDE), the total enrollment at the school during the 2018-19 school year was 2,458 students. The student population was 52.1% male and 47.9% female. In terms of race/ethnicity, the student population consisted of 65.7% White, 21.2% African American, 8.1% Hispanic, 2.5% Asian/Pacific Islander, and 2.3% Native American or more than one race. The school had a 44.8% poverty rate and employed 138 teachers.

While SHS is an excellent high school in many respects, student engagement was a notable area where growth and improvement were needed. In April and May of 2017-18, the SDE contracted AdvancED to conduct a school-wide Student Engagement Survey. The survey indicated that 54.2% of students at SHS were engaged cognitively with the school learning environment, 48% were engaged behaviorally, and 55.5% were engaged emotionally. The SDE administered additional teacher and student surveys of the learning environment at SHS, and these surveys indicated that while 92.7% of teachers reported being satisfied with the learning environment, only 68.5% of students

[1] Actual names of the school and district have been replaced with pseudonyms, and all state and state data references have been removed to protect the identities of participants.

responded positively. The chronic absentee rate at SHS was 14.5%, which may also have indicated student disaffection with the learning environment.

As an English language arts (ELA) teacher at SHS, I knew my own classroom learning environment could be improved in terms of intrinsically motivating learning experiences. I strove to design an engaging and authentic learning environment for my students, but, nevertheless, I often observed student disengagement and unsatisfactory learning outcomes. For instance, at the time this study began, students in my sophomore English class had recently completed reading Steinbeck's *Of Mice and Men*. As we read the novel, students completed reading notes to help scaffold their understanding of its literary and thematic elements (Burke, 2010). However, only 12 of the 29 students enrolled in the class (i.e., 41.4%) completed the assignment. Likewise, only 20 students (i.e., 69%) completed a personal essay connected to the instructional unit's overarching theme. Informally, I had observed students frequently off-task during instructional time. Often, they were using their phones or laptops to play games or interact with social media.

Following the suggestions of experienced teachers with whom I worked, I experimented with a shallow form of gamification in order to improve student motivation and engagement. Using the platform ClassDOJO (2020), I implemented a points-based extra-credit system wherein students were rewarded for positive behaviors such as being on-task, working hard, participating, helping others, and coming to class prepared. A positive outcome of this system was that it did seem to increase student engagement in the short-term. It gave cover to students who may have otherwise been reluctant to participate in class: they could claim they were "doing it for the DOJOs." However, the

behavioral aspects of this system struck me as problematic. As a teacher who believes in problem-posing education, I wondered if I was not simply teaching compliance rather than critical thought. More importantly, I noticed that the positive effects of this system tended to wane over time. As the semester progressed, the DOJO points seemed to have less effect on student participation. Indeed, students even appeared to be more reluctant to participate if not rewarded with points.

Though this initial experience with gamification did not radically change my pedagogy, it did lead to future ponderings on the effects of game elements on instruction. Gamification was a buzzword in the field of education (de Byl, 2013; Johnson, Adams-Becker, Estrada, & Freeman, 2014). As a scholarly practitioner, I felt a responsibility to critically examine this concept. Was gamification an effective method for improving learning environments, or was it just a passing trend? Was gamification just points, badges, and leaderboards, or could it be something deeper and more effective? In what ways could educators use gamification to cultivate authentically engaging and transformative learning experiences? How might I use gamification in my own ELA classroom to improve the learning outcomes for my students, even those students who, due in part to prior experiences, may have felt disaffected from ELA?

In the Freirean and Deweyean traditions, I knew this would require engaging students in an authentic project of inquiry. It was these ponderings and beliefs that informed the present action research study.

## Statement of the Problem

Technology affords today's students with learning experiences that are more engaging and effective than the instruction they typically receive in school (Gee, 2004,

2007). This has, arguably, contributed to the observed decline of student engagement and intrinsic motivation in school-based learning environments (Brenneman, 2016; Lepper et al., 2005; Scherrer & Preckel, 2019; Wang et al., 2015). If schools are to remedy this problem and prepare their most vulnerable students for success in a globalized economy and constructive engagement in a democratic society, then teachers will need to work collaboratively and creatively to transform classroom learning environments (Squire, 2011). The research literature indicates that gamification holds potential for creating intrinsically motivating learning environments (Dicheva et al., 2015). However, researchers stress that this requires the careful design and implementation of gamified instructional interventions (Landers, 2014; Nacke & Deterding, 2017).

**Purpose Statement**

The purpose of this action research study was to evaluate the impact of gamification on the intrinsic motivation and academic performance of students disaffected from ELA at SHS.

**Research Questions**

The following questions guided this research study:

1. How does gamification affect the intrinsic motivation of students disaffected from high school ELA?
2. Does gamification affect the academic performance of students disaffected from high school ELA?
3. What recommendations can students offer after reflecting on their experiences with gamification?

To fully answer these questions, I found it necessary to work alongside the participants in the study. This entailed understanding their perspectives, assessing changes in their motivation or performance as a result of the instructional intervention, and discussing and implementing recommendations based on these findings.

## Researcher Subjectivities and Positionality

Unlike most other forms of research, action research approaches the research subject from the inside (Herr & Anderson, 2005; Mertler, 2017). In other words, the researcher-practitioner is not a disinterested observer; rather, she is actively involved in working critically and reflectively with others to effect change. This method, while often effective in achieving its transformative aims, poses problems in terms of validity (Merriam et al., 2001). How can such inherently subjective research overcome the biases of the researcher(s)? Peshkin (1988) argued that all researchers, be they quantitative or qualitative, "should systematically identify their subjectivity throughout the course of their research" (p. 17) in order to detect conscious or unconscious biases that may otherwise skew their interpretation of the data or approach to the subject. Herr and Anderson (2005) noted that one way to accomplish this is through acknowledging one's presence in the study and building in self-reflection (i.e., reflexivity). Thus, it is imperative for anyone engaged in action research to explain his own subjectivity and positionality in relation to the research topic and other participants. With this in mind, I will briefly describe my background and interest in the research topic, the values I bring to bear on my practice as a teacher-researcher, and my relationship to the other participants in the study. In so doing, I hope to account for any biases that may otherwise affect the validity of my findings.

To begin, I am a white male who grew-up in a lower-middle class (as defined by Gilbert, 2008), Christian household with socially conservative values. My parents, like myself, are both public school teachers. While far from wealthy, my family provided me and my siblings with a stable and nurturing upbringing. My parents were always employed and did not drink alcohol or abuse any drugs. The only discrimination I recall experiencing was occasionally be looked down upon due to my Southern dialect, and this did not really occur until I attended university away from home.

Growing up, I attended public school in the same county where I now teach. While, like most children, I occasionally dreaded school, I never consistently found it to be disengaging or discouraging. In fact, I excelled in school, enjoyed inquiry- and project-based learning experiences through my enrollment in a gifted and talented academic track, and ultimately earned a full academic scholarship to my first-choice university.

All of this places me, to a degree, as an outsider to the participants in my study. I am an insider in the sense that I teach at the school wherein the study will take place, but I am an outsider in the sense that I never faced many of the dilemmas my students have faced and currently face. While I want to cultivate a democratic classroom wherein all students' voices are heard, all students have an equal opportunity to succeed, and all students know that they can work together to make real differences in their lives and communities, I realize that not all of my students share this goal or perspective. Many students are intolerant of individuals different from themselves. Many students fail to see education as one means of overcoming structural obstacles to success. Many students do not believe they can change themselves, much less their community. In acknowledging

my values in relation to the values of my research participants, I must conclude that I will be working with a diverse array of individuals. I cannot assume that all students who are disaffected from high school ELA are monolithic in their values and perspectives. It will be vital, therefore, to listen carefully to their viewpoints and engage them in dialogue throughout the research process. To truly examine the efficacy of a gamified curriculum on disaffected students, I will need to ensure that my research methods allow these students to speak and act for themselves.

In considering how I can work alongside my research participants, I must acknowledge my relationship to them. As their teacher, I am in a position of power: I evaluate their work in the course, I assign consequences when they violate the rules of behavior stated in the syllabus, and I have more knowledge about the course subject. Ethically, I must account for this power-dynamic when communicating purpose and procedures for the research; I do not, after all, want students to participate in the study against their will or out of fear of retribution. Similarly, I must account for this power-dynamic when considering the validity of my research. For instance, if students want to please their teacher, they may not be honest in their responses to interviews or surveys; this would skew the data and lead to invalid research results. It will be vital, therefore, for me to cultivate a relationship of both respect and comfort with my students. This will likely be a delicate balance, but I believe it can be achieved through open-communication and solicitation of their involvement in the key stages of the research process. If students have an authentic ownership stake in the research, then I believe they will want the research to be valid; moreover, if they know I truly respect their voices, then they will be comfortable truly speaking their mind.

As with any individual, I am prone to biases arising from my own background, experiences, values, and position relative to others. By continually monitoring and addressing these biases throughout the research process, I can engage in "critical subjectivity" (Heron, 1996, p. 128). This will not eliminate my biases, but it can prevent them from contaminating my research findings.

## Definition of Terms

### Academic Performance

Academic performance referred to quantitative (e.g., tests) and qualitative (e.g., essays, projects) measurements of student learning.

### Challenge

Challenge referred to problems or learning tasks with variable difficulty and uncertain outcomes.

### Disaffection

Disaffection referred to feelings of discontentment and disengagement relative to the majority of students in a learning environment. The present study followed the lead of previous research (e.g., Connel & Wellborn, 1991; Skinner & Belmont, 1993; Skinner, Furrer, Marchand, & Kindermann, 2008; Skinner, Kindermann, & Furrer, 2009) in operationalizing disaffection as the opposite of motivational engagement.

### Gamification

Following the definitions of Deterding, Dixon, Khaled, and Nacke (2011) and Landers (2014) as well as the work of Gee (2007, 2011), gamification in this study was defined as the use of game elements to design authentic and engaging problem-based learning experiences.

**Intrinsic Motivation**

This study relied on Deci and Ryan's (2000) definition of intrinsic motivation as "the doing of an activity for its inherent satisfactions rather than for some separable consequence" (p. 56).

**Levels**

Levels are used to structure a player's progress through a game environment. In this sense, levels are akin to learning modules in an instructional unit. Levels in this study were defined as organizing and feedback mechanisms for students' completion of learning activities and mastery of instructional objectives.

**Narrative**

Narrative provides a meaning-making context for instructional content. As a game element, it engages players in the motivational elements of fantasy and curiosity. In this study, narrative was defined as storylines and scenarios that situate students in realistic contexts while also engaging students' sense of fantasy and curiosity.

**Role-play**

Role-play occurs when players assume the identity of someone else. Like narrative, it allows for players to engage in the motivating element of fantasy. It also allows for players to adopt a projective identity, which may increase self-efficacy and have a positive effect on one's conception as a learner (Gee, 2004, 2007). In this study, role-play was defined as the positive and powerful personas students adapt as they engage in problem-solving.

## Teamwork

Teamwork was defined as “the integration of [students’] efforts towards the accomplishment of a shared goal” (Mathieu, Hollenbeck, Knippenberg, & Ilgen, 2017, p. 458).

# CHAPTER 2

# REVIEW OF RELATED LITERATURE

The purpose of this action research study was to evaluate the impact of gamification on the intrinsic motivation and academic performance of students disaffected from ELA at SHS. The review of related literature focuses on the research questions (a) how does gamification affect the intrinsic motivation of students disaffected from high school ELA, (b) does gamification affect the academic performance of students disaffected from high school ELA, and (c) what recommendations can students offer after reflecting on their experiences with gamification?

Given the infancy of this concept and field, only the search terms "'gamification' OR 'gamif*'" were selected for the initial searches conducted in the spring and summer of 2017. Conducting searches for the other variables in the study (i.e., motivation, performance, and disaffected students) would have produced many potentially irrelevant results, while combining the variables as keywords (e.g., "'gamification AND motivation") may have narrowed the search to the exclusion of some relevant studies. The search term, "gamif*," was chosen to ensure the search of this burgeoning field was comprehensive and included various verbal forms of gamification such as gamify, gamified, and gamifying.

The initial searches were conducted using the *Education Source*, *ERIC*, and *PsychINFO* databases. Additional searches of these databases were conducted periodically throughout the remainder of 2017 and 2018, and studies were selected,

organized, and reviewed based on their relevance to the variables listed in the main research question. Articles were then mined for references in order to locate additional sources, including books, videos, websites, and articles not found in the databases previously searched.

In the following review of this literature, I will advance the argument that a sociocultural approach to gamified instructional design—as opposed to the behavioral approach often found in gamified systems—is necessary to positively affect students' intrinsic motivation and academic performance. This argument is informed by my reading of the research literature, including theoretical and empirical works. The review is organized into three sections. The first section explores the conceptualization of gamification, including its definition and constituent parts (e.g., mechanics, aesthetics, etc.) and how it is different from related concepts such as game-based learning and serious games. The second section provides a theoretical foundation for understanding gamification in an educational context and, specifically, compares behavioral and sociocultural approaches to gamification, summarizes prominent motivational frameworks found in the extant research literature, describes the emerging theory of gamified learning, and reviews gamification design frameworks. The third section synthesizes the empirical research findings on the relationship between gamification and intrinsic motivation, academic performance, and student types, respectively.

## Conceptualizing Gamification

Due to its application to often disparate fields of study (e.g., marketing, health, education) and relatively recent emergence, Seaborn and Fels concluded as recently as 2015 that no standard conceptualization of gamification existed; more recently, however,

a standard definition and conceptualization has begun to emerge, largely due to the seminal and frequently cited work of Deterding and colleagues (2011) (Shahri, Hosseini, Phalp, Taylor, & Ali, 2019). Still, some researchers and practitioners argue that gamification is inherently different from related concepts such as serious games (e.g., Landers, 2014), while others conflate the two (e.g., Kapp, 2012), arguing that serious games are but a subset of gamification. Likewise, definitions of gamification vary depending on the context and researcher (Landers, Auer, Collmus, & Armstrong, 2019).

The purpose of this section of the review of related literature is to examine the various conceptual understandings of gamification. Specifically, I will examine the definitions of gamification from its origins to its applications in the field of education, review the classification and definition of various game elements, delineate the differences between gamification and game-based learning (GBL), and survey gamification design frameworks used in the field of education. In so doing, I hope to illustrate the emerging conceptual understandings of gamification which will inform this study.

**Gamification Definitions**

In many ways, the concept of gamification is nothing new. Games, game elements, and play have been used to motivate, engage, and instruct individuals throughout recorded history (Fuchs, 2014; Kapp, 2012; Nacke & Deterding, 2017; Zichermann & Linder, 2013). Children play games imitating the roles they are expected to adopt later in life; militaries and organizations such as the Boy Scouts award badges for exceptional acts of courage and skill; multinational corporations such as McDonald's leverage games such as Monopoly to increase customer engagement and boost sales.

One finds the elements of games—challenges, collaboration, rewards, rules, narrative, etc.—in virtually every aspect of life, past and present. This raises the question of what makes gamification a unique, much less novel, concept. In order to answer this question, it is necessary to understand the origins and context of the term gamification and its adaptation and usage in the field of education.

**Corporate and industry origins.** Though some have noted that the adjective "gamified" was used in academic literature in 2002 (Landers, 2014, p. 755), the noun form "gamification" first emerged in the digital media industry in the early- to mid-2000s (Deterding, 2014) and did not see widespread usage until the second half of 2010 (Deterding et al., 2011). It was used predominantly in marketing contexts wherein advertisers and corporate consultants touted gamification as a promising new method for motivating and engaging contemporary consumers and employees (Seaborn & Fels, 2015). For instance, in their book *Game Based Marketing: Inspire Customer Loyalty through Rewards, Challenges, and Contests*, Zichermann and Linder (2010) stated that "the old methods of reaching consumers with advertising methods have simply stopped working as well as they need to. Game mechanics, on the other hand, are steadily rising to the surface" (p. 6). Likewise, Werbach and Hunter (2012), in *For the Win: How Game Thinking Can Revolutionize Your Business*, claimed that "traditional incentive structures to motivate customers and employees often fall short…. [however] scholarly literature demonstrates that people will feel motivated by well-designed game features" (p. 10). In these quotes, one sees how gamification emerged in the context of marketing and corporate consulting: simply put, gamification was sold as a way for businesses to increase profits.

Such pronouncements led critics in game studies, most notably Bogost (2011), to decry gamification as a mere marketing ploy, a rhetorical hat trick and cheap appropriation of game culture. Bogost argued that gamification as a marketing technique takes the most trivial aspects of games (e.g., points, badges, and leaderboards) and promises businesses that these elements will engage customers and employees and increase profits. In reality, however, "the only purpose it serves is to advance the current—and likely temporary—reputation and advantage of those who would advance it as a solution" (Bogost, 2014, p. 77). Nevertheless, opposing or critiquing a concept is not equivalent to denying its presence and durability, as even Bogost (2014) tacitly acknowledged when he described the reappropriation of his own derogatory term "exploitationware" into the "gamification machinery" (p. 72). Far from being a fad (Kapp, 2012), gamification is quickly developing into its own field of study (Nacke & Deterding, 2017). This continued maturing of the field makes a standardized definition all the more essential.

During the early 2010s, several seminal efforts in industry and academia were made to define gamification. The two most notable definitions, in the corporate and academic spheres, respectively, were those of Zichermann (2011) and Deterding et al. (2011). In the corporate context, Zichermann has arguably been the leader in defining the concept of gamification (Seaborn, 2015). Zichermann (2011) defined gamification as "the use of game thinking and game mechanics to engage audiences and solve problems" (p. 1). This contrasts with the definition of Deterding et al. (2011), who defined gamification as "the use of game design elements in non-game contexts" (p. 2).

One sees two significant differences in a close comparison of these two definitions, and it should be noted that these differences will also appear in the definitions of gamified learning described further below. First, Zichermann's definition is sufficiently broad to include full-fledged games. For instance, using "game-thinking…. to engage audiences" could easily manifest into McDonald's using Monopoly to attract customers or Pepsi-Cola sponsoring a video game tournament. Deterding et al.'s definition, on the other hand, specifically limits gamification to the application of *parts* of a game (i.e., game design elements) to *non-game* contexts. In fact, in other works, the term gamification has even been replaced with "gameful design," in part to avoid the negative connotations of gamification (à la Bogost) but also to emphasize the design rather than game aspect of gamification (Walz & Deterding, 2014, pp. 6-7). In other words, gamification, according to Deterding and colleagues, is inherently *not* a game. Additionally, Deterding et al. emphasize that these design aspects of games do not include "game-based technology or other game-related practices" (p. 5). In the latter definition, there is a clear distinction between games and gamification.

Second, a comparison of these two definitions raises the question of what is meant by terms such as "game thinking," "game mechanics," and "game design elements." Unfortunately, the two definitions do not use these terms synonymously and neither do many research studies (Landers et al., 2019), which has resulted in confusion and construct proliferation in the research literature (Landers, 2014). The particular meanings of the authors' uses of these terms will be delineated presently (see section Classification of Game Elements); however, it is first necessary to examine how gamification has been defined in educational contexts.

**Educational contexts.** Though gamification may still be in its infancy, serious games and GBL have rich and well-developed literature bases and educational applications. In many ways, gamification itself—if one interprets it simply as the extraction and application of games elements to non-game contexts—originated not in corporate boardrooms but in the field of education with the research of Malone (1981) into the intrinsically motivating elements of games. Based on his research, Malone identified three intrinsically motivating categories of games: challenge, fantasy, and curiosity. It is upon this work, as well as the more recent hype around gamification (Brockmeyer, 2011), that the two main definitions of gamified learning build.

Perhaps the most comprehensive treatment of gamification from an educational perspective has been Kapp's (2012) *The Gamification of Learning and Instruction.* In this book, Kapp defines gamification as the use of "game-based mechanics, aesthetics and game thinking to engage people, motivate action, promote learning, and solve problems" (Kapp, 2012, p. 10). Central to this definition is the notion of game thinking, which Kapp describes as "the idea of thinking about an everyday experience like jogging or running and converting it into an activity that has elements of competition, cooperation, exploration and storytelling" (p. 11). Kapp emphasizes the social aspect of this understanding of gamification. Subsequently, he emphasizes that gamification is not merely badges, points, and rewards, or the trivialization of learning. While this indicates a sociocultural approach to gamification, Kapp's definition also tends to model Zichermann's in that it conflates gamification and games. In fact, Kapp explicitly states that the goal of gamification is to "create a game" (p. 11).

This contrasts with Landers' (2014) definition of gamification as the use of "game elements, including action language, assessment, conflict/challenge, control, environment, game fiction, human interaction, immersion, and rules/goals, to facilitate learning and related outcomes" (p. 757). In his definition, Landers attempts to align the research literatures of serious games and gamification in order to develop a psychological theory of gamified learning. To this end, he adopts the earlier taxonomy of Bedwell et al. (2012) for serious games and applies these categories (i.e., action language, assessment, conflict/challenge, control, etc.) to the study of gamified learning. Essentially, he replaces Deterding et al.'s (2011) category of "game design elements" and "non-game contexts" with this taxonomy of learning attributes and the educational context "to facilitate learning and related outcomes." Landers explicitly states that serious games and gamification need to be treated separately in order to avoid construct proliferation which could hinder the advancement of the research literature. He distinguishes between serious games and gamification in that the former acts as an instructor and affects learning directly, whereas the latter alters a contextual behavior or attitude which mediates or moderates the instruction.

The definitional differences for gamification in the fields of business, academia, and education are largely the same: (a) some conflate gamification with any game-based application whereas others strictly delineate the two, and (b) there exists inconsistencies in the terminology of game elements. In the following sections, I will provide support for the argument that gamification and GBL are separate constructs by comparing the advantages and disadvantages of each from an instructional perspective. I will then

highlight the most prominent classifications of game elements so that a clearer understanding of the terminology may emerge.

**Gamification vs. Game-Based Learning**

Though some educators and game designers use gamification and GBL interchangeably (e.g., Kapp, 2012; Nah, Zeng, Telaprolu, Ayyappa, & Eschenbrenner, 2014; Renaud & Wagoner, 2011), the two are distinct concepts (Alsawaier, 2018; Landers, 2014). The former comprises the use of actual games to facilitate learning, while the latter refers to the process of applying game elements to the design of instruction. In other words, gamification attempts to extract the motivating elements of games in order to enhance learning; however, it does not use games themselves as instructional methods or transform the learning experience into an *actual* game. The two approaches share many similarities, but each also has its own advantages, disadvantages, and purposes.

Traditional GBL approaches included using serious games (i.e., games designed with a purpose, such as education, besides entertainment), repurposing commercial off the shelf (COTS) games in educational contexts, and having students create their own games (van Eck, 2006). While these approaches share many goals with gamification (Kapp, 2012), each also has significant challenges which have prohibited its widespread adoption in classrooms (Simões, Redondo, & Vilas, 2013). Serious games, for instance, are resource intensive, expensive to produce, and often unprofitable (van Eck, 2006). COTS games are less costly and time-intensive; however, their applications to educational contexts are often limited and inconsistent and require a careful analysis and matching of the game to the educational context (Simões et al., 2013; van Eck, 2006).

Finally, the student-designed approach to GBL is cost effective, but requires a high investment of time, teachers skilled in game design and development, and institutions that encourage innovative and cross-disciplinary instructional approaches (Simões et al., 2013; van Eck, 2006).

Like GBL, gamification seeks to optimize learning through motivating learners, encouraging problem solving, and implementing game thinking (Kapp, 2012). However, gamification has several advantages over GBL. In contrast to GBL, gamification is inexpensive and relatively easy to implement (Landers, Armstrong, Collmus, 2017); however, the more important caveat is that designers and practitioners avoid implementation of the mere surface features of gamification, including extrinsic motivators such as points, badges, and leaderboards (Kapp, 2012; van Eck, 2015). Gamification, as an instructional design method, can (and should) be easily modified to meet the needs of specific contexts (Kapp, 2012; Landers et al. 2017; Nicholson, 2012). Additionally, whereas games provide short-term engagement, gamification holds the potential for much longer lasting engagement (Folmar & Kroski, 2015).

**Classification of Game Elements**

If, broadly speaking, gamification is the application of game elements, mechanics, aesthetics, or thinking to non-game contexts, then the question arises of what one actually means when referring to game elements, mechanics, aesthetics, etc. The inconsistency in defining these terms has been a significant obstacle in the advancement of the research literature on gamification (Bevins & Howard, 2018; Sailer, Hense, Mayr, & Mandl, 2017). The purpose of this section is to briefly review the classification of game elements (i.e., mechanics, aesthetics, thinking, components, etc.) according to key figures

in the field. Specifically, I will examine the classification of game elements according to Deterding et al. (2011), Zichermann and Cunningham (2011), Werbach and Hunter (2012), and Landers (2014). Respectively, the first three approaches may be referred to as the level model, MDA framework, and pyramid of game elements (Németh, 2015). The final approach will be referred to as the taxonomy of gamified learning attributes.

**Level model.** Deterding et al. (2011) classified game design elements into five levels (see Table 2.1). These levels are ordered from concrete to abstract. The most concrete level, game interface design patterns, includes game elements (e.g., badges, leaderboards, levels) implemented on the surface of a prototype. The next level up, game design patterns and mechanics, is somewhat more abstract in that multiple interface design patterns could be used to implement the elements.

Table 2.1 *Levels of Game Design Elements*[2]

| Level | Description | Example |
|---|---|---|
| Game interface design patterns | Common, successful interaction design components and design solutions for a known problem in a context, including prototypical implementations | Badge, leaderboard, level |
| Game design patterns and mechanics | Commonly reoccurring parts of the design of a game that concern gameplay | Time constraint, limited resources, turns |
| Game design principles and heuristics | Evaluative guidelines to approach a design problem or analyze a given design solution | Enduring play, clear goals, variety of game styles |
| Game models | Conceptual models of the components of games or game experience | MDA; challenge, fantasy, curiosity; game design atoms; CEGE |

[2] From Deterding et al., 2011, p. 12.

| | | |
|---|---|---|
| Game design methods | Game design-specific practices and processes | Playtesting, playcentric design, value conscious game design |

**MDA framework.** Zichermann and Cunningham (2011) classified game design elements according to the MDA framework (c.f. Deterding et al. referred to this framework in the game models level). The MDA framework was first developed by LeBlanc (Hunicke, LeBlanc, & Zubek, 2004) and refers to game design mechanics, dynamics, and aesthetics. Game design aesthetics include elements that make a game enjoyable and elicit an emotional response for a player (e.g., sensation, fantasy, narrative, challenge, etc.). Game design dynamics help create aesthetic experiences and refer to players' interactions with game mechanics. Lastly, game design mechanics support dynamics and represent the various actions and control mechanisms available to a player. In the game of poker, for example, game mechanics would include drawing and discarding cards and placing bets. These mechanics would, in turn, influence dynamics such as bluffing and aesthetics such as competition.

**Pyramid of game elements.** Werbach and Hunter (2012) classified game elements hierarchically into three categories: dynamics, mechanics, and components (see Figure 1). Though Werbach and Hunter share some of the same language as the MDA framework, it should be noted that they do not use the terms synonymously. Game design dynamics, according to this hierarchy, are at the most abstract conceptual elements and include constraints, emotions, narrative, progression, and relationships. Game design mechanics are next in the hierarchy and constitute the elements that drive users to engage with the game. Mechanics include challenges, chance, competition, cooperation,

feedback, resource acquisition, rewards, transactions, turns, and win states. Finally, components constitute the bottom of the hierarchy and are akin to Deterding et al.'s game interface design patterns in that they are concrete game elements. These include achievements, avatars, badges, boss fights, collections, combat, content unlocking, gifting, leaderboards, etc.


*Figure 2.1.* Pyramid of game elements[3]

**Taxonomy of gamified learning attributes.** In his proposed classification of game elements, Landers (2014) attempts to align the research literatures of serious games and gamification in order to develop a psychological theory of gamified learning. He adopts the game attribute categories of Bedwell et al. (2012), which had been used to guide serious game research and determine how specific game attributes affected learning. Landers argues that a modified version of Bedwell et al.'s taxonomy (see Table 2.2) could be used to determine how game elements produce learning outcomes in a gamified learning environment.

[3] From Werbach & Hunter, 2012, p. 82

Table 2.2 *Examples of Gamification by Learning Attribute Category*[4]

| Attribute category | Definition | Example of gamification |
|---|---|---|
| Action language | The method and interface by which communication occurs between a player and the game itself. | To participate in an online learning activity, students are now required to use game console controllers (e.g., a PlayStation controller) |
| Assessment | The method by which accomplishment and game progress are tracked. | In a learning activity, points are used to track the number of correct answers obtained by each learner as each learner completes the activity |
| Conflict/challenge | The problems faced by players, including both the nature and difficulty of those problems | A small group discussion activity is augmented such that each small group competes for the "best" answer |
| Control | The degree to which players are able to alter the game, and the degree to which the game alters itself in response | A small group discussion activity is restructured such that each decision made by each small group influences the next topic that group will discuss |
| Environment | The representation of the physical surroundings of the player | A class meeting is moved from a physical classroom to a 3D virtual world |
| Game fiction | The fictional game world and story | Lectures, tests, and discussions are renamed adventures, monsters, and councils, respectively |
| Human interaction | The degree to which players interact with other players in both space and time | Learners participate in an online system that reports on their assignment progress to other students as they work |
| Immersion | The affective and perceptual | When learning about oceanography, the walls of the classroom are replaced |

[4] From Landers, 2014, p. 756.

| Attribute category | Definition | Example of gamification |
|---|---|---|
| | experience of a game | with monitors displaying real-time images captured from the sea floor |
| Rules/goals | Clearly defined rules, goals, and information on progress toward those goals, provided to the player | When completing worksheet assignments on tablet computers, a progress bar is displayed to indicate how much of the assignment has been completed (but not necessarily the number of correct answers, which would fall under "Assessment") |

**Summary**

Gamification is a nascent concept but one which has developed rapidly. While no standard definition existed as recently as a few years ago (Seaborn & Fels, 2015), the field has begun to coalesce around the definition of Deterding et al. (2011). This is largely due to the maturing of the research literature (Nacke & Deterding, 2017) and the need for parsimony in regards to understandings of gamification, serious games, and related concepts (Landers, 2014). While gamification and GBL have similarities, they are separate constructs. The gamification of learning involves the use of game elements to facilitate learning outcomes. Game elements range from the concrete (e.g., points, levels) to the abstract (e.g., competition, collaboration).

## Theorizing Gamification

As the field of gamification has matured from questions of whether gamification is effective to how it is effective (Nacke & Deterding, 2017), researchers have increasingly found it necessary to situate and empirically test gamification in the context of relevant theories of learning and motivation (Rapp et al., 2018). The purpose of this section is to examine these theoretical understandings of gamification. I will begin by theoretically framing the gamification of learning as behavioral versus sociocultural

approaches, or incentive systems versus communities of practice. Next, I will outline and briefly summarize a few of the most pertinent motivational frameworks found in the research literature on gamification. Finally, I will describe the emerging theory of gamified learning and the implementations of theory-based design frameworks.

## Behavioral vs. Sociocultural Approaches

From a learning theory perspective, gamification may be viewed through multiple lens. Concurrently, its application may lean towards one end of the theoretical and epistemological spectrum (e.g., behaviorism) or another (e.g., constructivism, social learning). In the following paragraphs, I will examine behavioral and sociocultural approaches to gamification. While both approaches are necessary to comprehensively understand the effects of gamification on learning, the implementation of the former relies largely on incentive systems while the implementation of the latter relies largely on communities of practice. It is my contention that a sociocultural approach to gamification is necessary in order to achieve long-term positive impacts on student learning.

**Behavioral approaches to gamification.** Though there are several types of behaviorism (O'Donohue & Kitchner, 1999), the theory can generally be described as an attempt to interpret all behavior in terms of the observed interactions between an organism and its environment (Ertmer & Newby, 2013; Hayes, 1993; Turner, 2006). Learning occurs when an individual demonstrates a proper response to a stimulus (Ertmer & Newby, 2013). Thus, a behavioral approach to gamification posits that rewards and other environmental stimuli can be modified in order to change the behavior of players/students (Kapp, 2012; Linehan, Kirman, & Roche, 2014; Morford, Witts,

Killingsworth, & Alavosius, 2014; Sorgendal & Boks, 2014; Zichermann & Cunningham, 2011; Zichermann & Linder, 2013). This can be best understood through Skinner's (1953) concept of operant conditioning and the specific functions of reinforcement, punishment, and feedback scheduling.

***Operant conditioning.*** In contrast to Pavlov's early work on classical conditioning, Skinner's (1953) notion of operant conditioning goes a step further in that it demonstrated how the behavior of an organism could be reinforced to produce responses not necessarily natural or inherent to its being. In other words, while a dog salivating in anticipation of being fed is a natural response which could be associated with a given stimulus such as the chime of a bell (i.e., classical conditioning), a rat pressing a lever for food is an unnatural response but could still be produced through careful reinforcement (i.e., operant conditioning). When designing a gamified learning environment, educators can consider how reinforcement, punishment, and scheduling of feedback function to modify and produce desired behaviors.

*Positive and negative reinforcement.* Reinforcers are stimuli which have been observed to increase the likelihood of a behavior (Linehan et al., 2014; Sorgendal & Boks, 2014). Positive reinforcement includes game elements such as points, badges, and leveling up (Kapp, 2012; Zichermann & Cunningham, 2011). These game elements reward players for specific behaviors and, in so doing, encourage this same behavior in the future. Negative reinforcement, on the other hand, also seeks to encourage future behavior, albeit through the removal of a stimulus. As an example of this, Linehan et al. (2014) cite the game *Farmville*, in which a player's crops die if not harvested within a

certain time period; this negative reinforcement encourages players to regularly open the game and tend to their farm.

*Positive and negative punishment.* While reinforcement uses stimuli to encourage future instances of a given behavior, punishment uses stimuli to discourage future instances of a given behavior (Linehan et al., 2014; Sorgendal & Boks, 2014). Negative punishment removes a stimulus as a consequence of a player's behavior, while positive punishment adds a stimulus as a consequence of a player's behavior. For instance, when a player's character dies in a video game, this often results in the loss of a life, turn, or points. This use of negative punishment discourages the player from engaging in whatever behavior led to this consequence. While punishments are used infrequently in gamified applications for products due to the fear they will discourage customer engagement, they are a frequent mechanic used in actual games (Linehan et al., 2014).

***Schedules of reinforcement.*** While the mere introduction of a stimulus may have short-term effects on a player's behavior in a gamified learning environment, changes over time (i.e., learning) are more complex and are influenced through schedules of reinforcement. Schedules of reinforcement include two variables: interval and ratio (Kapp, 2012). Intervals refer to the amount of time between reinforcements and ratios refer to the amount of effort required to receive reinforcement. Intervals and ratios can be fixed or variable, and each type has a different effect on players' behaviors.

*Fixed interval reinforcement schedule.* When a player receives a reward only after a given amount of time has passed, this is known as a fixed interval. This schedule of reinforcement tends to encourage an increase in behavior immediately before the reward is given; behavior subsequently declines until the interval nears an end and the

next reward is provided. In terms of cumulative number of responses, overall behavioral engagement is low with fixed interval schedules in comparison to other types of feedback schedules (Kapp, 2012; Linehan et al., 2014).

*Variable interval reinforcement schedule.* A more effective type of interval reinforcement occurs when a player is rewarded at unpredictable intervals. Whereas a fixed interval schedule results in a flurry of activity leading up to the expected rewards, variable intervals result in a continuous but still relatively low level of activity (Kapp, 2012; Linehan et al., 2014; Sorgendal & Boks, 2014).

*Fixed ratio reinforcement schedule.* Because the reinforcement is more directly tied to the desired behavior, ratio reinforcement schedules tend to be more effective for increasing player engagement than interval reinforcement schedules (Kapp, 2012). A fixed ratio reinforcement schedule occurs when a player is rewarded consistently after a given number of responses. For instance, a player may receive an extra life every time she collects 100 coins. Like fixed interval schedules, fixed ratio schedules result in a low initial rate of response and then an increased rate of response as the player nears the expected reward.

*Variable ratio reinforcement schedule.* The most effective means of reinforcement scheduling is variable ratio reinforcement schedules (Linehan et al., 2014; Sorgendal & Boks, 2014). Under variable ratio schedules, players receive rewards for behaviors at unpredictable ratios. In other words, a player may receive a reward one time after putting forth a certain amount of effort, and then the next time the player may only receive a reward after putting forth three times the amount of effort. Because the player is uncertain how much effort will result in the reinforcement, the player is encouraged to

maintain a high level of responses. Because variable ratio reinforcement is so effective, it has been criticized for exploitative use and the encouragement of addictive behaviors (Bleda & Nieto, 2012; Zichermann & Cunningham, 2011). For instance, a person playing slots might keep feeding quarters into the machine even after the effort and amount of money he spends outweighs any reward he receives. Nevertheless, variable ratio schedules can be highly effective for encouraging desired behavior in a gamified learning environment.

Table 2.3 *Operant Conditioning Reward Schedules*[5]

| Type of Reward Schedule | Definition | Example |
|---|---|---|
| Variable ratio | Reinforcement for a behavior is provided in unpredictable intervals | Sometimes receiving a gold coin when hitting a mushroom and sometimes not. Sometimes receiving a reward when stealing a hat from ten elves and sometimes receiving the reward when stealing it from three or fifteen. |
| Fixed ratio | Reinforcement is provided after a pre-selected number of times a behavior is exhibited. | Receiving a power-up or reward after collecting one hundred coins or fifty badges |
| Fixed interval | Reinforcement for a behavior is provided after a fixed amount of time has elapsed. | A magic shield always appears fifteen minutes after the last magic shield is destroyed. |
| Variable interval | Reinforcement for a behavior is provided after a variable amount of time has elapsed. | The magic carpet appears every so many minutes; sometimes it is every two minutes, sometimes every three minutes, and sometimes up to ten minutes. |

[5] From Kapp, 2012, pp. 62-63.

*Schedule leaning.* It may not be feasible or desirable to constantly reinforce behavior in a gamified system. Research suggests, however, that once a behavior is established, the amount of work required to receive a reinforcement can be gradually increased in a technique known as schedule leaning (Kapp, 2012; Sorgendal & Boks, 2014). For instance, one can use schedule leaning in the design of levels in a gamified learning environment. While only 100 experience points (XPs) may be required to achieve Level 1, 250 XPs might be required for Level 2, 500 XPs for Level 3, etc. Though the player would need to earn more points as she progresses, the effective implementation of schedule leaning would prevent the reduction of the motivational effect of the rewards.

***Criticisms.*** The behavioral approach to gamification has not been without criticisms. For instance, some have labeled it as exploitative (Bogost, 2011; Franklin, 2012; Kim & Werbach, 2014), a system which appropriates and commodifies game culture for marketing purposes and manipulates players' instinctive reactions to stimuli for purposes of control. This raises the question of whether educators are uncritically buying into the idea of gamification, as well as other educational technologies, without truly understanding how it works or what epistemologies and ideologies underlie it (Kruger-Ross & Holcomb, 2012; Sayadmansour & Nassaji, 2013). Just as importantly, critics have also raised the question of whether this approach to gamification even works as its proponents contend (Attig & Frank, 2018; Bogost, 2014; Diefenbach & Müssig, 2018). As will be discussed further below in regards to self-determination theory, psychological research into intrinsic motivation strongly indicates that extrinsic rewards can undermine intrinsic motivation when perceived as controlling (Deci & Ryan, 2001).

If educators rely on a system of rewards and punishments to shape student behavior, they may see short-term increases in motivation and performance at the expense of long-term decreases (Nicholson, 2015).

Games, however, are more than points, badges, and leaderboards, and gamification as an instructional design method does not have to be limited to these surface level game elements. Kapp (2013) distinguishes between two types of gamification: structural and content. Structural gamification is largely behavioral and involves overlaying incentive systems on existing content in order to influence users' behavior. This approach relies primarily on game elements such as points, achievements, and levels. Content gamification, on the other hand, uses game elements and game-thinking to transform the learning experience on a deeper level and relies on game elements such as narrative, challenge, and collaboration. Similarly, Nicholson (2012) advocates for "meaningful gamification." Rather than relying on external rewards and scoring to influence learners' behavior, meaningful gamification attempts to use game elements to increase learners' sense of purpose and autonomy (Nicholson, 2012; Tan, 2018). These distinctions move gamification away from a behavioral approach and towards a sociocultural approach to learning.

**Sociocultural approaches to gamification.** In general, sociocultural learning theories draw on the work of Vygotsky, Dewey, and critical theorists such as Habermas and Freire, and argue that learning is inseparable from social context (Driscoll, 2005; Ramirez & Squire, 2014; Swan & Shea, 2005). Swan and Shea (2005) identified three common themes for sociocultural approaches to learning: "cognition is situated in particular social contexts, knowing is distributed across groups, and learning takes place

in communities" (p. 241). These ideas have been conceptualized in the terms situated cognition, distributed knowledge, and communities of practice. More recently, scholars such as Gee (2007) have directly analyzed the relationship between video games and learning and developed sociocultural theories such as new literacies theory. Each of these and its applications to gamification of learning will be briefly discussed below.

***Situated cognition.*** The theory of situated cognition posits that knowledge is situated in the activity, context, and culture in which it is used (Brown, Collins, & Duguid, 1989). Because traditional school culture is often divorced from authentic contexts and cultures, students struggle to transfer knowledge to situations outside of a classroom environment (Brown et al., 1989). GBL in general and gamification in particular have the potential and are well-positioned to address this problem and transform traditional learning environments (Kapp, 2012; Nicholson, 2012; Ramirez & Squire, 2014). For instance, introducing the game element of role playing into the classroom enables learners to situate themselves in an authentic context, such as a local watershed in order to learn chemistry and environmental science (Gaydos & Squire, 2012), solve problems, collaborate with others, form personal identify, and reflect upon their own learning (Daniau, 2016; Nicholson, 2015).

***Distributed knowledge.*** Distributed knowledge (i.e., distributed cognition) bridges the theoretical approaches of cognitive and sociocultural learning theories (Polat & Öz, 2017; Swan & Shea, 2005) in that it focuses on interactions and cognitive tools. Whereas cognitive approaches such as cognitive information processing theory seek to use the internal processes of the mind to explain learning (Driscoll, 2005), distributed knowledge adds that cognition does not reside solely in the mind of an individual but also

in the individual's interactions with others in a specific context (Swan & Shea, 2005). In a gamified learning environment, this perspective is exemplified in the game elements of teamwork and collaboration. Through working in collaborative learning environments with a common purpose, students can collectively construct knowledge structures in order to solve problems, develop identities, and reflect upon their own learning. Ramirez and Squire (2014) present the *Just Press Play* project at the Rochester Institute for Technology as a case study for how gamification can leverage the principle of distributed knowledge to enhance students' learning. For instance, they describe how the project designers offered the Undying achievement to all participating players if 90 percent of the students passed a particular course; this prompted students to collaborate and quickly form study groups.

***Cognitive apprenticeship.*** Central to application of theories of situated cognition and sociocultural learning is the idea of cognitive apprenticeship (Collins, Brown, & Holum, 1991). Cognitive apprenticeship attempts to make thought processes visible through modeling, coaching, scaffolding, articulation, reflection, and exploration (Collins et al., 1991). In order to teach argumentative writing, for instance, a composition instructor might encourage students to select topics of personal relevance and write a letter to the local paper. The instructor could use modeling, coaching, and scaffolding to help students initially, and then fade as students become more proficient and are able to articulate and reflect upon their own processes. A gamified version of this classroom might use the game element of risk-taking to encourage repeated rehearsal of skills (e.g., using parallelism for rhetorical effect) and the development of mastery. Likewise, the game elements of unlocked levels and challenges could be used to facilitate scaffolding.

Kapp (2012) describes how players can be apprentices to the game environments themselves when actions and activities are of value, each mission or challenge builds on skills mastered in a previous level, and the game provides continual feedback, tips, and coaching as the player progresses in real-time.

***Communities of practice.*** According to sociocultural theories of learning, learning is a process of increased participation in a community (Driscoll, 2005; Lave & Wenger, 1991). Communities of practice refer to the various learning communities of which an individual may be a member of (e.g., at school, at the workplace, online, with friends, etc.); it is closely related to the concept of legitimate peripheral participation which describes how an individual moves from the margins of a group to being a full member (Lave & Wenger, 1991). For instance, many students are members of game and school communities. In a traditional classroom wherein the teacher is perceived as the primary arbiter and dispenser of knowledge, the student may only participate marginally as a member of the classroom community of practice. However, if this same student is an avid gamer, she is likely a full member and expert in a gaming community. From a sociocultural perspective, a gamified learning environment transforms the social structure of the classroom to one wherein students and teachers work collaboratively and share control over learning, much like a game environment (Driscoll, 2005; Gee, 2007).

***New literacies theory.*** In his book *What Video Games Have to Teach Us About Learning and Literacy*, Gee (2007) develops new literacies theory and argues for games as a model of situated learning. New literacies theory broadens literacy from its traditional conception of reading and writing to include multimodal literacies, such as interpreting video games and other mediums (Gee, 2007). According to this perspective,

literacy always occurs in a specific social and cultural context (i.e., community of practice), which one must understand in order to make meaning of the text. Gee refers to a player's identity within the context of a game as projective identity. Whereas traditional school culture offers few positive identities besides becoming a good student, game structures enable students to adopt new roles and identities and potentially open new possibilities for students (Ramirez & Squire, 2014). Gee (2005) argues that educators and instructional designers can "apply the fruitful principles of learning that good game designers have hit upon" (p. 6) in order to transform education. These principles include learning by doing, well-ordered problems, learning through a projective identity, cycles of expertise, etc. (Gee, 2005, 2007). New literacies theory has been incorporated into several gamification studies conducted in the context of high school ELA (e.g., Abrams & Walsch, 2014; Kingsley & Grabner Hagan, 2015).

**Motivational Frameworks for Gamification**

Integral to a sociocultural approach to gamification is the notion of motivation in general and intrinsic motivation in particular. While extrinsic motivation is primarily external to the learner and may occur through methods such as operant conditioning, intrinsic motivation is primarily driven within the learner and must be explained according to psychological theories of motivation and guided by theory-based instructional design frameworks (van Roy, 2018). The purpose of this section is to briefly review key motivational theories and frameworks used in the research literature to explain and implement gamified learning systems. Specifically, I will review flow theory, self-determination theory (SDT), the ARCS model, and the taxonomy of intrinsic motivations.

**Flow theory.** Flow theory describes the mental state of being fully immersed in an activity (Csikszentmihalyi, 1975a). This requires that task be optimally challenging; if the task is too easy, the player will become bored and exit the state of flow, but if the task is too difficult the player will experience anxiety and also lose flow. Csikszentmihalyi (1975b) identified six salient features of flow: merging action and awareness, centering of attention, loss of ego, control of action and environment, demands for action and clear feedback, and autotelic nature of flow. While flow is difficult to achieve in a game or gamified learning environment, it can act as a framework and goal for which designers can aim (Kapp, 2012). Moreover, research indicates that the conditions for flow are especially salient in a gamified learning environment (Hamari & Koivisto, 2014; Suh, Cheung, Ahuja, & Wagner, 2017).

**Self-determination theory.** SDT is the most widely used motivational framework in gamification research (Hansch, Newman, & Schildhauer, 2015; Huang & Hew, 2018). As a macro-theory for human motivation, SDT and its sub-theory of cognitive evaluation (CET) study how humans' innate psychological needs for feelings of competence, autonomy, and relatedness influence their self-motivation and -regulation, as well as how environments influence these needs (Deci & Ryan, 2001; Ryan & Deci, 2000). SDT posits that humans have a natural inclination towards active, self-motivated and self-regulated behavior. Events that are perceived as increasing feelings of competence and self-determination will increase an individual's intrinsic motivation, while perceptions of "excessive control, nonoptimal challenges, and lack of connectedness" (Ryan & Deci, 2000, p. 76) will undermine an individual's intrinsic motivation.

In the context of rewards in gamification, this has significant implications (Rigby, 2014). In their meta-review of research on the use of rewards, Deci & Ryan (2001) identified two broad categories or aspects of rewards: informational and controlling. While the informational aspect of rewards can provide feedback and support feelings of competence, the controlling aspect of rewards tend to be perceived as undermining feelings of autonomy. Tangible rewards in particular were found to consistently decrease participants' intrinsic motivation; verbal rewards, on the other hand, tended to increase intrinsic motivation, particularly when they were informational in nature. Based on these findings, Deci & Ryan concluded that

> rather than focusing on rewards for motivating students' learning, it is important to focus more on how to facilitate intrinsic motivation, for example, by beginning from the students' perspective to develop more interesting learning activities, to provide more choice, and to ensure that tasks are optimally challenging (p. 15).

In other words, rather than taking the behavioral approach and developing a system of incentives to reinforce and shape learners' behavior, designers and practitioners would be better advised to adopt a sociocultural approach wherein they focus on the learners' needs and make learning tasks interesting, authentic, purposeful, and optimally challenging.

Several empirical studies have recently tested the elements of SDT as a design framework for gamification (e.g., Mekler, Brühlmann, Tuch, & Opwis, 2017; Sailer, Hense, Mayr, & Mandl, 2017; van Roy & Zaman, 2018). Results suggest that certain game elements align with and support specific psychological needs (Sailer et al., 2017), whereas other elements act primarily as extrinsic motivators (Mekler et al., 2017). Moreover, situational factors can confound the effect of game elements on psychological

need fulfillment, supporting one need (e.g., competence) while simultaneously hindering another (e.g., autonomy) (van Roy, 2018). For instance, Sailer and colleagues (2017) found that badges, leaderboards, and performance graphs all supported learners' feelings of competence and relatedness; however, Mekler and colleagues (2017) found that leaderboards, as well as points and levels, did not correlate with intrinsic motivation and rather acted as extrinsic motivators. These findings highlight the importance of considering the situatedness of the gamified learning environment when implementing and assessing its effectiveness (van Roy & Zaman, 2018).

**ARCS model.** The ARCS model represents attention, relevance, confidence, and satisfaction (Keller, 1987) and has been used to guide motivating instructional design. Given that gamification is essentially a design approach (i.e., gameful design), the ARCS model is particularly relevant when considering gamification as a motivating framework for instruction (Kapp, 2012). According to the model, effectively motivating instruction should first gain the attention of learners through perceptual or inquiry arousal or variability; the instruction should next establish relevance through goal orientation, motive matching, and familiarity; the instruction should support learners' confidence through clearly stated objectives, attainable opportunities for success, appropriately challenging experience, and feedback and reinforcement; and, finally, instruction should help learners gain satisfaction through the authentic application of skills and knowledge (Kapp, 2012). Hamzah and colleagues (2015) developed and tested the ARCS+G model (i.e., ARCS with the addition of gamified elements) and found that it significantly increased learners' feelings of confidence and satisfaction. These results support the idea that gamification can supplement the ARCS model to facilitate motivating instruction.

**Taxonomy of intrinsic motivations.** The taxonomy of intrinsic motivations combines the research findings of Malone and Lepper regarding the motivating elements of games, and it identifies internal and interpersonal motivations (Malone & Lepper, 1987). In the paragraphs that follow, I will discuss these categories of the taxonomy and present relevant empirical research informing each type of motivation.

***Internal motivations.*** Internal motivations include challenge, curiosity, control, and fantasy.

*Challenge.* In regards to the individual motivation of challenge, Malone and Lepper (1987) argued an activity must provide clear goals wherein attainment is uncertain and performance feedback that is connected to goal attainment and supportive of learners' self-esteem. Additionally, Malone and Lepper note that the importance of challenge as a motivator is mediated by whether the learner is intrinsically or extrinsically motivated to engage in the task initially. This implies that how one frames an activity—i.e., whether it is a toy or a tool, a game or a task—has a mediating effect on students' motivation. Lieberoth (2015) provided empirical support for this claim when, in a process he termed "shallow gamification" (p. 229), he found that simply framing an activity as a game through language and artifacts was as psychologically effective in increasing intrinsic motivation as using the full game mechanics.

*Curiosity.* The motivator of curiosity can be distinguished into two types: sensory and cognitive (Malone & Lepper, 1987). Sensory curiosity is connected to game aesthetics. Cognitive curiosity, on the other hand, is connected to the ideas of inquiry and the desire for coherence, or what Malone and Lepper refer to as "well-formed cognitive structures" (p. 236). In their study of workplace gamification, Suh and colleagues (2017)

found that participants' aesthetic experience deepened their engagement with gamification and increased feelings of flow.

*Control.* Malone and Lepper connected the idea of control to that of individual's desire for self-determination (Deci & Ryan, 2001) and argued that learning environments need to empower learners through perceptions of control. This perception can be facilitated through contingency (i.e., the idea that one's outcomes are contingent on one's responses), choice, and power.

*Fantasy.* Though often not considered in terms of intrinsic motivation, Malone and Lepper argue that fantasy is a vital contributor to intrinsic motivation. They identify exogenous fantasies (i.e., fantasies that depend on a skill being learned, but not vice versa) and endogenous fantasies (i.e., fantasies wherein the skill and fantasy are mutually dependent). Malone and Lepper contend that endogenous fantasies are more effective because they provide specific constructive feedback, metaphors for understanding concepts, and real-world applications.

Malone and Lepper further explicate fantasy in terms of emotional and cognitive aspects. The emotional aspect is closely tied to the individual's ability to identify with a character. The cognitive aspect, on the other hand, manifests primarily as metaphors and analogies, which help the learner better understand new information connect it to existing schemata. Cognitive fantasies also help learners contextualize and transfer knowledge, as is particularly the case in simulations and role-play.

***Interpersonal motivations.*** Interpersonal motivations include cooperation, competition, and recognition. While these motivators can at times be clearly extrinsic (e.g., a student performing a task for the recognition of the teacher), they can also provide

intrinsic motivation that would not exist without the presence of and interaction with other individuals (Malone & Lepper, 1987). As with fantasy, Malone and Lepper hypothesize that endogenous, or natural, forms of these interpersonal motivators are more motivating than exogenous forms.

*Cooperation.* In order to design learning environments that encourage cooperation, Malone and Lepper stress the importance of distinguishing between independent and dependent units of interaction. Whereas students do not have to depend upon others for completion of independent units (e.g., taking turns spelling words), students must work closely with others for the completion of dependent units (e.g., taking turns providing letters in the spelling of a word).

*Competition.* While exogenous competition can increase motivation temporarily, it may undermine intrinsic motivation over time (Deci & Ryan, 2001; Malone & Lepper, 1987). As with cooperation, endogenous competition can be facilitated through dependent units of interaction. In their recent field study of gamification, Morscheuser, Hamari, and Maedche (2018) found inter-team competition to be more motivating for participants than collaboration or individual competition.

*Recognition.* The final type of intrinsic motivation which Malone and Lepper identify is that of recognition. A prerequisite for learning environments to motivate through recognition is that one's achievements must be visible to others. This can be accomplished through making the process of performing an activity visible (e.g., a recital or performance), making the product of the activity visible (e.g., a work of art displayed in a gallery), or making some other result of the activity visible (e.g., listing names on an

honor roll, displaying badges and medals). In a gamified learning environment, forms of recognition may include elements such as leaderboards, badges, and player artifacts.

## The Development of a Theory of Gamification

While the initial research into gamification suffered from hype, inflated expectations, and many sanguine yet methodologically flawed findings (Dichev & Dichev, 2017; Landers, 2014), more recently the field has matured in terms of rigor and theoretical development (Nacke & Deterding, 2017; Rapp et al., 2018). Scholars (e.g., Landers, 2014) have proposed and developed a theory of gamified learning and designed studies to test and modify this theory (e.g., Huang & Hew, 2018; Sailer et al., 2017). The theory of gamified learning (alternately referred to as the theory of gamified instruction; see Landers & Landers, 2014, p. 769) and affiliated research will be outlined below.

**Theory of gamified learning.** The theory of gamified learning (Landers, 2014; Landers et al., 2017) hypothesizes that game elements function as a mediating or moderating influence on learners. For instance, game elements might directly increase learner engagement, which would indirectly affect learning outcomes. This instructional influence differs from that of serious games, wherein the game itself acts as an instructor to the learner and thereby directly affects learning outcomes (Lander, 2014). As mentioned previously (see Defining Gamification section), Landers (2014) adapts the game attributable taxonomy developed by Bedwell and colleagues (2012) and defines the gamification of learning as the "use of game elements, including action language, assessment, conflict/challenge, control, environment, game fiction, human interaction, immersion, and rules/goals, to facilitate learning and related outcomes" (p. 757). This is important because Landers recommends researchers test these specific attributes (rather

than treat gamification as a unitary construct) in order to determine the effects of game elements when acting as mediating or moderating variables on learning. Landers concludes that researchers must systematically explore the impact of each game element on learning, and combinations of game elements on learning, in order to accurately interpret the effects of gamification.

**Maturation of gamification research.** Subsequent researchers have heeded this call and designed studies to examine game elements individually and in combination, as well as in laboratories and *in situ* settings. While studying individual game elements in isolation may not produce authentic results due to the dynamic interplay of the game elements, the learning environment, and the targeted learning audience (Aldemir et al., 2018), such studies in combination with more authentic research can collectively form a comprehensive body of research guiding instructional designers and practitioners (Landers et al., 2018b). A number of these studies are summarized in Table 2.4 and discussed in further detail below.

Table 2.4 *Studies Empirically Testing the Theory of Gamified Learning*

| Study | Game Element(s) | Methodology | Findings |
|---|---|---|---|
| Huang & Hew (2018) | Badges, challenges, levels, points | Two mixed-methods quasi-experimental designs. Included convenience sample of 21 participants in the first experimental group and 19 in the control group and 25 in the second experimental group and 15 in the control group. Data collected through pre- and post-tests and interviews. | Badges motivated students through goal-setting and informative feedback. Levels of challenges supported feelings of autonomy. This resulted in an increase in student completion of out-of-class activities, increase in quality of student work, and positive student perceptions of gamification. |

| Study | Game Element(s) | Methodology | Findings |
|---|---|---|---|
| | | | Additionally, the study provided initial empirical support for the GAFCC gamification design model. |
| Landers et al. (2017b) | Leaderboards | Experimental design with five groups. Included 240 participants. Data collected through validated goal commitment scale. | Leaderboards motivated participants to set higher goals and increase performance. Goal-setting theory used as framework. |
| Landers et al. (2018a) | Competition | Experimental method (treatment and control). Included 347 participants. Data collected through task performance (i.e., brainstorming) and questionnaires assessing influences of trait competitiveness and intrinsic motivation. | Competition moderately improved task performance. However, performance was not moderated by participants' existing competitiveness or mediated by intrinsic motivation. This suggests that competition motivates primarily through the creation of extrinsic rewards. |
| Landers & Landers (2014) | Leaderboards | Randomized controlled study with experimental and control group. Included 109 participants. Data collected through task performance (i.e., number of edits made to a wiki). | Leaderboards motivated students to increase time on task and engage more often with a learning task. Provides support for mediating process of theory of gamified instruction. |
| Mekler et al. (2017) | Points, leaderboards, levels | 2x4 online experiment. Included 273 participants. Data collected through task performance (i.e., number of tags made to | Game elements did not significantly affect feelings of competence or intrinsic motivation; however, game elements did lead to greater |

| Study | Game Element(s) | Methodology | Findings |
|---|---|---|---|
| | | images) and questionnaires (i.e., Intrinsic Motivation Scale and General Causality Orientation Scale). | performance (i.e., more tags, though not better quality tags). This leads to the conclusion that points, leaderboards, and levels in this context acted as extrinsic motivators to increase performance quantity. |
| Morschheuser et al. (2018) | Competition, cooperation, inter-team competition; badges, experience points, virtual currency | Field experiment testing three versions (i.e., competitive, cooperative, and inter-team competitive) of crowdsourcing application. Included 203 participants that used the application for crowdsourcing and a subset of 170 who complete a survey. Data collected through user behavior in the application and surveys. | Inter-team competitions most effective in increasing engagement and enjoyment. Cooperation perceived more positively than competition. |
| Sailer et al. (2017) | Points, badges, leaderboards, performance graphs, meaningful stories, avatars, teammates | Randomized controlled study with two experimental groups. Included 331 participants. Data collected through questionnaire. | Badges, leaderboards, and performance graphs supported feelings of competence and autonomy regarding task meaningfulness. Avatars, meaningful stories, and teammates supported feelings of relatedness. |
| van Roy & Zaman (2018) | Badges, challenges, group competition | Single-group experimental case study design. Included 40 participants. Data collected through open-ended surveys and focus group interviews. | Game elements that support one need may hinder another (e.g., group competition fostered feelings of relatedness but undermined feelings of competence). Situational |

| Study | Game Element(s) | Methodology | Findings |
|---|---|---|---|
| | | | factors must be considered in the design and implementation of game-based interventions. |

These studies as a whole support the theory of gamified instruction in that they demonstrate how individual game elements and combinations thereof can act as mediating variables in the learning process. For instance, game elements such as badges and leaderboards can motivate students through goal-setting (Huang & Hew, 2018; Landers et al., 2017a; Landers & Landers, 2014). Avatars, narratives, and teams can motivate students through feelings of relatedness (Sailer et al., 2017; Morschheuser et al., 2018). These motivating game elements can, in turn, result in increased performance (Huang & Hew, 2018; Landers et al., 2017a; Landers & Landers, 2014; Morschheuser et al., 2018). However, the effect of gamification and individual game elements are also mediated through a number of situational factors. Depending on the specific context and the perceptions of the gamified elements, gamification can motivate intrinsically or extrinsically (Landers et al., 2018a; Mekler et al., 2017). Likewise, specific game elements such as badges and leaderboards can foster feelings of competence in one context and hinder these feelings in another (Huang & Hew, 2018; Sailer et al., 2017; van Roy & Zaman, 2018). This implies that any effective implementation of a gamified learning system must consider multiple factors, including how individual game elements align with motivational theories and learning goals, how the game elements will interact with and support each other, how learners will perceive game elements (e.g., will points be perceived as rewards or feedback), and how cultural and environmental aspects of the

learning environment will affect the implementation (Aldemir et al., 2018; Hamari, Koivisto, & Sarsa, 2014; Rapp et al., 2018; van Roy & Zaman, 2018).

If the theoretical and scientific advancement of gamification indicates anything, it is that gamification should not be treated as a monolithic construct and that it cannot be naively grafted onto existing instruction; rather, it must be treated as a multifaceted, yet powerful, instructional design approach.

**Summary**

Instructional approaches to gamification can be framed theoretically as behavioral or sociocultural. The behavioral approach to gamified learning emphasizes the incentive aspects of game elements. This approach explains student learning primarily through observed behavior changes produced through schedules of reinforcement. Critics of this approach claim it is exploitative and fails to account for the internal motivations of learners. A sociocultural approach, on the other hand, emphasizes the social and authentic aspects of game elements. This approach explains student learning as a dialectic between learners and their environment. A gamified learning environment is theorized to foster extrinsic and intrinsic motivation. While both types of motivation can increase student learning outcomes, educators typically prioritize intrinsic motivation due to a strong research base indicating it has more longitudinal effects. Intrinsic motivation can be facilitated through a number of factors, including an optimal level of challenge, meaningful choices, social relatedness, etc. Recent work in the field of gamification has resulted in the development of a theory of gamified learning, which posits that gamification as a mediating or moderating variable in affecting learning outcomes. A

number of situational factors must be considered when designing a gamified learning system.

## Evaluating the Impact of Gamification

The purpose of this section is to review relevant research regarding the impact of gamification on intrinsic motivation, academic performance, and learner type. First, I will examine empirical evidence indicating whether gamification has a positive, neutral, or negative effect on motivation and performance. I will then proceed to examine the effect gamification has on different student types, including disaffected students in particular.

### Impact of Gamification on Intrinsic Motivation

Motivation can range on a continuum from extrinsic (i.e., external to the learner) to intrinsic (i.e., internal to the learner) (Deci & Ryan, 2001). Extrinsic motivation can vary in terms of its relative autonomy (van Roy & Zaman, 2017). Whether or not the learner personally identifies with the reasons for doing something (i.e., intrinsic and identified regulations) or sees the reasons for doing something as external and controlling (i.e., introjected or external regulations) has implications for the quality and type of their motivation (Deci & Ryan, 2001; van Roy & Zaman, 2017). In the terminology of SDT, learning tasks that students perceive as supporting feelings of autonomy, competence, and relatedness are more likely to lead to intrinsic motivation; conversely, learning tasks that students perceive as controlling, too easy or challenging, or disconnected from a greater purpose will likely lead to extrinsic motivation or amotivation.

This theoretical understanding may help interpret the empirical results regarding the effect of gamification on intrinsic motivation. The following paragraphs will evaluate

the empirical research on gamification and intrinsic motivation in terms of this theoretical frame, as well as the methodological rigor and findings of the individual studies. I will first present studies indicating gamification has a positive impact on learners' intrinsic motivation. I will then present studies suggesting a neutral or negative effect.

**Studies indicating positive impact.** While early research presented an overwhelmingly positive view of the relationship between gamification and intrinsic motivation (Hamari et al., 2014), a more nuanced view has since emerged (Dichev & Dicheva, 2017). For instance, in a relatively early study, Banfield and Wilkerson (2014) found that their implementation of leaderboards resulted in dramatic increases in student intrinsic motivation and self-efficacy compared to a control group (e.g., 92.5% of students in the treatment group responded in intrinsic motivation themes compared to only 30.5% in the control). However, these findings should be approached with some skepticism due to the exclusive reliance on qualitative data, lack of triangulation, and lack of rich description of the control (i.e., "didactic,") class. Similarly, Hakulinen, Auvinen, and Korhonen (2015) reported that badges motivate students; however, this assertion also relies entirely on students' self-reported data (though it should be noted that mixed methods were used in other parts of the study to ascertain the effects of badges regarding engagement and performance). While the reliance on qualitative data is by no means a fatal limitation to a research study, a more important issue arises in many early studies in that they tend to focus on the question of "does gamification impact intrinsic motivation" rather than "how does gamification impact intrinsic motivation" (Nacke & Deterding, 2017).

***Perceptions of autonomy, competence, and relatedness.*** More recent studies have attempted to answer this latter question, and, in so doing, have presented a more nuanced view of the impact of gamification on intrinsic motivation. For instance, in regards to leaderboards and badges, some studies have indicated that they support feelings of competence, autonomy, and relatedness (i.e., purposefulness) (e.g., Sailer et al., 2017); however, several studies also indicate these game elements have different effects on different types of learners (e.g., Codish & Ravid, 2014; Christy & Fox, 2014; Ding, Er, & Orey, 2018). For instance, extroverted and introverted, male and female, and high, medium, and low achieving students may all perceive game elements such as leaderboards and mechanics differently (the subject of differentiation will be discussed in more detail below; see Impact of Gamification on Learner Types), which in turn leads to different effects on intrinsic motivation.

Indeed, the inference that the intrinsically motivating effect of gamification depends largely on learners' perceptions of game elements is supported in other studies on the impact of gamification on motivation. Çakıroğlu et al. (2017) recently found that, in their implementation of gamification, leaderboards and points were perceived as feedback mechanisms rather than status indicators; they concluded that this enabled these game elements to function as intrinsic motivators, in contrast to other elements in the study such as real gifts. One finds similar conclusions—i.e., that it is the perception of game elements rather than the game elements themselves that matters—in several other empirical studies (e.g., Abramovich et al., 2013; Aldemir, 2018; Ding et al., 2018; Mekler et al., 2013; Mekler et al., 2017; Sailer et al., 2017; van Roy & Zaman, 2018). This highlights the importance of how learners perceive game elements, and specifically

whether they view them as supporting their psychological needs of autonomy, competence, and relatedness.

***Social aspects.*** Perception is likely one key factor in how gamification impacts intrinsic motivation, but it is far from the only factor. Research also indicates that social aspects of gamification can positively impact students' intrinsic motivation (Dominguez et al., 2013; Hamari et al., 2014; Hansch et al., 2015; Knutas et al., 2014; Shi et al., 2014; Smith et al., 2014), though this again can vary depending on student type (Aldemir, 2018; Barata et al., 2017; Christy & Fox, 2014). Specifically, the interpersonal motivators of competition and collaboration seem to play a vital role in how gamification impacts intrinsic motivation. Several studies indicate that learners view competition as intrinsically motivating (Aldemir et al., 2018; Banfield & Wilkerson, 2014; Çakıroğlu et al., 2017). Significantly, research indicates that male students tend to prefer competition over female students (Anderson et al., 2015; Christy & Fox, 2014; Koivisto & Hamari, 2014). These findings lead many researchers to recommend designers strategically balance the social elements of competition and collaboration (Barata et al., 2017; Sánchez-Martín, Cañada-Cañada, & Dávila-Acedo, 2017).

**Studies indicating neutral or negative impact.** Surprisingly, the majority of research studies into gamification and intrinsic motivation presents inconclusive results (Dichev & Dicheva, 2017) and at least one (i.e., Hanus & Fox, 2014) strongly suggests that it has a detrimental impact on students' intrinsic motivation. Besides methodological reasons (e.g., small sample sizes, confounding variables), the reported neutral or negative effects of gamification can largely be attributed to four factors: (a) negative perceptions of competition by some learners, (b) the use of some game elements leading to an

undermining of feelings of competence, (c) the use of extrinsic motivators leading to diminished intrinsic motivation, and (d) the short duration of gamified interventions leading to a novelty effect.

***Negative perceptions of competition.*** While competition can be an effective interpersonal motivator for many (Aldemir et al., 2018; Banfield & Wilkerson, 2014; Çakıroğlu et al., 2017; Malone & Lepper, 1987), research indicates that a significant minority of students do not respond positively to this game element (Aldemir, 2018; de-Marcos et al., 2014; de-Marcos et al., 2016; Dominguez et al., 2013; Kopcha et al., 2016; Sánchez-Martín et al., 2017; Turan, Avinc, Kara, & Goktas, 2016). While trait competitiveness (i.e., participants' disposition towards competition prior to the gamified intervention) may help explain this phenomenon (Landers, 2014; Star, 2015), a recent study attempting to isolate and study the effects of competition as a gamified learning element indicated that there was no moderating effect of competition across learners in the studied activity (Landers et al., 2018). Studies have indicated that the number of students competing can affect the perceptions and effects of competition as a motivator (Garcia & Tor, 2009; Landers et al., 2018). Large numbers of competitors can decrease learner motivation (Garcia & Tor, 2009); however, dividing students into teams and encouraging competition can be an effective way of offsetting this issue (Landers et al., 2018). Ultimately, however, the negative perceptions of competition may be largely attributable to its undermining of feelings of competence, particularly for low-achieving players/students (Barata et al., 2017).

***Feelings of competence undermined.*** Competition is far from the only game element that can potentially undermine learners' feelings of competence. Studies have

indicated that badges and leaderboards can, in some circumstances and with some learners, also have this effect (Christy & Fox, 2015; Ding et al., 2018; Hanus & Fox, 2014; van Roy & Zaman, 2018). For instance, while Ding and colleagues (2018) found that badges served as effective competence and feedback tools for high- and medium-achieving students, they found the opposite to be true for low-achieving students, a result which they speculated to be due to social comparison. This aligns with the findings of Christy and Fox (2015) in which they found leaderboards resulted in negative performance for female participants and concluded this was likely due to stereotype threat and social comparison.

***Feelings of autonomy undermined.*** Game elements such as badges and leaderboards can be perceived as controlling, as has been noted previously in this chapter. Studies indicate that badges given for participation are more likely to be perceived as controlling and thereby undermine intrinsic motivation, whereas badges awarded for specific skills are more likely to be perceived as feedback and recognition mechanisms and thereby support intrinsic motivation (Abramovich, Schunn, & Higashi, 2013; Cruz, Hanus, & Fox, 2017). In a longitudinal study on the effects of gamification on intrinsic motivation, Hanus and Fox (2015) found that while badges and leaderboards initially increased intrinsic motivation, they led to decreases in intrinsic motivation over time. They concluded that the use of extrinsic rewards (e.g., badges and leaderboard) were perceived as controlling and therefore led, over time, to decreases in students' intrinsic motivation.

***Novelty effect.*** Hanus and Fox (2015) revealed a major limitation to many of the extant studies on gamification: the novelty effect. Many studies report increases in

intrinsic motivation; however, the duration of these studies tends to be anywhere from one day to a few weeks (e.g., Fitz-Walker et al., 2017; Kocadere & Çağlar, 2015). This limitation can arguably render the findings of many studies as inconclusive (Dichev & Dicheva, 2017), particularly in the context of longitudinal studies such as Hanus and Fox (2015). This has led many researchers to call for additional studies on the long-term effects of gamification on intrinsic motivation (Alsawaier, 2018; Hew, Huang, Chu, & Chiu, 2016; Mekler et al., 2017).

## Impact of Gamification on Academic Performance

Ultimately, motivation is a means to an end: increasing learning outcomes. The following section will examine the research literature on how gamification impacts academic performance. As with previous sections, I will first review studies indicating gamification positively impacts academic performance. I will then review studies indicating it has a neutral or negative effect.

**Studies indicating positive impact.** The research literature suggests that gamification can positively impact academic performance. Specifically, studies have shown that gamification can increase academic performance in terms of skill and knowledge acquisition.

***Increased skill acquisition.*** Skill acquisition includes procedural knowledge, or the knowledge of how to perform a given task (Kapp, 2012). Studies indicate that gamification can enhance procedural knowledge such as evaluating writing (Tenório, 2016; Tsay et al., 2018). Tenório and colleagues found that undergraduate and secondary students performed better with a gamified peer assessment online learning environment than in non-gamified model. Specifically, their findings indicated that the quality of the

peer writing assessments were comparable to those of the non-gamified group; however, the amount of time it took for students to complete the evaluations was significantly less.

***Increased knowledge acquisition.*** Several studies also indicate that gamification can increase students' knowledge acquisition (Huang & Hew, 2018; Meng & Hew, 2016; Turan, Avinc, Kara, & Goktas, 2016; Yang, Quadir, & Chen, 2016; Yildirim, 2017). Kapp (2012, 2013) argued that gamification is particularly well-suited for facilitating knowledge acquisition because it encourages users to engage in repeated practice. A recent meta-analysis synthesizing gamification research on cognitive, motivational, and behavioral learning outcomes indicated that gamification consistently demonstrated significant albeit small gains in cognitive learning outcomes across a range of studies deemed to have methodological rigor (Sailer & Homner, 2020).

**Studies indicating neutral or negative impact.** While a strong body of evidence exists that gamification increases learning outcomes, there is also a large body of research indicating that gamification does not significantly outperform other teaching methods in terms of academic performance. Additionally, some game elements may encourage students to focus on performance quantity over quality.

***Comparison to other instructional approaches.*** Significantly, some studies have found that game elements have no significant effect on learning outcomes and do not outperform other instructional approaches. For instance, Attali & Arielli-Attali (2015) found that points had no effect on the accuracy of students' responses in a math assessment. De-Marcos et al. (2014, 2016) found that gamification did not outperform traditional e-learning in students' knowledge acquisition in a gamified undergraduate course. Fitz-Walker et al. (2017) found no change in beginning driver behavior, despite

learners' reported enthusiasm with the instructional application. This mirrors the findings of Goehle & Wagaman (2016) in that high school chemistry students enjoyed gamification but did not perform significantly better on a final exam. Hanus & Fox (2015) found that the effects of gamification declined sharply over time and students scored lower on final exam. Finally, Kyewski & Krämer (2018) found that the game element of badges had only a minimal effect on performance at best.

***Performance quantity over quality.*** Though gamification may increase engagement and the quantity of students' performance, it may do so at the price of performance quality. In an image annotating task, Mekler et al. (2017) found that learners tagged significantly more images in a gamified instructional environment; however, the quality of their tags decreased significantly. It is possible that the competitive aspect of the assignment led participants to rush to earn as many points as possible without taking time to ensure the accuracy of their work. Similarly, Dominguez et al. (2013) found that though gamification resulted in increased performance with practical assignments, it concurrently resulted in a decrease in students' performance on writing assignments. This implies that care must be taken in the design of a gamified learning environment to ensure that students are focused on the quality of their work and not just the goal of winning (e.g., through speedy responses and the accumulation of points and other rewards).

## Impact of Gamification on Learner Types

Just as not everyone learns the same way, not everyone plays a game the same way. Therefore, it is crucial to understand one's students in the design of a gamified learning environment. It is also crucial understand how different types of students react

to and perceive gamification as an instructional approach. The following section will examine research on the identification of player types, learners' perceptions of gamification, and the relationship between gamification and disaffected students in particular.

**Identification of player/learner types.** Much of the research and design of gamified learning systems relies upon the early research of Bartle (1996) into player types. Bartle classified players into four types: Achiever, Explorer, Socializer, and Killer. He also referred to each type as Diamonds, Explorers, Hearts, and Clubs, respectively. Though these categories are not mutually exclusive—i.e., an Achiever can share traits of a Killer—Bartle contended that players tended to favor one type of play over another (Kapp, 2012). Achievers tend to set game-related goals (e.g., accumulating treasure, defeating the enemy, earning a high score, being on top of the leaderboard). Explorers, on the other hand, primarily want to discover as much as possible about the game (e.g., following various storylines, discovering secrets hidden within the game). Socializers use the game to communicate and interact with other players (e.g., greeting new players, connecting through the game environment). Finally, Killers seek to impose upon other players by wreaking havoc, destroying, or zealously offering help.

While Bartle's taxonomy can provide a useful framework when considering player types in a gamified learning environment, it does not necessarily answer the question of how different types of students learn in such an environment. In regards to this question, the work of Barata, Gama, Jorge, and Gonçalves (2014, 2017) has been illuminating. In two separate studies, Barata and colleagues attempted to identify student types in a gamified learning experience. Their classification of student types is based on

student achievement rather than type of play. In the first study (2014), they identified three types of students: the Achievers, the Disheartened, and the Underachievers. In the second study (2017), they revised the taxonomy to include six groups: the Achievers, the Regulars, the Late-Awakers, the Disheartened, the Half-hearted, and the Underachievers.

Like Bartle's Achievers, Barata et al.'s Achievers focused on having the most points and badges and outperformed all other students. The Regular student-type only emerged in third year of Barata et al.'s study, after changes had been implemented to diversify game elements, encourage quality of discussion posts over quantity, and encourage collaboration. Regulars were the largest and second best performing group of students. While they did not perform as well as the Achievers, they performed above average and perceived the gamified instruction as more motivating and engaging than normal courses. A third group was the Half-hearted, who also emerged in the third year of the study. These students tended to perform slightly below-average and participate unoften. The data collected in the study indicated that these students were not engaged with the course and did not find the game elements particularly game-like. The fourth group of students, the Disheartened, performed at a level similar to the Achievers during the first weeks of the course but soon declined to slightly below-average performance levels. The fifth group of students were termed the Late-Awakers; they demonstrated the reverse of the Disheartened in that they began the course underperforming, but then demonstrated an increase in performance. This group found the course to be competitive and motivating. Finally, the Underachievers consistently stayed at the bottom of the leaderboard and had the lowest number of points. They had the lowest final grade in the course as well and did not participate often. While they self-reported the course to be

interesting and motivating, their responses to the formal assessment scale the researchers administered indicated they had a low level of engagement.

**Learners' perceptions of gamification.** As the work of Bartle (1996) and Barata et al. (2014, 2017) demonstrates, different students experience gamification in different ways. Additional studies have revealed that students with different personality types (e.g., introverted vs. extraverted) and learning preferences (e.g., global vs. sequential) tend to have different perceptions of gamification. For instance, studies indicate that extraverted students to have more positive perceptions of gamification than introverted students (Buckley & Doyle, 2017; Codish & Ravid, 2014). Likewise, active and global learners tend to react more positively to gamification than passive or sequential learners (Buckley & Doyle, 2017).

**Gamification and disaffected students.** Gutteridge (2002) identified several observational criteria teachers have used to identify students as disaffected, including off-task behavior, lack of preparation for class, lack of interest in grades, submission of substandard work, and delaying tactics used to avoid work. In their study, Nutall and Doherty (2014) operationalized disaffected students as those whom teachers observed "displaying aggressive and disruptive behaviours and an apathy to learning" (p. 802). Disaffected students have also been operationalized as students who have dropped out (Wiklund, Mozelius, Norberg, & Westin, 2014), students with frequent disciplinary issues (Graham, Van Bergen, & Sweller, 2015), and students engaging in risky behavior (Cowan, 2012). Additional studies have linked disaffected students to the concept of being at-risk due to economic or social inequality or minority status (Cremen, Mason, Busher, 2011; Lumby, 2012).

Within the field of motivation, disaffection has been conceptualized as the opposite of engagement (Skinner et al., 2009) and the reflection of "maladaptive motivational states" (Skinner et al., 2008, p. 767). Disaffection, in this sense, is the outward display or result of an inward process (e.g., deterioration of intrinsic motivation). While motivation and psychological need fulfillment are facilitators of engagement/disaffection (Furrer & Skinner, 2003; Patrick, Skinner, & Connel, 1993), indicators of disaffection include behavioral (e.g., disruptive behavior, disengagement) and emotional (e.g., boredom, anxiety, frustration) factors (Skinner et al., 2009; Skinner, 2016).

Little research currently exists on how disaffected students in particular perceive and react to gamification, though one may argue that disaffected students may fit the disheartened students type Barata et al. (2017) describe. Another possible fit is the work of Davis and Singh (2015). In their study, they explored "the opportunities and challenges associated with implementing a digital badge system that awards high school credit for students' participation in a network of afterschool programs serving youth from low income, immigrant backgrounds" (p. 74). As a result of their study, they found that students saw potential in the game elements of badges as an instructional tool; however, the particular implementation of the badge system needed more participant awareness and understanding and more credibility and recognition within the community. Nevertheless, they found that the badges did help motivate and empower students. These findings indicate that gamification may be an effective means of motivating students who may feel disaffected or marginalized; however, active participation and inclusion for the students may be required to see the full realization of the gamified intervention.

## Chapter Summary

Gamification is a relatively new concept but one that has quickly evolved and matured into a field of study. Gamification can be defined as the use of game elements in a non-game context. The gamification of learning occurs when game elements are used to facilitate learning outcomes. Game elements range from abstract dynamics such as competition and collaboration to concrete interface components such as points and avatars. While gamification often is implemented according to behavioral learning approaches, a sociocultural approach is more effective in terms of facilitating intrinsic motivation and long-term learning outcomes. Gamification functions primarily through increasing learner motivation. Research indicates that gamification can positively impact learners' intrinsic motivation, engagement, and academic performance; however, gamification is a multifaceted concept and careful analysis and consideration of the interaction between learners, the learning environment, and game elements must be considered to fully understand the effect of gamification on learning.

# CHAPTER 3

# METHOD

The purpose of this study was to evaluate the impact of gamification on the intrinsic motivation and academic performance of students disaffected from ELA at SHS. Three questions guided the study:

1. How does gamification affect the intrinsic motivation of students disaffected from high school ELA?
2. Does gamification affect the academic performance of students disaffected from high school ELA?
3. What recommendations can students offer after reflecting on their experiences with gamification?

This chapter details the study's (a) research design, (b) setting, (c) participants, (d) innovation, (e) data collection, (f) procedures, and (g) rigor and trustworthiness. It concludes with a (h) plan for sharing and communicating findings.

## Research Design

Given the aims of this study and my own embeddedness in the research setting, I determined that action research was the best approach. This approach enabled me to work alongside my research participants in order to effect real change within my sphere of influence (Mertler, 2017). Through systematic inquiry grounded in a localized setting, action research fulfills both Dewey's (1971) notion of teachers as reflective practitioners and Freire's (1975) concept of educators engaged in "praxis: reflection and action upon

the world in order to transform it" (p. 51). Accordingly, by using action research to study the effects of gamification, I hoped to improve my own teaching methods and share this knowledge with fellow educators in order to better address the issues of student motivation and performance.

Lewin (1946) originally formulated the concept of action research as a cyclical process involving several iterations of planning, acting, and evaluating. More recently, Mills and Butroyd (2014) described action research as a four-phase cycle involving the identification of an area of focus, collection of data, development and implementation of a plan of action, and evaluation leading to the next research cycle. In an educational setting, action research may be broadly defined as any systematic inquiry conducted by educators in order to better understand and improve their school environment or instructional methods (Cochran-Smith & Lytle, 1993; Mertler, 2017; Mills & Butroyd, 2014).

Action research is markedly different from more traditional forms of scientific inquiry. The purpose of action research is to enact change at a local level, not test theories or produce generalizable findings (Mertler, 2017; Mills, 2018). Given its embeddedness in real-world environments, it is not conducive to experimental designs with strictly controlled variables (Mertler, 2017; Mills, 2018). The lead researcher is by necessity also a participant in the study; it is not possible or even desirable, therefore, for him or her to maintain objective distance from the other research participants.

None of this implies, however, that action research lacks rigor. Mills and Butroyd (2014) described action research as a "rigorous approach….that helps [educators] make sense of the apparent randomness and frustrations associated with teaching and learning"

(pp. 4-5). Action research requires a rigorous review of related research, analysis of multiple data, and a meticulous accounting of the lead researcher's potential biases. While the findings of an action research study are not generalizable, its process may be; thus, it is necessary to closely document its research phases and details (Lawson, 2015).

In an attempt at comprehensively understanding the research problem, I supplemented the action research approach with a convergent parallel mixed methods design. According to Creswell (2014), a convergent parallel mixed methods design allows for a comprehensive understanding of the research phenomena. Specifically, in this design, the researcher collects both quantitative and qualitative data "at roughly the same time and then integrates the information in the interpretation of the overall results" (Creswell, 2014, p. 15). By collecting multiple pieces of evidence and focusing on a limited number of participants, I was able to triangulate my findings in order to gain a more comprehensive, deep, and credible interpretation of the research phenomena. This enabled me to work with my students clearly and systematically to better understand and, hopefully, improve the learning environment.

## Research Setting

This study occurred in my Fall 2019 English 4 ELA courses at SHS. The research setting can be understood through a description of its (a) learner context, (b) instructional objectives, and (c) technological affordances.

The learners in this course were 11$^{th}$ and 12$^{th}$ grade students enrolled in English 4. Students in English 4 at SHS are untracked (i.e., not grouped according to academic history or post-graduation plans) and demonstrate a wide range of pre-existing abilities, academic records, and future plans. For instance, the range of unweighted GPAs (i.e., on

a uniform 4.0 scale) for students in all three sections of my Fall 2019 course was 1.333 to 3.917 with a mean of 2.914. Scores on the most recent ELA section of the Preliminary Suite of Assessments Test (PSAT) for students enrolled in the course ranged from 15 to 27 (Enrich, 2019). Three students received special education accommodations through an Individualized Education Plan (IEP) or 504 Plan. Eight students received English as a Second Oral Language (ESOL) accommodations. While several students expressed an intent to enroll into a two- or four-year college or university after graduation, many other students stated plans to enter directly into the workforce or enlist in the military. This wide variety of academic histories and future plans directly related to the instructional objectives for the course.

The instructional objectives for this course were based on the State College and Career Readiness Standards (SCCRS) for ELA, which are divided into five categories or strands: inquiry-based literacy, reading literary texts, reading informational texts, ELA writing, and ELA communication. Moreover, the instructional objectives for this course were informed by the State Portrait of a College- and Career-Ready ELA Student, which included the following six criteria: academic success and employability, interdependent thinking and collaborative spirit, intellectual integrity and curiosity, logical reasoning, self-reliance and autonomy, and effective communication. These objectives aligned, on paper at least, with students' future goals and aspirations; however, the achievement of the objectives depended, in part, on the availability of resources (e.g., technology affordances) in the learning environment.

The technology affordances for this course included hardware and software. The classroom included a touchscreen Promethean Board and two traditional white boards.

Due to CSD's student laptop initiative, all students enrolled in the course had their own laptops, which they could use at school and home. All students had regular internet access at school, and, for students without regular home access to the internet, the CSD published a list of free Wi-Fi hotspots and the SHS library provided a limited number of portable hotspots available for student check-out. For its learning management system (LMS), SHS used Schoology (2019), which supported some gamification elements (e.g., badges and unlocked levels). Additional gamification elements (e.g., leaderboards, avatars) were available through a variety of Web 2.0 tools students could potentially access via their laptops and internet connections.

## Participants

Participants in the study included students purposefully selected from the Fall 2019 English 4 courses described above. In total, 70 students were enrolled in the three sections of the course. Within the first two weeks of the semester, I administered the Engagement versus Disaffection Student Self-Report survey (EvsD; Skinner et al., 2009; Appendix B) to identify students who may be disaffected from high school ELA and thereby eligible for the study. Students whose composite scores ranked in the lower half of the survey results were deemed potentially eligible for the study. From this list of potential participants, I reviewed school records, including attendance, behavioral, and academic data. This helped me further narrow the list of potential participants. For instance, truancy and discipline issues are indicators of disaffection (Gutteridge, 2012; Skinner et al., 2009); however, students who are frequently absent or assigned to alternative school due to behavioral issues may not have been sufficiently present for the study. Based on the school records, three students were removed from the list of

potential participants due to frequent absences. This resulted in a total of 32 students deemed eligible for the study. I subsequently distributed assent and consent forms to these students and briefed them on the purpose of the study. Ultimately, 19 students returned signed assent and consent forms (see Appendix C) and were included as participants in the study. Table 3.1 summarizes demographic data for these participants.

Table 3.1 *Summary of Participant Demographics*

| Gender | | Race/Ethnicity | | | | GPA | | Accommodations | | EvsD | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| M | F | AA | H | NA/H | W | Mean | Range | IEP/504 | ESOL | Mean | Range |
| 8 | 11 | 4 | 1 | 2 | 12 | 2.85 | 1.87-3.92 | 1 | 3 | 4.06 | 2.7-4.75 |

*Note.* $N = 19$. Race/ethnicity abbreviations include African-American, Hispanic, Native American/Hispanic, and White. GPAs reported on an unweighted 4.0 scale. EvsD responses recorded using a 7-point Likert scale.

While all participants involved in the study were invited to participate in the three focus group interviews (see Data Collection section below), 11 participants ultimately attended at least one session. Table 3.2 includes demographic data for these participants.

Table 3.2 *Focus Group Participant Demographics*

| Participant | Gender | Race/Ethnicity | Focus Group Session(s) Attended |
|---|---|---|---|
| Helen | F | NA/H | 1, 3 |
| Jasmine | F | AA | 1, 3 |
| Anna | F | W | 1, 3 |
| Maria | F | H | 1, 2 |
| Jason | M | W | 1, 2, 3 |
| Jamar | M | AA | 1, 2 |
| Sarah | F | W | 1 |
| Steven | M | W | 2 |
| Robert | M | W | 2, 3 |
| Lucy | F | W | 2 |
| Elizabeth | F | NA/H | 2 |
| Rebecca | F | W | 3 |

*Note.* $N = 11$. Pseudonyms are used for participants' names.

## Innovation

The innovation for this study was a gamified instructional unit for high school ELA. Guiding the design of this unit was the belief that gamefully designed instruction (i.e., gamification) is essentially "situated, embodied, problem-based learning" (Gee, 2011, p. ix). In order to avoid the negative impact of gamification on intrinsic motivation indicated in prior studies (e.g., Hanus & Fox, 2015), I favored content over structural gamification (Hudiburg, 2016; Kapp, 2013) in the unit's design. In the unit, students worked in teams to create and present research-based arguments on books related to the themes of protest and censorship. Reflecting its thematic focus, the unit was titled Voices of Protest and the gamified research project (described in detail below) was referred to as the Voices of Protest Project. Throughout the unit, students not only read novels but also works from a variety of literary genres (e.g., poetry, essay, film, speech). The game elements of (a) narrative, (b) role-play, (c) teamwork, and (d) challenge were incorporated throughout the unit's design and are described in further detail below. All instructional materials unless otherwise noted were hyperlinked in the assignment instructions and posted directly to the LMS.

### Narrative

The game element of narrative fosters a sense of cohesion in gamified learning experiences (Aldemir, 2018) and fosters the transfer of knowledge (CGTV, 1990). As the inciting incident for the narrative anchoring the instruction, students were presented with a letter addressed to the SHS principal (see Appendix G). In the letter, the fictitious group Citizens for Morality raised objections to five novels in the SHS library. These objections included allegations of obscenity and controversial political content.

Accordingly, the group demanded that the offensive books be removed from the school library and all classroom curricula. The books included Sherman Alexie's (2007) *The Absolutely True Diary of a Part-time Indian,* Jason Reynolds and Brandon Kiely's (2017) *All American Boys,* Angie Thomas's (2017) *The Hate U Give,* Matt de la Peña's (2010) *Mexican Whiteboy*, and Courtney Summer's (2009) *Some Girls Are*.

After using the letter to establish the anchoring narrative, I informed students that the school board had scheduled a meeting to hear opposing arguments and vote on whether the books merited censorship. I then relayed a message from the school principal requesting students' help in reading the books, researching the books' allegedly controversial content, making an informed argument regarding the proposed censorship of the books, and then presenting their arguments at the school board meeting in order to persuade school board members.

It should be noted that while the premise for this narrative was fictional, each of these books had in fact been banned or challenged recently within the state or country (Flood, 2018; Martinez, 2012; NCAC, 2015; Williams, 2014). These acts of censorship had been based on objections to the books' content, which included addressing issues such as racial profiling and police brutality. Therefore, the events in this narrative and the skills needed to successfully complete the learning objectives (e.g., conducting research, composing arguments, communicating ideas persuasively) were designed to be connected in an endogenous relationship. This was significant given the research indicating that skills and fantasies tied together in an endogenous relationship tend to be perceived as intrinsically motivating (Malone & Lepper, 1987).

As the climatic event in the narrative, students presented their arguments in a mock school board meeting. This low-risk and authentic scenario in the narrative was designed to resolve the narrative and provide students with an opportunity to synthesize and transfer the skills they have developed (Gee, 2007). The mock school board meeting occurred in the SHS library and began with a fictional letter from the school superintendent (Appendix G). The agenda for the mock school board meeting included the following: (a) opening statement from the superintendent, (b) student presentations, (c) question and answer session, and (d) school board vote. Though no school board members actually attended, the school's principal and an assistant principal made brief appearances to observe students' arguments. These administrators, along with the school librarians and I, played the role of school board members listening and evaluating the merits of students' arguments. Additionally, students themselves adopted roles as various stakeholders within the district listening to and evaluating the merits of each team's arguments.

**Role-play**

Role-play enables immersive learning experiences (Jagoda et al., 2015) wherein learners adopt alternate personas. This adoption of alternate personas encourages the development of "projective identities" (Gee, 2007, p. 50)—i.e., identities players negotiate between their real-world and character identities within a game—potentially beneficial to a learner's self-concept (Daniau, 2016; Gee, 2007; McGonigal, 2015). In this unit, students role-played in three different ways. First, they role-played while conducting research and writing arguments for their novels. To facilitate this role-play, I distributed instructions for a Team Work Roll Call assignment (Appendix G). This

assignment prompted students to choose unique roles and responsibilities as they worked with their teams. These roles included chief editor, detective, journalist, market researcher, and professor. The purpose of this assignment was two-fold: (a) to facilitate interdependent teamwork (discussed in further detail below) and (b) encourage the adoption of academic personas.

Students also role-played in a specific activity related to the books they read. During each level (i.e., module) of the gamified instruction, students completed activities designed to facilitate discussion and analysis of their books. As a culminating activity for this aspect of instruction, students performed a talk-show activity (Appendix G) wherein they interviewed the characters in their novels and indirectly communicated important literary elements (e.g., characterization, conflict, theme). The purpose of this activity was also two-fold: (a) to facilitate a synthesis of students' analysis of their novels and (b) to prepare students for the public speaking aspects of the mock school board meeting.

As the culminating activity for the research project and the unit as a whole, students role-played during the mock school board meeting. Prior to the activity, I distributed the School Board Role Sheet (Appendix G) and game chips of various colors. Each chip also had a number (one or two) written on it. The color of the game chip determined what role a student would adopt while other teams presented. These roles included various stakeholders within the district: parent, student, teacher, administrator, and concerned citizen. The number of the chip, meanwhile, determined whether the student in his or her imagined role would be in favor of or against censorship prior to the meeting. Once students had determined their roles and positions, they created names and backstories for their characters and explained reasons for the characters' position on the

issue of censorship. The purpose of this task was to prompt students to consider the viewpoints of various stakeholders in order to enhance their argumentative and communicative thinking skills (Kuhn, 2019; Styslinger & Overstreet, 2014). While students were given a position on censorship prior to the meeting, they were encouraged to listen to the arguments of other teams and evaluate the persuasiveness of the arguments based on their characters' concerns and values.

**Teamwork**

Teamwork involves collaborating with other individuals to achieve a shared goal (Driskell et al., 2018; Mathieu et al., 2017). In the gamified instructional unit, students worked in teams to read and discuss books, conduct research on topics related to their books, create arguments based on their reading and research, and present their arguments to persuade various stakeholders in a mock school board meeting. This type of teamwork involved a high level of interdependence, which research indicates is a particularly effective form of collaboration and interpersonal motivation (Malone & Lepper, 1987; Morschheuser et al., 2018). To facilitate collaboration among group members, I distributed the Team Work Roll Call (Appendix G) assignment described above. While students generally shared responsibilities for all tasks, this assignment was designed to give each team member a specialized focus (e.g., editing, persuading, researching) so that team members would have designated individual responsibilities and need to dependent upon each other for successful completion of each challenge. Students worked in teams to complete every challenge in the instructional unit.

Additionally, teams were formed based on shared interests rather than personal affections or the discretion of the teacher. During the first week of the unit, students

participated in a book pass activity (Daniels & Steincke, 2004; Gallagher & Kittle, 2018) in which they rated their interest in each of the five book selections. Depending on the availability of each title, students received their first or second highest rated choice. Students then formed teams based on the book they received. In this sense, the teams operated as "affinity groups" (Gee, 2007, p. 27), which Gee has likened to communities of practice (Lave & Wenger, 1991) in that they are based on shared interests and enable the sharing of knowledge and enculturation of new members. In other words, the teams were designed so that they were based on students' interests (i.e., the books they rated as most interesting) and facilitated the construction and sharing of knowledge (e.g., through daily discussion and interaction).

Lastly, during the Team Work Roll Call activity, which students completed within the first week of instruction, students worked with their teams to negotiate a team name. This team name was posted on the whiteboard and became the reference for the team throughout the unit. This task was intended to help each team foster a sense of identity, which research indicates is important to the overall effectiveness of teamwork (Faiella & Ricciardi, 2015).

**Challenge**

The game element of challenge—when appropriately difficult and well-structured (Csikszentmihalyi, 1975; Vygotsky, 1978)—motivates learners to work towards a goal (Malone & Lepper, 1987). The instructional content for this unit was organized into levels, missions, and challenges. These gameful design terms correlated roughly to the more traditional terminology of instructional modules, learning activities, and evaluative activities (Sheldon, 2011). The four challenges—forming research questions, creating an

annotated bibliography, writing an argumentative letter, and presenting arguments—required students to work collaboratively with their teammates. Students were presented with each challenge at the beginning of its respective level; in this sense, the challenges acted as initiating projects (Grant, 2002; Tamim & Grant, 2013) within the larger Voices of Protest Project and helped situate and contextualize students' learning. The levels functioned primarily as scaffolding devices and were designed to structure instruction and give students a sense of accomplishment as they progressed through the unit (Alsawaier, 2018). The missions, lastly, were intended to fulfill Gee's (2007) principle of "explicit information on-demand and just-in-time" (p. 226) and were designed to provide students with instructional scaffolding as they completed the challenges. Table 3.3 displays the alignment of levels, missions, and challenges in the Voices of Protest instructional unit.

Table 3.3 *Alignment of Levels, Missions, and Challenges*

| Levels (Instructional Modules) | Missions (Learning Activities) | Challenges (Evaluative Activities) |
|---|---|---|
| Level 1: The Poetry of Protest | • Mission 1 (choose books and negotiate reading schedules)<br>• Mission 2 (read poem and form research questions)<br>• Mission 3 (read poem and create research presentation) | • Challenge #1 (Research Questions) |
| Level 2: The Story of Protest | • Mission 4 (evaluate the credibility of websites)<br>• Mission 5 (navigate databases and library catalog)<br>• Mission 6 (read narrative essay and create bibliography entry) | • Challenge #2 (Annotated Bibliography) |
| Level 3: The Speech of Protest | • Mission 7 (read speech and delineate argument) | • Challenge #3 (Argumentative Letter) |

| | | |
|---|---|---|
| | • Mission 8 (view film and analyze rhetoric) | |
| Level 4: Speaking Out | • Mission 9 (present talk-show activity for books) | • Challenge #4 (Argumentative Presentation) |

## Data Collection

The study utilized three data sources in order to answer the research questions (a) how does gamification affect the intrinsic motivation of students disaffected from high school ELA, (b) does gamification affect the academic performance of students disaffected from high school ELA, and (c) what recommendations can students offer after reflecting on their experiences with gamification? These data sources were triangulated in order to gain a comprehensive and accurate interpretation of each question (Creswell, 2014; Mertler, 2017; Mills, 2018). Table 3.4 provides an overview of the research questions and data sources. Specifically, these data sources included (a) the Argumentative Research Skills Assessment, (b) focus group interviews, and (c) the Intrinsic Motivation Inventory. Each of these sources will be described in further detail below.

Table 3.4 *Research Questions and Data Sources*

| Research Questions | Data Sources |
|---|---|
| RQ1: How does gamification affect the intrinsic motivation of students disaffected from high school ELA? | ● Focus group interviews<br>● Intrinsic Motivation Inventory |
| RQ2: Does gamification affect the academic performance of students disaffected from high school ELA? | ● Argumentative Research Skills Assessment |

| | |
|---|---|
| RQ3: What recommendations can students offer after reflecting on their own experiences with a gamified curriculum? | • Focus groups interviews |

**Argumentative Research Skills Assessment**

The Argumentative Research Skills Assessment (ARSA) was self-designed to assess students' content knowledge regarding research and argumentative writing skills and determine whether gamification affected participants' academic performance. The ARSA was administered before and after the instructional innovation in a pretest-posttest design. The test included 25 multiple-choice items, and each test item included four answer selections. To check the content validity of the test, I had two experienced colleagues in the English Department at my school review the test and provide feedback regarding the test items. Each item on the test was aligned with SCCRS for ELA and the instructional objectives of the gamified instructional unit. Table 3.5 depicts the alignment of learning objectives, SCCRS for ELA, and test items. A copy of the test is included in Appendix E.

Table 3.5 *Alignment of Learning Objectives and Test Items*

| Learning Objective (Students will be able to…) | Test Items |
|---|---|
| Identify relevant topics and form effective research questions | 4, 5, 6, 8, 11, 14 |
| Gather information from a variety of sources; evaluate for validity and bias; and summarize information objectively | 1, 2, 3, 7, 9, 10, 12, 13, 15 |
| Cite sources to avoid plagiarism and strengthen the credibility of one's writing | 22, 23, 24, 25 |
| Identify rhetorical elements | 16, 17, 18, 19, 20, 21 |

## Focus Group Interviews

Focus group interviews were conducted to gather information on how gamification affected participants' intrinsic motivation and what recommendations participants could offer regarding gamification. Focus group interviews allow researchers to listen to a range of participants in a relatively short amount of time (Morgan, 2008) and typically include no more than 10 to 12 individuals per session (Mertler, 2017).

This study included three focus group interviews. The interviews were scheduled, respectively, during the first, third, and fifth weeks of the instructional innovation. Each interview took place in my classroom during students' one-hour lunch and free period and included between five and eight participants. During the interview sessions, I facilitated the discussion and ensured that each participant was provided with opportunities to share his or her perspective (Mills, 2018). In order to ensure the accuracy of the data, I took notes during the interviews, recorded the sessions on multiple devices (i.e., laptop and phone), and transcribed the interviews within three days. These measures helped me capture nonverbal gestures of participants and ensure their voices were recorded clearly and audibly. Protocol and questions for each of the three focus group interviews are included in Appendix F.

## Intrinsic Motivation Inventory

Changes in motivation were measured quantitatively through an analysis of participants' responses to the Intrinsic Motivation Inventory (IMI; Ryan, 1982) before and after the innovation. The IMI is a multidimensional measurement device based on SDT, and it is primarily used to assess participants' subjective experience related to

activities in laboratory experiments (Deci, Eghrari, Patrick, & Leone, 1994; Plant & Ryan, 1985; Ryan, 1982; Ryan, Mims, & Koestner, 1983). The standard version of the IMI includes 22 items divided into four subscales: interest/enjoyment, perceived choice, perceived competence, and pressure/tension (Deci et al., 1994; Plant & Ryan, 1985; Ryan, 1982; Ryan et al., 1983; SDT, n.d.). The interest/enjoyment subscale of the IMI is considered the self-report measure of intrinsic motivation (Deci et al., 1994; Plant & Ryan, 1985; Ryan, 1982; Ryan et al., 1983; SDT, n.d.). The perceived choice and competence subscales are theorized to positively predict behavioral and self-report measures of intrinsic motivation, while the felt pressure and tension subscale is theorized to negatively predict intrinsic motivation (Deci et al., 1994; Plant & Ryan, 1985; Ryan, 1982; Ryan et al., 1983; SDT, n.d.).

Items on the IMI are often slightly modified to fit specific activities (Ding et al., 2018; Hanus & Fox, 2015; McAuley, Duncan, & Tammen, 1987). IMI items for this study were modified to reflect students' attitudes towards the gamified research project. For instance, the item "I tried very hard to do well at this activity" was changed to "I tried very hard to do well with this research project" (SDT, n.d.). Likewise, the item "I found this activity interesting" was modified to "I found this research project interesting." Each item was rated with 7-point Likert-type scale ranging from (1) *Not at all true* to (7) *Very true*. The IMI is included in Appendix D.

The IMI was chosen for this study because it has been used in numerous studies related to intrinsic motivation and self-regulation (e.g., Deci et al., 1994; Plant & Ryan, 1985; Ryan, 1982; Ryan et al., 1983) as well as gamification (e.g., Ding et al., 2018; Hanus & Fox, 2015; Lieberoth, 2015; Mekler et al., 2017). McAuley, Duncan, and

Tammen (1987) performed a study to evaluate the reliability and validity of the IMI and found strong support for each. In their study, McAuley and colleagues used an 18-item version of the IMI and modified the items to indicate the task was a basketball game (e.g., "While playing this basketball game, I was thinking about how much I enjoyed it," p. 51). Using Cronbach's alpha test, McAuley and colleagues found the IMI to be internally consistent and reliable: the coefficient of the interest/enjoyment subscale was .78, the perceived competence subscale was .80, the effort subscale was .84, and the pressure-tension subscale was .68. The results of their confirmatory factor analysis indicated that the fit indices for the hierarchical model and the first order model were negligible, which allowed the researchers to conclude that the IMI "measures both specific components of intrinsic motivation, as well as reflecting the overall levels of intrinsic motivation one experiences as a function of engaging in the task" (p. 55). Given its reliability and validity at measuring intrinsic motivation, the IMI was deemed an appropriate instrument to use in the present study.

## Data Analysis

Data were analyzed using quantitative and qualitative methods. Table 3.6 displays the alignment between research questions, data sources, and methods of analysis. A full description of the analytical methods is provided in Chapter 4.

Table 3.6 *Research Questions, Data Sources, and Methods of Analysis*

| Research Questions | Data Sources | Methods of Analysis |
|---|---|---|
| How does gamification affect the intrinsic motivation of students disaffected from high school ELA? | • Intrinsic Motivation Inventory<br>• Focus group interviews | • Descriptive statistics<br>• Paired t-tests<br>• Inductive analysis |
| Does gamification affect the academic performance of | • Argumentative Research Skills Assessment | • Descriptive statistics |

| | | |
|---|---|---|
| students disaffected from high school ELA? | | • Paired t-tests<br>• Correlation tests |
| What recommendations can students offer after reflecting on their experiences with gamification? | • Focus group interviews | • Inductive analysis |

## Procedures and Timeline

This action research study occurred in the Fall 2019 semester at SHS and included the following three phases: (a) Participant Identification and Initial Data Collection, (b) Implementation and Continued Data Collection, and (c) Data Analysis and Evaluation. Each of these phases is outlined in Table 3.7 and described in detail below.

Table 3.7 *Action Research Procedures and Timeline*

| Phases of the Study | Researcher Procedures | Participant Procedures | Timeline |
|---|---|---|---|
| Phase I: Participant Identification | ● Collect and analyze demographic and historical ELA performance data<br>● Identify potential participants<br>● Distribute and collect consent and assent forms<br>● Select participants | ● Complete IMI pretest<br>● Return signed consent and assent forms | 2 weeks |
| Phase II: Implementation and Data Collection | ● Administer IMI pretest<br>● Administer ARSA pretest<br>● Facilitate Focus Group Interviews 1-3<br>● Administer ARSA posttest<br>● Administer IMI posttest | ● Complete ARSA pretest<br>● Participate in Focus Group Interviews 1-3<br>● Complete ARSA posttest<br>● Complete IMI posttest | 5 weeks |
| Phase III: Data Analysis and Evaluation | ● Conduct inductive analysis of focus group interviews | ● Participate in member checking | 6 weeks |

| | |
|---|---|
| | • Conduct descriptive and inferential analysis of ARSA and IMI pretest-posttests |

**Phase I: Participant Identification**

The first phase of the research project began within the second week of the Fall 2019 semester and focused on the identification and selection of participants. During the second week of the semester, I administered the EvsD (Appendix C) to all students in my English 4 courses. Students whose scores ranked in the lower half of the survey results were deemed potentially eligible for the study. I then distributed assent and consent forms (Appendix C) and explained the purpose and requirements of the study to these potential participants. Participants were given at least one week to return the signed forms and elect to participate in the study. A total of 19 students qualified and elected to participate in the study.

**Phase II: Implementation and Data Collection**

The second phase of the research project included the implementation of the innovation and the collection of data. This phase of the research spanned six weeks. On the two days prior to the start of the instructional innovation, participants took the IMI and ARSA pretests, which were posted on the course LMS. During the first week of instruction, participants met for the first focus group interview. During the third week of instruction, participants met for the second focus group interview. Participants met for the third focus group interview during the fifth and final week of instruction. On the last day of the instructional unit, participants took the posttest ARSA and IMI, which were again posted on the course LMS.

### Phase III: Data Analysis and Evaluation

Once all data had been collected and the instructional innovation had been completed, the study moved into the data analysis and evaluation phase. This phase took six weeks to complete and included the analysis of qualitative and quantitative data and member checking. Inductive analysis (Creswell, 2014), constant comparative methods (Glaser, 1978), and thick, rich descriptions (Merriam, 1998) were used to identify and interpret emergent themes from the focus group interview transcripts. Descriptive and inferential statistics were used to interpret and determine the significance of participants' pretest-posttest responses to the ARSA and IMI. Due to the COVID-19 pandemic and resulting school closures, findings were emailed to participants in a form of member checking.

## Rigor and Trustworthiness

Qualitative research not only relies on different data collection and analysis methods from quantitative research; it relies on different philosophical approaches (Creswell, 2014; Mills, 2018). Guba (1981) rejected the positivist terminology of validity and reliability, instead arguing that the trustworthiness of qualitative research could be established by addressing credibility, transferability, dependability, and confirmability. Creswell (2014) provided a further distancing from the positivist paradigm, arguing for the use of a variety of "validity strategies" (p. 201) in qualitative research. Following Creswell's framework, this study used multiple validity strategies to ensure rigor and trustworthiness. Specifically, the study used the following four validity strategies: (a) triangulation, (b) member checking, (c) peer debriefing, and (d) the maintenance of an audit trail.

## Triangulation

The use of multiple data, commonly known as triangulation, is essential to the trustworthiness of educational research (Hubbard & Powers, 2003; Mills, 2018). This study used data from focus group interviews, an established survey measurement of intrinsic motivation (i.e., the IMI), and a teacher-created measurement of academic performance (i.e., the ARSA). Each set of data provided a specific perspective on the research phenomenon, and, collectively, the data was aggregated to provide a comprehensive and accurate understanding of the research phenomenon. Furthermore, the different types of data were used to corroborate or provide new insights into the interpretation of individual sets of data and the research phenomenon as a whole. While data were triangulated to answer the first research question, the second and third research questions were limited to one source of data.

## Member Checking

Allowing the participants in a study to verify the account of the data is vital to ensuring the trustworthiness of a qualitative study (Creswell, 2014; Harper & Cole, 2012). Though I had initially planned to conduct member checking in an on-campus session during the Spring 2020 semester, the closing of the school due to the COVID-19 outbreak necessitated that the debriefing take place online. After completing the data analysis, I emailed a summary of the study's findings to all participants. These findings were summarized briefly in text and displayed in a table (see Table 4.8).

## Peer Debriefing

The peer debriefing process entails having an expert review the methods used in the study (Creswell, 2014; Mertler, 2017; Mills, 2018). Throughout the research process,

I engaged in frequent dialogues and consultations with my dissertation chairperson. This enabled me to reduce any biases and ensure the trustworthiness of my findings. The study was also critiqued and reviewed by the dissertation committee members.

### Audit Trail

Qualitative researchers can further ensure the trustworthiness of their study by maintaining an accurate audit trail, which can be reviewed by an outside expert not familiar with the researcher or the study (Creswell, 2014). Yin (2014) advised that qualitative researchers create a database documenting their procedures and protocol so that others may replicate the procedures in their own contexts and situations. In the present study, I used Google Drive to maintain a digital audit trail. Copies of all the collected data and instruments were stored in this database, which is available for auditing.

## Plan for Sharing and Communicating Findings

Though the primary purpose of action research is to understand and improve one's professional practice, there are several benefits for sharing the results of action research to a larger audience. Efron and Ravid (2013) identify the importance of sharing one's findings with colleagues and students in one's own school in order to encourage reflective practice. Mertler (2017) noted that one of the major aims of action research is to bridge the gap between theoretical researchers and practicing educators. While the results of my action research will certainly benefit myself and the students involved, sharing the research process can benefit the school and district at large, as well as other schools and districts within the state and region (Efron & Ravid, 2013; Lawson, 2015). Thus, it is imperative to form a plan for sharing and communicating findings.

Most immediately, I will share my research experience and findings with the participants and parents of participants in my study. This will require careful planning and thorough communication in language the students can easily comprehend. I intend to share these results both orally through a presentation and in writing through a brief report summarizing my findings. Ideally, I will have students who participated in the research co-present these findings. The presentation of these research results can take place at the research site at a time convenient to parents and students.

Less immediate stakeholders in the research will also need to be informed of the findings. This includes colleagues within the English Department at SHS, fellow teachers at SHS and other schools within the district, and administrative staff at the school and district level. It may also include educational professionals at local, state, and regional conferences, such as the State Teachers of English Conference, the Upstate Technology Conference, and the National Council of Teachers of English Conference. I intend to share the results of my research via a presentation, be it a poster presentation or more formal presentation. The presentation can be constructed via PowerPoint and enhanced with videos, photos, and other artifacts from the research. To maintain the interest of my audience and effectively communicate my findings, I will summarize my major points in a handout accompanying the presentation.

When sharing the results of a study conducted within a high school environment, one must be cautious not to violate the ethical principles of privacy and respect for individuals (U.S. Department of Health and Human Services, 1979). To ensure that the privacy of my participants is protected when presenting my findings locally (i.e. within the school and district), I will avoid using students' actual names and clearly

communicate and receive parental permission for any students who may co-present the research findings. When presenting outside of the school district, I will take these precautions as well as mask the identity of the school and district as needed. All of this will be discussed and approved with my school principal prior to any form of presentation or publication.

# CHAPTER 4

# ANALYSIS AND FINDINGS

The purpose of this action research was to evaluate the impact of gamification on the intrinsic motivation and academic performance of students disaffected from ELA at SHS. Data were collected from tests of instructional content, self-report surveys of intrinsic motivation, and focus group interviews in order to answer the following questions:

1. How does gamification affect the intrinsic motivation of students disaffected from high school ELA?
2. Does gamification affect the academic performance of students disaffected from high school ELA?
3. What recommendations can students offer after reflecting on their experiences with gamification?

Analysis will begin with the findings from the two quantitative instruments. Qualitative findings for the three focus group interviews will then follow.

## Quantitative Analysis and Findings

Quantitative data collected in the study included participants' (a) scores on the teacher-created Argumentative Research Skills Assessment (ARSA) and (b) responses to the Intrinsic Motivation Inventory (IMI; Ryan, 1982). All analyses of this data were conducted using JASP (Version 0.11.1; 2020), an open-source statistical analysis software program supported by the University of Amsterdam.

**Argumentative Research Skills Assessment**

The ARSA (Appendix E) was self-designed and created prior to the instructional innovation. As described in Chapter Three, the ARSA assessed students' content knowledge regarding research and argumentative writing skills. The test included 25 multiple-choice items worth one point each. Each item included four answer selections. To check the content validity, two experienced colleagues in the ELA Department at SHS reviewed the test and provided feedback regarding specific test items. Due to an absence during the pretest administration, only 18 participants were included in the analysis of the ARSA.

**Descriptive statistics.** Table 4.1 displays the descriptive statistics for the ARSA pretest-posttest. Participants' scores on the pretest ranged from 5 to 23 with a mean of 9.17 and a standard deviation of 4.20. After the posttest was administered, the lowest score increased by 6 points to 11, while the highest score did not change. The mean score on the posttest increased 7.72 points to 16.89 with a standard deviation of 2.78. An increase in the mean score on the posttest suggests that participants improved after experiencing the gamified instructional innovation.

Table 4.1 *Descriptive Statistics for the ARSA*

| | *M* | *SD* | Range |
|---|---|---|---|
| Pretest | 9.17 | 4.20 | 5-23 |
| Posttest | 16.89 | 2.78 | 11-23 |

*Note*. $N = 18$. Maximum score on ARSA = 25

**Inferential statistics.** After running a Shapiro-Wilk test to check for data normality, I conducted a paired t-test to determine the significance of the observed difference in pretest-posttest scores. An alpha level of .05 was used to determine

statistical significance. The paired t-test indicated that participants scored significantly higher on the posttest assessment of content knowledge ($M$ = 16.89, $SD$ = 2.78) than they scored on the pretest ($M$ = 9.17, $SD$ = 4.20), $t(17) = -8.55$, $p < .001$. Table 4.2 displays the results of this analysis.

Table 4.2 *Summary Results of Paired t-test on ARSA*

| | Pretest | Posttest | $t(17)$ | $p$ |
|---|---|---|---|---|
| *M* | 9.17 | 16.89 | -8.55 | <.001 |
| *SD* | 4.20 | 2.78 | | |

*Note*. $N$ = 18. Maximum score on ARSA = 25.

**Intrinsic Motivation Inventory**

The IMI (Appendix D) was administered before and after the instructional innovation in order to measure changes in participants' intrinsic motivation. The IMI is a multidimensional measurement device based on SDT (Deci et al., 1994; Plant & Ryan, 1985; Ryan, 1982; Ryan et al., 1983) and includes 22 items divided across four subscales: interest/enjoyment, perceived competence, perceived choice, and tension/pressure. The interest/enjoyment subscale is considered the self-report measure of intrinsic motivation (Deci et al., 1994; Plant & Ryan, 1985; Ryan, 1982; Ryan et al., 1983) and includes seven items. The remaining subscales are theorized to predict behavioral and self-report measures of intrinsic motivation (Deci et al., 1994; Plant & Ryan, 1985; Ryan, 1982; Ryan et al., 1983) and include five items each. All items were rated with a 7-point Likert-type scale ranging from (1) *Not at all true* to (7) *Very true.* For the present study, the reliability of the IMI was tested using the posttest data ($n$ = 19). Reliability was determined by coefficient alpha (Cronbach, 1951). Because Cronbach's alpha frequently underestimates the internal consistency of subscales with less than 10 items (Herman,

2015; Schmitt, 1996), mean inter-item correlations were also calculated and reported with optimal values ranging from .15 to .50 indicating satisfactory internal consistency. Internal consistency for the four subscales was found to adequate with the alpha coefficient and mean inter-item correlation for each of the following subscales shown in parentheses: interest/enjoyment (α = .92/.61), perceived competence (α = .69/.31), perceived choice (α = .78/0.41), and tension/pressure (α = .50/.21).

**Descriptive statistics.** Table 4.3 provides descriptive statistics for each subscale of the IMI. Mean and median scores for the interest/enjoyment and perceived competence subscales on the posttest were between (4) *Somewhat True* and (7) *Very True*. The interest/enjoyment subscale on the pretest had the largest amount of variance (*SD* = 1.20); however, this variance declined during the posttest (*SD* = 1.07). The perceived choice subscale had the lowest mean and median scores for the pretest and, despite increasing, remained low on the posttest relative to the other measures. The mean and median scores for each of the subscales increased from the pretest to the posttest, except for those of the tension/pressure subscale, which is theorized to be a negative predictor of intrinsic motivation.

Table 4.3 *Descriptive Statistics for the IMI*

| Subscale | Pretest | | Posttest | |
|---|---|---|---|---|
| | *M* (*SD*) | *Mdn* | *M* (*SD*) | *Mdn* |
| Interest/ Enjoyment | 3.69 (1.20) | 3.71 | 4.50 (1.07) | 4.71 |
| Perceived Competence | 4.35 (1.05) | 4.20 | 5.30 (0.72) | 5.20 |
| Perceived Choice | 3.06 (1.12) | 2.80 | 3.52 (1.11) | 3.60 |

| | | | | |
|---|---|---|---|---|
| Tension/ Pressure | 3.78 (0.67) | 3.80 | 3.23 (0.80) | 3.20 |

*Note.* $N = 19$.

**Inferential statistics.** After normality tests (i.e., Shapiro-Wilk) indicated normal distribution for each subscale of the IMI, paired t-tests were used to compare participants' pretest and posttest responses. Since four tests were conducted on the same sets of data, a Bonferroni correction was calculated to prevent possible bias of repeated testing effects (i.e., Type I errors). Accordingly the desired alpha significance level of .05 was divided by four, which resulted in p-values less than or equal to .0125 being considered significant. The results of these paired t-tests are shown in Table 4.4.

The paired t-tests demonstrated significant results for two of the four subscales. First, the analysis of the interest/enjoyment subscale indicated that participants responded significantly higher on the posttest survey ($M = 4.60$, $SD = 1.07$) than on the pretest ($M = 3.69$, $SD = 1.20$), $t(18) = -3.75$, $p < .001$. Second, the analysis of the perceived competence subscale indicated that participants responded significantly higher on the posttest survey ($M = 5.30$, $SD = 0.72$) than on the pretest ($M = 4.35$, $SD = 1.05$), $t(18) = -3.76$, $p < .001$. Third, the analysis of the perceived choice subscale indicated that participants did not respond significantly higher on the posttest survey ($M = 3.52$, $SD = 1.11$) than on the pretest ($M = 3.06$, $SD = 1.12$), $t(18) = -2.31$, $p = .033$. Lastly, the analysis of the felt tension/pressure subscale indicated that participants did not respond significantly lower on the posttest survey ($M = 3.23$, $SD = 0.80$) than on the pretest ($M = 3.78$, $SD = 0.67$), $t(18) = 2.35$, $p = .031$.

Table 4.4 *Summary Results of Paired t-tests on IMI*

| Subscale | | Pretest | Posttest | *t*(18) | *p* |
|---|---|---|---|---|---|
| Interest/ Enjoyment | *M* | 3.69 | 4.60 | -3.75 | < .001 |
| | *SD* | 1.20 | 1.07 | | |
| Perceived Competence | *M* | 4.35 | 5.30 | -3.76 | < .001 |
| | *SD* | 1.05 | 0.72 | | |
| Perceived Choice | *M* | 3.06 | 3.52 | -2.31 | .033 |
| | *SD* | 1.12 | 1.11 | | |
| Tension/ Pressure | *M* | 3.78 | 3.23 | 2.35 | .031 |
| | *SD* | 0.67 | 0.80 | | |

*Note.* $N = 19$.

**Correlation statistics.** Because gamification is theorized to act as a mediating or moderating influence on academic performance (Landers, 2014), a correlation test was run to determine if a relationship exisited between the variables of intrinsic motivation and academic performance. A Pearson *r* was calculated between each of the IMI measures and the ARSA scores. The perceived competence subscale had a slight positive correlation with the ARSA posttest and the remaining subscales negatively correlated with the ARSA posttest; however, none of the correlations were significant. Table 4.5 depicts the results of this test.

Table 4.5 *Correlations between IMI Subscales and ARSA Posttest*

| Subscale | Pearson *r* | *p* | 95% CI |
|---|---|---|---|
| Interest/ Enjoyment | -.17 | .502 | [-0.59, 0.32] |
| Perceived Competence | .15 | .562 | [-0.34, 0.57] |
| Perceived Choice | -.35 | .153 | [-0.70, 0.14] |

| | | | |
|---|---|---|---|
| Tension/ Pressure | -.34 | .167 | [-0.70, 0.15] |

*Note.* $N = 18$.
* $p < .05$

## Qualitative Analysis and Findings

Qualitative data were collected from three focus group interviews conducted with participants at the beginning, middle, and end of the instructional innovation. Focus group interviews were recorded, digitally transcribed, and then imported into CAQDAS for analysis. Through the process of inductive analysis (Creswell, 2017; Mertler, 2017), 139 unique codes were identified and then subsequently refined into categories and emergent themes. Table 4.6 summarizes this data and enumerates the codes generated from each transcript. In the sections below, I will describe the process of qualitative analysis used to identify categories and themes for these data. I will then proceed to a comprehensive presentation of the findings for these data.

Table 4.6 *Summary of Qualitative Data Sources*

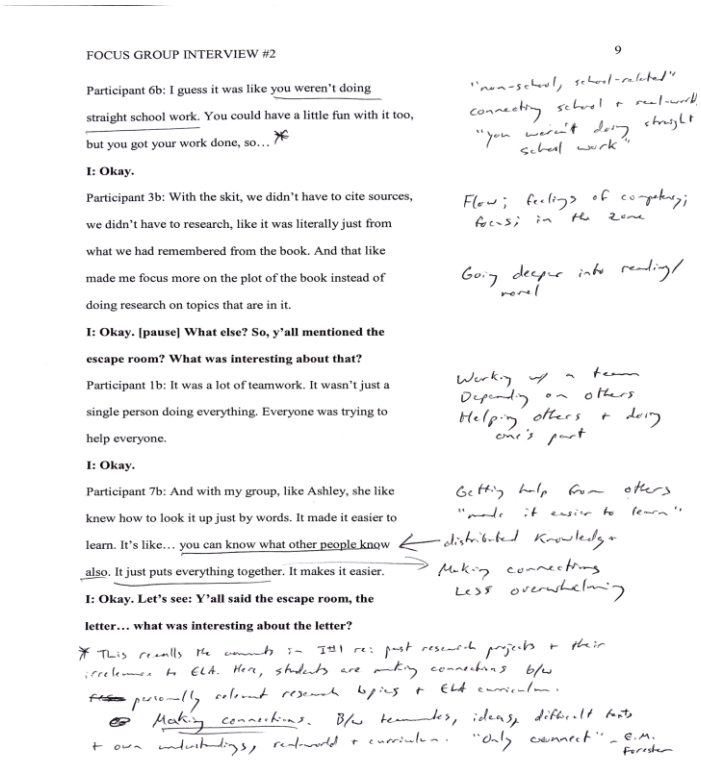
| Focus Group Interview | Number of Codes |
|---|---|
| Interview 1 | 36 |
| Interview 2 | 35 |
| Interview 3 | 67 |

### Qualitative Analysis

The focus group interviews were digitally recorded and then manually transcribed. I audio recorded the three focus group interview sessions using two devices: a personal cell phone and school-issued laptop. This helped ensure not only that sessions would be recorded if one device malfunctioned but also that all participants' voices were clear and audible. During the interviews, I took notes in my researcher's journal. Within

three days following each interview, I personally transcribed the audio recording into Microsoft Word. These steps helped ensure the accuracy of the data (Mertler, 2017; Morgan & Guevara, 2008a) and also enabled me the opportunity to become "immersed in the data, an experience that usually generates emergent insights" (Patton, 2002, p. 441). The transcription of the focus group interviews yielded 38 pages and with a total word count of 8,286.

After initially transcribing each interview, I printed and read the transcription while relistening to the audio file. These steps further ensured the accuracy of the transcription and the emergence of patterns and categories in the initial phases of inductive analysis (Creswell, 2017; Patton, 2002; Saldaña & Omasta, 2017). To facilitate the emergence of these patterns and categories, I wrote analytic memos in the margins of each printed transcript (Creswell, 2014, 2017; Saldaña, 2016).


FOCUS GROUP INTERVIEW #2

9

Participant 6b: I guess it was like you weren't doing straight school work. You could have a little fun with it too, but you got your work done, so… *

"non-school, school-related"
connecting school + real-world
"you weren't doing straight school work"

**I: Okay.**

Participant 3b: With the skit, we didn't have to cite sources, we didn't have to research, like it was literally just from what we had remembered from the book. And that like made me focus more on the plot of the book instead of doing research on topics that are in it.

Flow; feelings of competency; focus; in the zone

Going deeper into reading/ novel

**I: Okay. [pause] What else? So, y'all mentioned the escape room? What was interesting about that?**

Participant 1b: It was a lot of teamwork. It wasn't just a single person doing everything. Everyone was trying to help everyone.

Working w/ a team
Depending on others
Helping others + doing one's part

**I: Okay.**

Participant 7b: And with my group, like Ashley, she like knew how to look it up just by words. It made it easier to learn. It's like… you can know what other people know also. It just puts everything together. It makes it easier.

Getting help from others
"made it easier to learn"
distributed knowledge +
Making connections
Less overwhelming

**I: Okay. Let's see: Y'all said the escape room, the letter… what was interesting about the letter?**

* This recalls the comments in IW1 re: past research projects + their irrelevance to ELA. Here, students are making connections b/w personally relevant research topics + ELA curriculum.

Making connections. B/w teammates, ideas, difficult texts + own understandings, real-world + curriculum. "Only connect" - E.M. Forester

*Figure 4.1.* Analytic memos written in the margins of a printed transcript.

I then imported the transcripts into the CAQDAS program Delve (2019) for analysis through coding. At the early stages of the coding process, I used attribute coding methods to record basic descriptive information about my participants and setting (e.g., participant demographics, time and date of interview) and structural coding methods to organize the content of the transcripts according to interview and research questions (Saldaña, 2016). In addition to helping me organize the data, these methods further immersed me in the analytic process and facilitated the emergence of insights which would become more apparent through the subsequent processes of initial and focused coding.

Initial coding entails assigning provisional codes to data in a preliminary and open-ended analysis (Charmaz, 2014; Saldaña, 2016). In this first cycle of coding, I read through the data closely (i.e., line by line) and assigned process and in vivo codes. Process coding uses gerunds to capture actions (Saldaña, 2016). For instance, I assigned the process code "connecting literature to current events" nine times throughout the inductive process to capture participants' active linking of the curriculum and the world outside of the school building. While I could have used a descriptive code such as "authentic connections" for this same data, this may have neglected important processes leading to potential categories and themes (Glaser, 1978; Charmaz, 2014; Saldaña, 2016).

In vivo coding, on the other hand, uses the actual words of participants and can be helpful in prioritizing participants' voices (Charmaz, 2014; Saldaña, 2016). I used this type of coding method to capture salient phrases from participants and ensure their voices were included in the analytical process. For instance, when participants described the situated experience of role-play as making school projects "non-school, school-related"

and “less heavy,” I used in vivo codes to capture these salient phrases. These phrases captured the important insights regarding how role-play specifically and gamification generally eased the stress and tension participants indicated they normally experienced with challenging assignments. Using participants’ own words helped prevent their meanings from being distorted or diluted and ensured their voices were present in the analytic process.

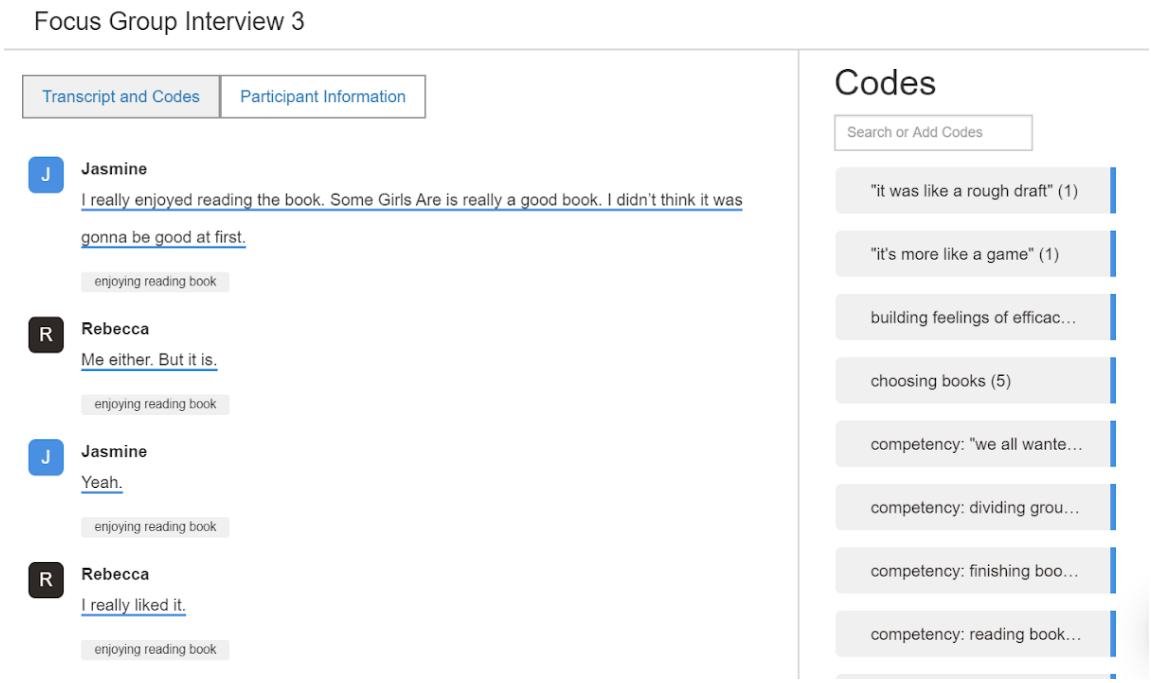
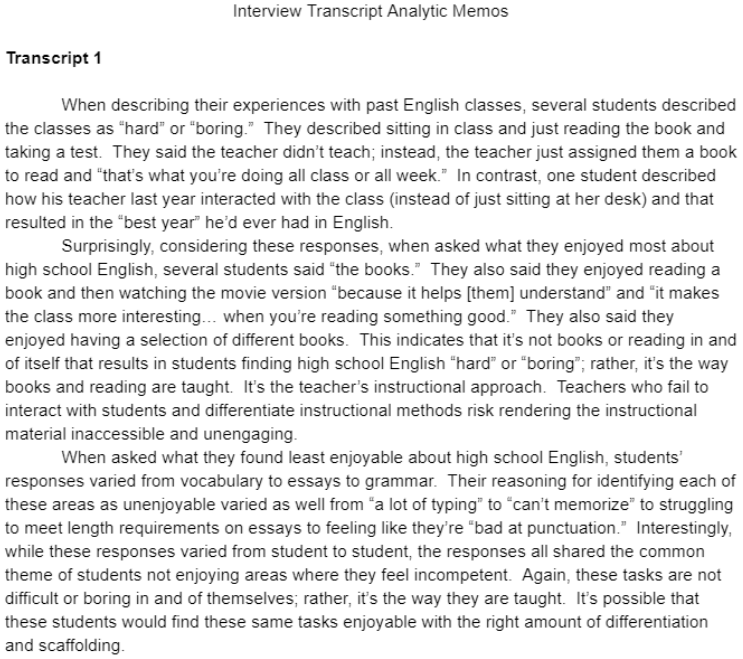



*Figure 4.2.* Screenshot of initial coding in Delve.

Saldaña (2016) notes that “coding and analytic memo writing are concurrent qualitative data analytic activities” (p. 44). Throughout the coding process, I composed memos within Delve (2019), but I also jotted down memos elsewhere (e.g., in my researcher’s journal) whenever an “ah-ha” moment occurred (Saldaña, 2016, p. 45). For instance, as I finished coding each individual transcript, I used Google Docs to compose a summative memo. These memos helped me determine what ideas recurred and were significant in each interview and across the interviews as a whole.



Interview Transcript Analytic Memos

**Transcript 1**

When describing their experiences with past English classes, several students described the classes as "hard" or "boring." They described sitting in class and just reading the book and taking a test. They said the teacher didn't teach; instead, the teacher just assigned them a book to read and "that's what you're doing all class or all week." In contrast, one student described how his teacher last year interacted with the class (instead of just sitting at her desk) and that resulted in the "best year" he'd ever had in English.

Surprisingly, considering these responses, when asked what they enjoyed most about high school English, several students said "the books." They also said they enjoyed reading a book and then watching the movie version "because it helps [them] understand" and "it makes the class more interesting… when you're reading something good." They also said they enjoyed having a selection of different books. This indicates that it's not books or reading in and of itself that results in students finding high school English "hard" or "boring"; rather, it's the way books and reading are taught. It's the teacher's instructional approach. Teachers who fail to interact with students and differentiate instructional methods risk rendering the instructional material inaccessible and unengaging.

When asked what they found least enjoyable about high school English, students' responses varied from vocabulary to essays to grammar. Their reasoning for identifying each of these areas as unenjoyable varied as well from "a lot of typing" to "can't memorize" to struggling to meet length requirements on essays to feeling like they're "bad at punctuation." Interestingly, while these responses varied from student to student, the responses all shared the common theme of students not enjoying areas where they feel incompetent. Again, these tasks are not difficult or boring in and of themselves; rather, it's the way they are taught. It's possible that these students would find these same tasks enjoyable with the right amount of differentiation and scaffolding.

*Figure 4.3.* Summative analytic memo composed in Google Docs.

By its very definition, initial coding is provisional and open. While assigning initial codes, I attempted to avoid using preexisting categories or concepts and instead move quickly through the data, code with words that reflect actions, and make comparisons between codes (Charmaz, 2014; Corbin & Strauss, 1990; Glaser & Strauss, 1967). However, the provisional nature of initial coding also necessitates revisions (Charmaz, 2014). Prior to advancing to second cycle coding, I used analytical memos to facilitate reflection on the codes, reread the transcripts with codes, and made revisions to the wording of codes as necessary. The initial cycle of coding generated 139 unique codes across all three transcripts. Many of these codes, however, were nearly identical to other codes and only differed in phrasing. For instance, a review of the initial codes revealed three instances each of the codes "sharing responsibility for teamwork" and

"sharing responsibility for team." These codes were revised and consolidated since they conveyed the same meaning.

Due to the overwhelming number of codes generated during initial coding, I found it helpful to use concept mapping strategies (Saldaña, 2016) to visualize and efficiently organize the codes. To accomplish this, I exported the codes from Delve to Microsoft Word. I then printed and separated the codes into strips of paper, which I spread on a table and began grouping into rough categories. This process yielded 20 initial groupings. However, through comparisons between groups (Corbin & Strauss, 1990), I was able to refine and consolidate the groupings into twelve broader groupings. For instance, the initial groupings included hearing other viewpoints, enjoying group work, sharing responsibility, learning from observing other groups, distributing knowledge/skills, and getting to know team members. All of these groups, however, involved collaborating with peers and were consequently consolidated into that category. The twelve consolidated groupings included interacting with the teacher, collaborating with peers, role-playing, feedback, connecting research topics to real life, enjoying reading books, establishing instructional rationale, scaffolding and differentiating instruction, streamlining tasks, creating reading schedules, feeling overwhelmed, and enjoying gamification.

After the first cycle of coding, I was ready to transition into a second cycle using the method of focused coding (Charmaz, 2014; Saldaña, 2016). Focus coding requires that the researcher select significant codes to develop into categories. This involves considering which initial codes occurred most frequently or provided the most analytical insight regarding the research questions (Charmaz, 2014; Corbin & Strauss, 1990). In

essence, the grouping process described above initiated the process of focused coding: it prompted me to consider which codes occurred most frequently and significantly and helped me notice patterns in the data. Using the twelve groupings listed above as focused codes, I reviewed the transcripts and ensured each segment of data had been properly categorized. This process helped me continue to make comparisons across groupings in order to refine the emerging categories.

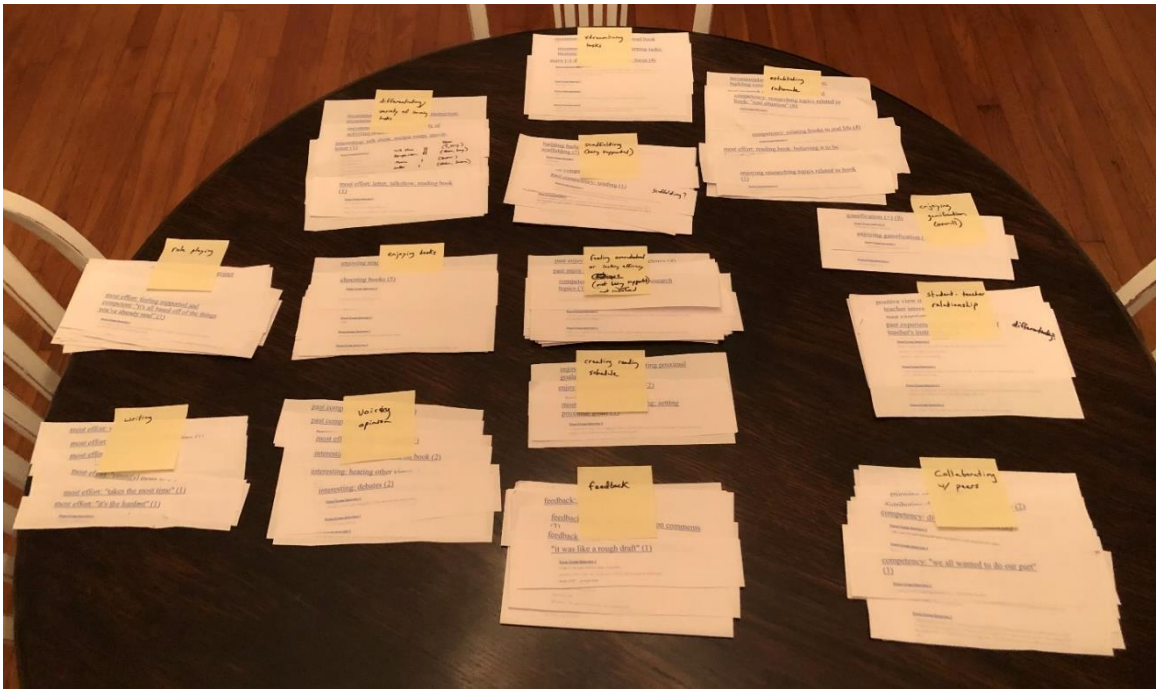



*Figure 4.4.* Grouped codes.

I found it necessary to revise the labeling of some categories in order to be more precise in capturing participants' meanings and connecting those meaning to the research questions guiding the analysis. For instance, the label *role-playing* did not provide much information about the data contained within the category. What was the effect of role-playing? How did it affect students' experiences with instruction? After reviewing the data, I relabeled this grouping *situating learning in narrative and role-play* and divided it into two separate categories based on how role-play operated: *lowering psychological*

*stakes* and *making authentic connections.* Likewise, the grouping *collaborating with peers* was split into two separate categories: *developing team identities through shared responsibilities* and *distributing knowledge*.

I also began to winnow data not relevant to the research questions (Creswell, 2014, 2017). For instance, the category labeled *enjoying gamification* included data indicating participants' positive perceptions of the gamified instruction as a whole. While this data certainly indicated that participants found the instruction to be intrinsically motivating (i.e., enjoyable), it did not provide useful insight into how gamification affects intrinsic motivation. In other words, it addressed *whether* gamification affects intrinsic motivation instead of *how*. Consequently, I eliminated this data from the refined groupings.

This stage of the analysis also involved consolidating categories into larger groupings, which facilitated the emergence of broad themes in the data. Categories such as *distributing knowledge* and *improving performance through informative feedback* were subsumed under the broader category of *building knowledge through interaction* because comparisons between the data revealed that participants found both types of interactions (i.e., peer and teacher interactions) to be supportive of their understanding and mastery of instructional material. Likewise, I consolidated the categories *creating reading schedules* and *enjoying reading books* into the single category *providing choice in instructional content and pacing* since they both pertained to the presence of choice in instruction (i.e., students chose their books and created their own reading schedules).

Once I had made these revisions to the categories, I developed a codebook which included focus codes (e.g., *lowering psychological stakes*), definitions (e.g., any evidence

describing reduced feelings of pressure or tension during instruction), and examples excerpted from the interviews and illustrating the application of the code. A codebook can be useful for increasing interrater reliability (Creswell, 2017); though I conducted my analysis without a co-researcher, the codebook helped me ensure the accuracy of my analysis. For instance, as I engaged in an additional cycle of coding, I used the codebook to ensure each segment of data had been properly coded. This development of the codebook also helped me clarify each of the focused codes, which would become the categories supporting the themes emerging from the analysis. Furthermore, the development of a codebook became part of the audit trail for my study and a tool for outside researchers to verify the results of my analysis. Table 4.7 provides an excerpt from the codebook.

Table 4.7 *Examples of Codebook Entries*

| Code | Definition | Example |
|---|---|---|
| Distributing knowledge | Any evidence referring to sharing knowledge or skills within or across teams. | "It's like… you can know what other people know also." |
| Lowering psychological stakes | Any evidence describing reduced feelings of pressure or tension during instruction. | "I feel like it makes the project a lot less heavy. It seemed like you were just acting out something…" |

In order to examine and clarify the relationships between these regrouped, refined, and consolidated categories, I engaged in the process of theoretical coding (Charmaz, 2014; Corbin & Strauss, 1990; Saldaña, 2016) which involved additional memo-writing and diagramming. I examined and organized previously composed memos and created new memos summarizing and synthesizing my previous insights.

Through the careful examination and reflection of memos, two themes began to emerge: (a) *supporting competency* and (b) *hindering competency*. For instance, participants indicated they enjoyed *distributing knowledge* because it made the instructional tasks easier (i.e., supported competency). Likewise, participants indicated they enjoyed role-play and narrative because by *lowering psychological stakes* it reduced feelings of anxiety or pressure (i.e., supported competency). When participants identified aspects of the instruction they did not enjoy (e.g., reading a difficult speech), the responses indicated it was because they did not feel supported.

I created diagrams or "graphics-in-progress that illustrate the central/core category and its related processes" (Saldaña, 2016; see Figure 4.5). This helped me visualize and further clarify the relationships between the categories and emergent themes. As a result of these processes, I arrived at the assertion that *for students disaffected from high school ELA there is a direct correlation between feelings of competency and intrinsic motivation*. This assertion aligned with findings in previous research on intrinsic motivation (Ryan & Deci, 2020).

Throughout the analysis process, I engaged in regular peer debriefing sessions with a faculty advisor (i.e., my dissertation chair). Based on his recommendations, I made significant revisions to my analysis to ensure my process was, indeed, inductive rather than deductive, and to verify the emergent categories and themes. For instance, during a preliminary cycle of analysis, my advisor questioned whether I relied too heavily upon self-determination theory in the development of themes, which suggested that my process had been deductive rather than inductive. After reflecting on these comments, I engaged in the subsequent cycles of coding described above. These cycles of coding

resulted in new categories and themes, which emerged from inductive analysis rather than a priori categories.

Lastly, to ensure the accuracy of the analysis, I created a table summarizing the qualitative findings (see Table 4.8) and emailed this table along with a written summary to all participants in the focus group interviews. This form of member checking allowed participants to provide any feedback or changes and ensure their experiences had been accurately interpreted.

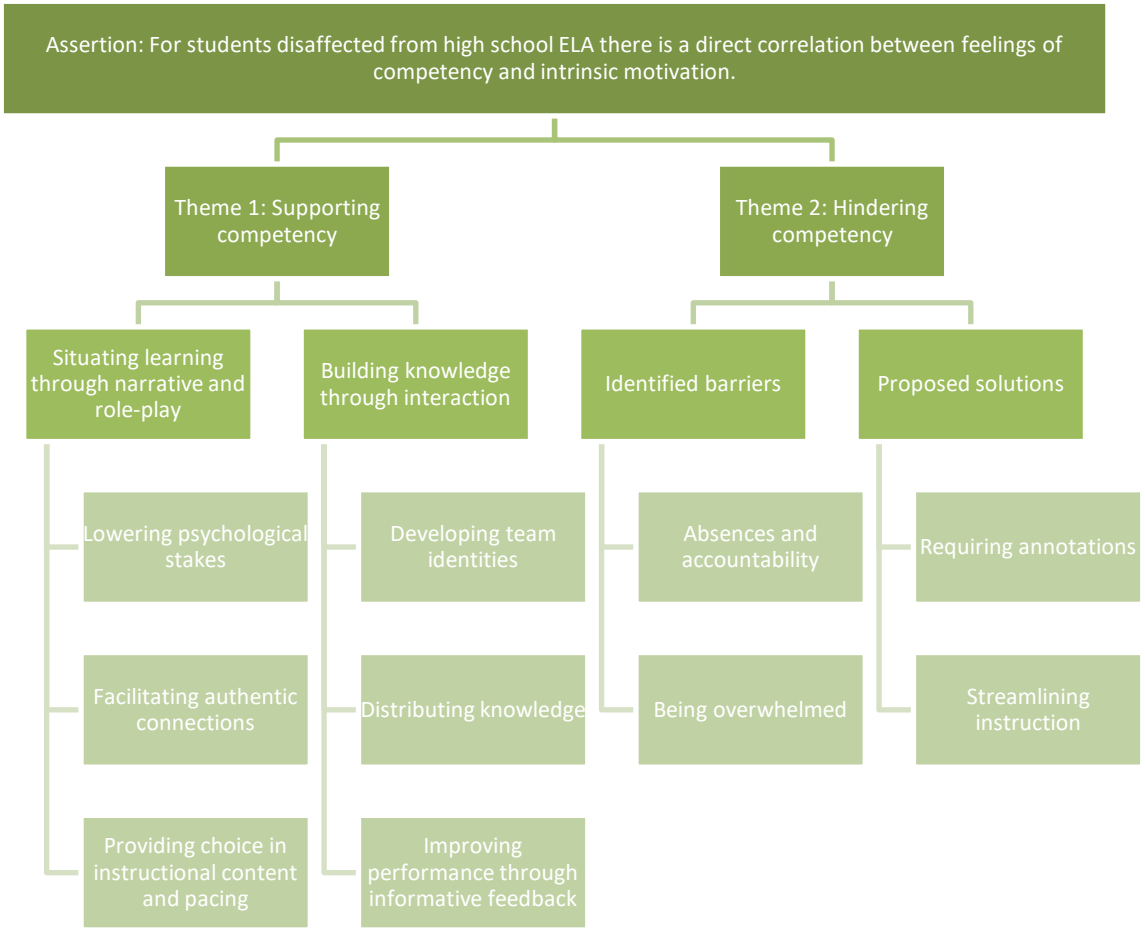



*Figure 4.5.* Relationships between assertion, themes, and categories.

**Presentation of Findings**

Two themes emerged from the analysis of the data (see Table 4.8). Participants' focus group interview responses indicated that gamification affects intrinsic motivation by (a) supporting competency and (b) hindering competency. These findings support the assertion that *for students disaffected from high school ELA there is a direct correlation between feelings of competency and intrinsic motivation*. Each theme and its attendant categories and subcategories are described in detail in the sections below.

Table 4.8 *Qualitative Findings at a Glance*

| Assertion: For students disaffected from high school ELA there is a direct correlation between feelings of competency and intrinsic motivation. | | | |
|---|---|---|---|
| Theme | Category | Subcategory | Example |
| Supporting competency | Situating learning through narrative and role-play | Lowering psychological stakes | "I feel like [role-play] makes the project a lot less heavy. Like it seemed like you were just acting out something, but at the same time you were doing what you had to do for the grade." |
| | | Facilitating authentic connections | "…[the book] had a lot of real life experience going on it, so you could relate to it easy. That's why I liked doing research on it." |
| | | Providing choice in instructional content and pacing | "I never really finish books, so when we started figuring out how many books—I mean how many pages a week—like that actually like was really good." |
| | Building knowledge through interaction | Developing team identity | "[Teamwork] was just more engaging because we all wanted to do our part." |
| | | Distributing knowledge | "It's like… you can know what other people know also. It just puts everything together." |

| Assertion: For students disaffected from high school ELA there is a direct correlation between feelings of competency and intrinsic motivation. | | | |
|---|---|---|---|
| Theme | Category | Subcategory | Example |
| | | Improving performance through informative feedback | "That's what I like because you walk through… the classroom and you like tell us what we could do better because like some teachers won't do that…" |
| Hindering competency | Identified barriers | Absences and accountability | "You have to know all the information. If somebody wasn't here for one part of the project like you have to catch them up." |
| | | Being overwhelmed | "I didn't understand [the speech], it was really long, and that packet to do along with it, which is like on top of it, which was trying to do it and understand what we were reading was a lot." |
| | Proposed solutions | Requiring annotations | "…it doesn't seem like it's gonna help but when it comes around to writing you want something to look back cause once you're all the way through the book." |
| | | Streamlining instruction | "I'd try to like slow it down where you didn't have like more than two or three things going at once…" |

**Theme 1: Supporting competency.** Competence is theorized to be one of the necessary psychological conditions for intrinsic motivation (Deci & Ryan, 1985; Ryan & Deci, 2001; Ryan et al., 2019). Competence involves feelings of mastery, success, and growth (Ryan & Deci, 2020). Previous research indicates that teachers can support

students' feelings of competency through well-structured learning environments (Aelterman et al., 2019; Grolnick et al., 2014) with optimal levels of challenge (Csikszentmihalyi, 1975b; Shapira, 1976) and adequate instructional supports (Anderson, Nash, & McCauley, 2015; Vygotsky, 1978), positive and constructive feedback (Deci & Ryan, 2001; Malone & Lepper, 1987), and frequent opportunities for growth (Reeve & Jang, 2006; Ryan & Deci, 2020). Participants' focus group responses indicated they experienced feelings of competency most significantly and frequently through situated and interactive learning experiences. Accordingly, the findings for this theme are organized according to the two categories (a) situating learning through narrative and role-play and (b) building knowledge through interaction.

***Situating learning through narrative and role-play.*** Situated cognition posits that knowledge and thinking are inseparable from the context in which they occur (Brown, Duguid, & Collins, 1989); effective instruction, therefore, must situate learning in authentic and immersive contexts in order to facilitate meaning making and the transfer of knowledge to novel contexts. The gamified instructional unit situated learning tasks in an ongoing narrative. In this narrative, students had to read, research, and defend a challenged book against the censorship efforts of the fictitious Citizens for Morality. Students adopted academic identities (e.g., researchers, editors) as they conducted their research. They presented their arguments in a mock school board meeting wherein their peers adopted roles as various stakeholders in the school district (e.g., parents, teachers, administrators) and they had to consider the concerns of these stakeholders as they delivered their arguments. Students also role-played through a talk show activity wherein they created a script and interviewed characters from their novels.

When analyzing participants' interview responses, references to these particular activities occurred frequently (e.g., 49 initial codes for *role-playing*). Participants' responses indicated that situating learning in narrative and role-play supported feelings of competency and enjoyment through (a) lowering psychological stakes, (b) facilitating authentic connections, and (c) providing choice in instructional content and pacing.

*Lowering psychological stakes.* Numerous research studies have shown that feelings of tension and pressure negatively predict intrinsic motivation (Ryan & Deci, 2020). Gee (2007) argued that video games are effective learning systems, in part, because they allow players to "take risks in a space where real-world consequences are lowered" (p. 222). Previous research has indicated that learners experience the game elements of narrative and role-play as immersive (Jagoda et al., 2015) and even transformative (Daniau, 2016). During the analysis of qualitative data, the code *lowering psychological stakes* was defined as any evidence describing reduced feelings of pressure or tension due to gamification. This code occurred 33 times throughout the interviews and indicated that the game elements of role-play and narrative lowered the psychological stakes associated with the research project.

Participants' responses indicated that role-play and narrative fundamentally transformed the learning environment:

> Anna: I feel like [role-playing] makes the project a lot less heavy. Like it seemed like you were just acting out something, but at the same time you were doing what you had to do for the grade. I like that you gave each of us a role to play. It was kinda like a game almost, but we were actually graded.

Robert: I liked almost everything that we did. We kinda like role-played with it, you know what I mean? Like we didn't actually have a school board meeting, but you know, I liked the roles that you get into. It was kinda fun.

Jason: [The project was] more like a game, but you also learned and did research, but you had fun while doing it…. It was like you weren't doing straight school work. You could have a little fun with it too, but you got your work done.

Helen: [The project] was like non-school school-related.

Because students were able to adopt alternate personas through role-play, they experienced less pressure while conducting research on their banned books and forming and presenting their arguments for the mock school meeting. Participants described the situated role-play as game-like and "non-school school-related." The transformed, game-like learning environment allowed students to enter into a psychological space wherein they could have fun while learning. As Anna stated, it made the project "less heavy."

This idea of lowered psychological stakes is further illustrated in participants' descriptions of a role-play activity associated with the books their teams read. After finishing their novels, students created a talk-show script including key characters and then presented the script in front of the class. The purpose of this activity was two-fold: to facilitate an analysis of characterization, plot, and theme in the students' novels and to prepare students for the public speaking aspects of the mock school board meeting (i.e., the culminating activity for the unit). Participants remarked that the talk show activity, in particular, was easy because they were able to inhabit the roles of characters from their

books. For instance, when asked which activity they put forth the least effort in, participants responded:

> Jason: I guess the talk show. I mean, it wasn't like I purposefully did it, but since it was like a game, you just didn't really think about it. You just kind of like wrote down what you think they would say in real life.
>
> Anna: 'Cause like the interviewer came up with the questions. And then your job was just to answer them based off of what you had read. So it was pretty easy.
>
> Lucy: With the skit, we didn't have to cite sources, we didn't have to research, like it was literally just from what we had remembered from the book. And that like made me focus more on the plot of the book instead of doing research on topics that are in it.

These responses demonstrate how role-play enables students to be immersed in instructional material. Participants stated that they used their knowledge of their books to write down what the characters would say in "real life" and that this helped them "focus more on the plot of the book." Participants' responses indicate that role-play and narrative may be salient conditions for the psychological state of flow (Csikszentmihalyi, 1975), in which learners become immersed in an activity and lose sense of time. This experience of immersion may further explain the reduced feelings of tension or pressure participants expressed regarding these activities. By making learning tasks "less heavy" and immersing students in meaningful yet playful contexts, situated role-play and narrative frees students to take risks necessary for growth and the development of

competence. However, narrative and role-play also supported students' feelings of competency through the facilitating of authentic connections.

*Facilitating authentic connections.* Research indicates that purpose is an important component of intrinsic motivation (Ryan & Deci, 2020) and autonomy-supportive instruction (Patall et al., 2019). Through the game element of narrative, students made meaningful connections between the curriculum and the real world. These connections motivated students to read their books and conduct research for their arguments defending the books against censorship.

The category *facilitating authentic connections* is defined as any evidence referring to meaningful connections made during instruction. Participants commented positively and frequently (e.g., 35 initial codes related to *connecting literature and real-life*) on the real-world connections they made while reading and researching. For instance, when asked during the final focus group interview what they enjoyed most about the instructional unit, several participants stated they enjoyed reading and researching because they could relate the books to real issues:

Jasmine: I really liked when we did research on [our book], like the topics like bullying and stuff, like so they really interested me.

Rebecca: And also because it had a lot of real life experience going on it, so you could relate to it easy. That's why I liked doing research on it.

Jasmine: I feel like with the research I found really good articles and I could really type about them and how they relate to my book.

Anna: Yeah, since the topic of our book was racial profiling and police brutality, the fact that it's like a real situation and there's so many

instances of where it's happened recently made it a lot easier to find reliable sources and stuff like that.

Jason: Yeah, it was a lot easier to research than all the other times…. I mean, they're trying to ban these books, but you can turn on the news and hear about it.

Jasmine: It was real life situations.

These responses illustrate how participants found the "real life" connections they made between the curriculum (i.e., their books and research topics) and events in the news (e.g., racial profiling, police brutality) and their own lives (e.g., bullying) to be meaningful. Though the narrative of a group attempting to censor library books was, in this case, fictional, the issues raised in this narrative (e.g., censorship vs. speaking out) were far from fiction. As Jason stated, "they're trying to ban these books, but you can turn on the news and hear about it." The narrative game element situated the instruction and facilitated meaningful connections.

The role of narrative in situating instruction and facilitating meaningful connections is not only demonstrated in participants' comments regarding their experiences with gamification. Participants' comments during the first focus group interview focused on their past experiences with research in ELA and illustrated how the lack of an anchoring narrative negatively impacted the relevance of instruction.

During the first focus group session, participants were asked to describe their past experiences with research projects in high school ELA. While several participants expressed limited experience with research in their past ELA classes, one participant (i.e., Anna) described in detail a year-long project in which the teacher required students to

research contemporary sociopolitical topics (e.g., texting and driving, marijuana legalization). Despite being able to choose her own topic, this participant described the experience negatively:

> Anna: I remember in [a past ELA class], we were given a portfolio project and we did nothing but that all year, and it had nothing to do with English. I did texting and driving and had to make videos and write essays, and that's all we did. I learned *nothing* that year, except not to text and drive, and that's *all* we talked about. Some people were doing different topics, like totally irrelevant, like talking about marijuana. It just had nothing to do with English, so I didn't learn anything…. It didn't teach me anything. It did not teach me anything.
>
> Jason: Yeah, I guess like past research projects haven't been based like on like English topics, they've just been like you research something you picked, and then… [shrugs shoulders]

Given the prevalence of texting and driving and marijuana usage among teens (Li et al., 2018) one might assume that these would be meaningful research topics. Certainly, they are "real life" issues. However, participants' responses indicated the opposite. They described the topics as lacking relevancy to the curriculum. The topics, in other words, were not situated in a meaningful context. These experiences stand in contrast to participants' descriptions of their experiences in the gamified instructional unit.

*Providing choice in instructional content and pacing.* Situating instructional material in an authentic and relevant context encouraged participants to forge meaningful connections between the ELA curriculum and real world issues. These connections made

the learning tasks purposeful and motivating; however, research indicates that the presence of meaningful choices can also provide purpose and motivation during instruction (Bao & Lam, 2008; Reeve & Jang, 2006; Ryan & Deci, 2020; Schutte & Malouff, 2019). During the analysis of qualitative data, the focused code *providing choice in instructional content and pacing* occurred 21 times and was defined as any evidence referring to student choice or control over instruction. While the books students read and discussed with their teams helped situate the instruction in narrative (i.e., the books provided the narrative for role-play activities such as the talk show), students had choice in what book they read and how often.

Participants expressed positive reactions to the presence of choice in the gamified instruction. During the first week of instruction, students participated in a book pass activity (Daniels & Steineke, 2004; Gallagher & Kittle, 2018) and rated their interest in the five novel selections for the unit. Students then received novels based on their ratings, and this became the basis on which the teams in the unit were formed. Participants stated they enjoyed being able to choose which book they read and discussed with their team:

Jason: You got to pick between like five books, so you didn't, like, everybody had to read the same ones.

Rebecca: Yeah, you had more of a variety of your own choice.

Jasmine: Yeah.

Jason: Like other teachers will make the whole class just read one book and then everybody gets bored and don't want to do it.

Rebecca: That's true.

These responses indicate that participants found the presence of choice to be supportive of autonomy. In contrast to past experiences where "teachers [made] the whole class just read one book," the presence of choices helped ensure participants found the instructional material relevant and interesting (e.g., several participants stated they enjoyed reading books of their choosing and contrasted this with being forced to read "boring" books in previous classes), and it gave them control over their own learning.

Moreover, participants stated that the narrative and role-play activities pertaining to the books, along with the presence of teamwork, gave them a greater sense of freedom and choice in instruction:

> Rebecca: You made it more fun. You made me actually want to read and be engaged in the conversation and actually discussing it, rather than being forced to read and not really having all the different things you did like the talk show and the letter and presenting.
>
> Jason: You make the activities seem like it's not just like 'we got to do this,' it's, you know, you actually get excited about it and want to do it…. It's not like when you normally get done reading a book, you know your teacher has all these things that you've got to research and all that. It's, you know, you just kind of go by yourself and just show the teacher that you read it… [instead] you don't have to follow all these rules and all these questions about it. You're kind of free, you know.

Instead of feeling forced or coerced into reading, discussing, or analyzing a book, students "actually [wanted] to read and be engaged" because they had choice in how they demonstrated their knowledge.

In addition to having choice in aspects of the instructional content, students had choice in the pacing of the content. Specifically, once they had received their books and formed teams, students' first mission was to work with their teams to negotiate a reading schedule. Participants stated that they enjoyed being able to create their own schedules and that this supported their feelings of competency:

Lucy: Working at like our own pace [was enjoyable] 'cause we had like a certain amount of pages a week that we had at one point. And that was nice because some days you're busier than others so it wasn't like an every night kind of thing.

Jamar: If I read too much, like, it make me stop wanting to read. Like I don't wanna read no more. But like since I read a little bit each night, I can keep going.

Lucy: Yeah, it like it kept me motivated.

Maria: Yeah, I never really finish books, so when we started figuring out how many books—I mean how many pages a week—like that actually like was really good.

Rather than being forcibly assigned a set number of pages to read per night, participants' responses indicate a degree of flexibility and autonomy in the pace and responsibility of reading. Control over the learning environment—in this case the choice and pace of reading—helps empower students and motivate them to complete learning tasks (Malone & Lepper, 1987). Additionally, negotiating reading schedules with their teams prompted students to set proximal goals and chunk the instruction. For instance, Jamar stated that "since I read a little bit each night, I can keep going." Meaningful choices, such as

allowing students to determine the own pace of their reading, not only allow students to take ownership and initiative of their learning but can also encourage them to set goals that can help motivate them and positively affect their academic performance (Murayama et al., 2015). With students who are disaffected from school in general or a subject matter in particular, meaningful choices can rekindle curiosity towards learning and engage them in instruction (Schutte & Malouff, 2019).

***Building knowledge through interaction.*** Since learning is inherently social (Bandura, 1977; Brown et al., 1991; Lave & Wenger, 1991), educational research and theory posits that it is vital for teachers to create and sustain a collaborative learning environment in order to optimize instruction (e.g., through differentiation) and prepare students for the future (Gee, 2004). In a collaborative learning environment, knowledge is often distributed and shared among learners as well as tools and technologies (Polat & Öz, 2017; Ramirez & Squire, 2014; Swan & Shea, 2005). Moreover, in a supportive and inclusive collaborative learning environment, the classroom becomes a community in which disengaged or unconfident students are able to participate peripherally through the observation of more adept peers (Lave & Wenger, 1991). This distribution of knowledge in a participatory learning environment helps facilitate feelings of confidence crucial to intrinsic motivations for learning (Gee, 2007; Ramirez & Squire, 2014; Squire, 2011). Previous research in the field of gamification has indicated that dependent interaction wherein learners rely upon each other to achieve objectives and overcome challenges is especially motivating (Malone & Lepper, 1987; Morscheuser et al., 2018; Ramirez & Squire, 2014). In the case of underachieving or disaffected students in particular, research indicates that collaboration is a more effective means of motivating learners than

competition (Barata et al., 2017). Participants' responses in the focus group interviews reflected these research findings and indicated gamification resulted in (a) developing team identity, (b) distributing knowledge, and (c) improving performance through informative feedback.

*Developing team identity.* As mentioned previously, students formed teams based on common interests (i.e., the books they chose). Throughout the unit, students worked with their teams on a daily basis to complete a variety of learning tasks (e.g., researching topics related to their books, writing argumentative letters). Previous research strongly suggests that the social aspects of gamification can positively impact students' intrinsic motivation (Dominguez et al., 2013; Hamari et al., 2014; Hansch et al., 2015; Knutas et al., 2014; Shi et al., 2014; Smith et al., 2014). Participants' responses in the focus group interviews reflected the impact of teamwork and indicated that the presence of teams throughout the unit resulted in shared responsibilities. The focused code *developing team identity* occurred 29 times in the interviews and was defined as any evidence indicating being part of a team by helping each other and sharing responsibilities. Participants' interview responses indicated that they developed team identities through sustained work together and shared responsibilities.

Through frequently working with their teams over a sustained number of weeks, students began to bond with their teammates:

Robert: It's easier to get to know more people and people that you don't normally talk to and kind of get out there.

Steven: We've had the same groups in the past few weeks now, so getting to know them better makes it a lot easier doing a project with them, since

you like know each person's mind on something. So it really helps us, like with the thing we did today, the talk show.

Because they worked with each for several class periods, students were able to better understand each other and "know each person's mind." This made collaboration easier, as Steven stated, but it also established a sense of shared responsibility which further developed each team's sense of identity and cohesion.

Because they were part of a team, participants expressed how they wanted to do their part to help their teammates.

Lucy: Dividing, like, group work [was something we did well]. Like when we were writing the letter and when we were doing the skit today. It was just more engaging because we all wanted to do our part. So I know I missed a few days, and then I pulled my weight the next few days.

Robert: You just know that everyone's helping—you know that everyone needs to do it, so you just, everyone knows to get it done.

Lucy: I think that the longer we've been in a group together kind of keeps us more accountable because I know if I don't pull my weight or like I'm slacking they're gonna like know.

Steven: It was a lot of teamwork. It wasn't just a single person doing everything. Everyone was trying to help everyone.

Robert: On the letter, we knew that [one of our teammates] was leaving, like the next day, so we knew we had to get that done before he left. So we

> all—we all had to throw it together that day, so we didn't have stuff left over from him that he didn't do that we would have to fill in.

While one may argue that social pressure to do one's part is an extrinsic motivator, these responses indicate that the presence of a team identity made the desire to do one's part intrinsic. Students, in other words, genuinely wanted to help their teammates because they viewed this as helping themselves. They viewed themselves as part of a team, not just a group assigned arbitrarily to work together.

*Distributing knowledge.* Within the gamified instructional unit, teams acted as affinity groups (Gee, 2007), which is to say that team members were bonded through shared interests (i.e., their books) and goals (i.e., creating and presenting a research-based argument) rather than affective ties or ability. While this formation facilitated feelings of autonomy and identity as previously discussed, participants' focus group responses indicated that it also facilitated feelings of competency due to the distribution of knowledge within groups. Distributed knowledge is the idea that cognition resides not solely in the mind of an individual but also in the individual's interactions with others in a specific context (Swan & Shea, 2005). During the analysis of qualitative data, distributed knowledge was defined as any evidence referring to sharing knowledge or skills within or across teams. The code *distributing knowledge* occurred 27 times throughout the focus group interviews and indicated the distribution of knowledge within and across teams.

Within their teams, participants shared knowledge and skills and learned from each other. This distribution of knowledge resulted in increased feelings of competency, as demonstrated by participants' focus group responses:

Anna: I liked having small groups. It was good to have people to work with instead of reading by yourself, individually. 'Cause some people are better at one thing, like there can be somebody who's better at remembering the book and then somebody who's better at interpreting what happens and stuff like that.

Robert: Just having the whole group thing. It's a whole lot easier to do it with a group than it is by yourself.

Steven: We're definitely working in groups more than I have in the past few years going through high school. So a lot more group work makes a lot of things easy because you can express yourself more than just by yourself.… It makes it a lot easier because you have other people helping you. Where if you're just working by yourself you can only ask a teacher, but if you ask another student then you have the same people and can understand most things.

Maria: [My teammate] knew how to look [research] up just by words. It made it easier to learn. It's like… you can know what other people know also. It just puts everything together. It makes it easier.

Teamwork made tasks easier "because you have other people helping you" and "everyone was trying to help everyone." As Maria aptly stated: "It's like… you can know what other people know also." This idea of "[knowing] what other people know" is essential to the concept of distributed knowledge in education and illustrates Gee's (2007) description of learners functioning as nodes "within a network that connects them in rich ways to other people and various tools and technologies" (p. 202). Within their

teams, participants shared insights and skills and learned to leverage this knowledge to overcome challenges. Because of the collaborative learning environment in general and the dependent teamwork in particular, participants felt less stressed or anxious when faced with complex and potentially difficult tasks such as analyzing a novel, conducting research, or writing an argument.

Knowledge and learning was not only distributed within teams, however; it was also distributed across teams within the classroom learning environment. Participants described how they not only learned from their teammates, but also from other teams through observation:

> Rebecca: It helped. And also getting to see other groups, seeing how they did on their stuff. It helped.
>
> Anna: It's not like copying or anything, but when you see another group do something you can, like, not do the exact same thing but, like, take tips from other groups and see 'I like how they did that' and 'I don't like how they did this.' It's not necessarily like you're copying them, but it's good to see other people do it so you can just see like 'this was really good' and 'this was really bad' so it helps you do better.

These responses demonstrate how gamification enabled the classroom learning environment to truly become a community of practice (Lave & Wenger, 1991) in which all members participated and learned from each other. Moreover, the observations of other groups functioned as additional modeling with which students could compare, critique, and improve their own work.

*Improving performance through informative feedback.* Feedback is essential to learning and can significantly impact a learner's intrinsic motivation (Deci & Ryan, 2001). Positive feedback can encourage and motivate learners through recognition (Malone & Lepper, 1987); however, in order for optimal growth and improvement, positive feedback must be balanced with constructive feedback (Kapp, 2012). Research indicates, however, that teachers must be cautious with how they provide feedback to students: while informative feedback can support intrinsic motivation by facilitating feelings of competence, feedback perceived as controlling can actually reduce intrinsic motivation by undermining feelings of autonomy (Ryan & Deci, 2001; Ryan & Deci, 2020). Numerous studies show that grades, in particular, provide negligible informative feedback in and of themselves and can often detrimentally affect learners' intrinsic motivation (Butler, 1987; Ryan & Deci, 2020). While participants' responses in the first focus group interview indicated that grades had been the primary means of feedback in past ELA classes, their responses in the subsequent interviews indicated that informative feedback through interactions with the teacher were the primary means of feedback during the study. During the analysis of qualitative data, the focused code *improving performance through informative feedback* occurred 23 times and was defined as any evidence referring to using feedback to improve performance.

Research indicates students perceive feedback as most valuable and needed when tasks are challenging (Tauer, 2004). Participants stated that they appreciated the active presence of the teacher during instruction—including independent or collaborative work—and used his feedback to overcome challenges and improve their work:

Rebecca: That's what I like because you walk through, you walk through the classroom and you like tell us what we could do better because like some teachers won't do that, and then like everyone does bad, but you like walk around and tell us like 'well, this could be better.'

Jasmine: You give good suggestions.

Rebecca: It does help a lot. Coming around and helping individual groups.

Jasmine: 'Cause I be lost and you'll just come and help me and I'll be like okay good.

Rebecca: And you put us back on track.

These responses emphasize how the teacher's interactions with students while they worked were important for supporting feelings of competency crucial for intrinsic motivation. In contrast to previous experiences wherein teachers provided little informative feedback, participants described the presence of feedback during the gamified instructional unit as providing needed scaffolding. Participants' responses support previous findings in the research literature on feedback emphasizing the importance of balancing positive and constructive feedback in order to encourage growth and change (Kapp, 2012). Participants described how this formative feedback given immediately, as opposed to after an assignment had been completed, helped "put [them] back on track" and reduced feelings of tension and uncertainty.

In addition to commenting positively on the impact of the teacher's oral feedback, participants stated that they found the teacher's written feedback also informative and supportive of growth. While the gamified instructional unit was designed so that missions (e.g., completing the library escape room activity) functioned primarily as

formative assessments and challenges (e.g., completing an annotated bibliography) were summative assessments, participants noted how the teacher's constructive feedback coupled with ample opportunity to practice and develop new skills enabled them to continue growing and achieving mastery in the instructional unit:

> Anna: Yeah, you know how you would give us comments and say 'resubmit it,' like that helped a lot. 'Cause some teachers will just give you a project and then they won't help you and then they'll just give you a grade.
>
> Jasmine: And you can't learn from that.
>
> Jason: And then they also sometimes won't tell you what you did wrong… just give you a grade. Like, how'd I make a 90? What'd I do wrong?

In essence, the use of informative feedback and the opportunity to continually revise and improve one's work transformed all assignments, at least in part, into formative assessments. This encouraged and enabled students to strive towards mastery and develop feelings of competence necessary for intrinsic motivation.

**Theme 2: Hindering competency.** Since it occurred at the beginning of the instructional unit, questions during the first focus group interview focused largely on participants' past experiences in ELA rather than their current experiences with gamification. In this interview, participants' comments regarding what aspects of ELA they enjoyed the least strongly illustrated the assertion that there is a direct correlation between feelings of competency and intrinsic motivation (i.e., interest and enjoyment). While responses ranged from studying vocabulary, to writing essays, to following the rules of Standard American English grammar, the reasoning for not enjoying these

particular aspects of ELA were consistent: students stated they struggled and did not view themselves as good in that aspect of ELA. For instance, when asked to explain why she did not enjoy reading poetry, Maria stated, "Some people understand [poetry] but some people don't, and I'm one of the don'ts." Students do not enjoy academic areas in which they do not have perceived feelings of competency. These findings are consistent with the research literature (Ryan & Deci, 2020).

While participants generally expressed positive reactions to the gamified instruction (e.g., "I liked almost everything we did") and indicated that it supported their feelings of competency, they did note two areas which hindered their feelings of competency and enjoyment. However, since they were also asked what recommendations they would offer to improve gamification, participants identified two specific solutions to overcome the identified barriers to competency. The sections below will describe these (a) identified barriers and (b) proposed solutions.

***Identified barriers.*** Participants identified two barriers to competency. While these barriers did not render the overall instruction unmotivating or ineffective, they did hinder participants' competency and enjoyment of instruction in part. As barriers to competency, participants identified (a) dealing with absences and accountability and (b) being overwhelmed.

*Absences and accountability.* Students shared responsibilities as team members, which helped develop team identities and cultivate a positive collaborative learning environment; however, students also bore the responsibility for absent group members, which occasionally made tasks more difficult. Though the code *absences and*

*accountability* did not occur frequently, it was significant because it revealed an area of potential improvement for the design of the gamified instruction.

During the final focus group interview, several participants discussed how they found the presentation (i.e., mock school board meeting) to be challenging. When asked to explain why they found this assignment challenging, participants stated that absences in the group made it difficult for the team to work as a whole when presenting:

Anna: That [was] a problem with our group. If you like know you're presenting, you like really have to know the information, so like you can't, if you weren't here for a day, like you couldn't go up there and present. You have to know all the information. If somebody wasn't here for one part of the project like you have to catch them up. Stuff like that.

Rebecca: I guess it would have been presenting for me too… We struggled with like getting our presentation together, especially since we had people absent a lot in my group. So when we presented, we had it like certain stuff people were gonna do but then they weren't here when we presented so we had to take on more stuff we had to do by ourselves. So yeah.

Jasmine: I think mine was the presentation. I wasn't here when we did it and when I got back they kind of already had it done. I didn't really get to do anything. So I didn't really help them. I just presented. I did the talking more.

Helen: Yeah, cause like in our group, there was always someone absent, so it was tough for us too.

Teamwork can, as demonstrated in participants' responses presented earlier, provide a powerful support by encouraging shared responsibility and the distribution of knowledge; however, as demonstrated in these responses, absences of team members result in a greater burden for the remaining team members. More importantly, absences negatively impact feelings of competence: instruction can only be effective when students receive it. These responses highlight absences and accountability as combined issues negatively impacting intrinsic motivation.

*Being overwhelmed.* In addition to absences and accountability, participants expressed feelings of being overwhelmed with one activity in particular. In the second and third focus group interviews, participants unanimously expressed negative reactions to a task in which they had to read and analyze Dr. Martin Luther King, Jr.'s 1969 "Speech on the Vietnam War," also known as "A Time to Break the Silence." While this activity was intended to provide scaffolding for the argumentative writing students would undertake in their letters to the school board (i.e., students wrote research-based argumentative letters explaining why their banned book should or should not be read, and then presented their arguments in a mock school board meeting), participants commented that the task was "difficult," "boring," and "overwhelming." Participants unanimously stated that the task was difficult, confusing, and unenjoyable; consequently, several participants identified this task as one in which they put forth the least effort:

Steven: [The speech] just wasn't enjoyable at all.

Jamar: The words he be using, I don't understand.

Lucy: I didn't like how we were still doing stuff on top of that, if that makes sense, like it was just kind of hard going from the regular class stuff back to Voice of Protest and back and forth. I'd rather just focus on four days on this and then like one day on that, you know? Or like a week on this instead of spreading it out. We could stay focused on what we were doing because it was hard to see how things connected.

Maria: Like one day we didn't read the speech, and then we read it again and I was confused.

Robert: We didn't get enough time for AIR time sometimes, like some days we'd have it, like some days I couldn't read my book all the way, like I couldn't read it at the house, and then you wouldn't give us AIR time here, so it was kinda hard to keep up with it.

Lucy: It was just like didn't understand it, it was really long, and that packet to do along with it, which is like on top of it, which was trying to do it and understand what we were reading was a lot.

Given adequate instructional support and pacing, participants may have had different reactions to this learning task; however, their responses clearly indicate that they did not find the task effective. Rather, they found it to be overwhelming in the context of the other activities in the unit. These responses echo earlier statements participants made regarding tasks which they perceived as overly challenging. For instance, when asked during the first focus group session why they found poetry or difficult texts uninteresting, participants said "if you don't understand it, then when there's a discussion or something you can't get involved because you don't understand it." Another student responded "it's

pointless." Participants stated they enjoyed discussing texts in class; however, when they are unable to participate due to lack of understanding of instructional material, then interaction is rendered purposeless and impossible: how can one interact in a discussion when one has nothing to say about the topic? Participants' responses indicated that students want to be able to participate and be engaged in learning tasks, but for this to happen they must receive good instruction that facilitates comprehension of the learning material.

***Proposed solutions.*** Fortunately, participants did not merely identify issues with the gamified instruction; they also proposed solutions. Specifically, participants recommended that future iterations of gamification be improved by (a) requiring annotations and (b) streamlining instruction.

*Requiring annotations.* During the final focus group interview, participants suggested that requiring students to complete annotations as they read their books would be a helpful addition to future instruction. This would, they explained, provide instructional support for students as they read their books and gathered evidence for their arguments and also ensure accountability for absent team members:

> Anna: I think you should—I mean this—most students don't mind doing it while they're reading but it helps making them—instead of a discussion, like do a discussion, but also make them take annotations while they're reading because it doesn't seem like it's gonna help but when it comes around to writing you want something to look back cause once you're all the way through the book.

Rebecca: You forget what happened in the beginning. That happened for us too. I think that making us take notes…

Jasmine: [CT] Like a weekly journal.

Rebecca: …especially 'cause some partners in my group they weren't here a lot, so they didn't really know anything so that we could catch them back up on it. That would help.

Jasmine: Yeah, and you could do it for a grade, you know make them…

Anna: Actually do it.

When I asked students whether they thought this added requirement might take away from the fun of reading and discussing the novels, they responded that the benefits outweighed the risks of added work:

Jason: I mean, it's really all an easy grade…

Anna: If you're reading the book, it's not that hard.

Rebecca: That would also help you keep track on who's actually reading the book too. Because people in my group didn't read either. They didn't really help, so that would like make them read the book for a grade.

Jason: I mean, the ten minutes you spend doing it is going to help you in the long run when you start writing and doing the project and all that.

Participants viewed annotations as an instructional support and accountability measure that would support feelings of competency with minimal effects on autonomy. In other words, they viewed the addition of this task not as an onerous requirement but rather as a valuable tool for increasing the efficiency and effectiveness of gamification.

*Streamlining instruction.* In addition to requiring annotations, participants recommended streamlining instruction as a way to improve gamification and support feelings of competency and enjoyment. Streamlining instruction can be defined as paring down or combining the number of learning tasks in order to allow for more independent work time (e.g., reading novels independently) and/or reduce feelings of stress and anxiety. This recommendation is illustrated through the following participant quotes:

Steven: Make sure each activity's, like, fun. Don't just throw activities out there that people aren't going to enjoy. Because when you throw things out there like we've being doing like the movie, the letter, and the script, it's a lot of… it kind of engages you into it instead of wondering what to do and being confused the whole time.

Jason: I'd try to like slow it down where you didn't have like more than two or three things going at once…. I think it'd be a lot easier if you could just focus on one thing instead of having two or three things you have to do in one day and you just flip flop back and forth.

Robert: I think we said this last time, but give us more time to read the book. Cause there was like a lot and you didn't really give us enough time to read our book. So, like, we all, some of us have less time to do it at home—we have to, uh—the only time to read is in here. So. I think we said that last time too.

Jason: Less stuff, like we said last time. Have more days on just one thing. It'd be a lot easier to do kind of like one thing a day. It's kind of hard to whip back and forth doing two different things.

More time to focus on individual tasks rather than "flip [flopping] back and forth" would enable students to focus on what is important and see how tasks connect. If nothing else, these responses indicate participants' desire for more gamified tasks (e.g., "the letter, and the script") and less traditional tasks (e.g., reading the speech without any meaningful game elements added to it).

## Chapter Summary

Quantitative and qualitative data were analyzed in order to answer the research questions guiding this study. Quantitative data included participants' pretest-posttest responses to the ARSA ($n$ = 18) and IMI ($n$ = 19). Descriptive statistics indicated an overall increase from the pretest to posttest results on the ARSA. A paired t-test indicated the increase was significant. Likewise, descriptive statistics indicated an overall increase for all subscales of the IMI except the tension/pressure subscale, which is theorized to negatively predict intrinsic motivation. Paired t-tests indicated these changes were significant for the interest/enjoyment and perceived competence subscales. A Pearson $r$ was calculated to determine if any relationship existed between the posttest ARSA and IMI results; however, no results were significant.

Qualitative data included participants' ($n$ = 11) responses during three focus group interviews. Inductive analysis resulted in the assertion that *for students disaffected from high school ELA there is a direct correlation between feelings of competency and intrinsic motivation.* This assertion is supported by the themes (a) supporting competency and (b) hindering competency. The data indicated that gamification supports feelings of competency through situating learning through narrative and role-play and building knowledge through interaction. Hindrances to gamification's support of

competency were discussed through identified barriers and proposed solutions based on student recommendations. Identified barriers included absence and accountability issues and feelings of being overwhelmed. Proposed solutions included requiring annotations or other tasks as instructional supports and accountability measures and streamlining instructional tasks.

# CHAPTER 5

# DISCUSSION, IMPLICATIONS, AND LIMITATIONS

This chapter positions the findings from the present study within the existing literature on gamification, intrinsic motivation, and academic performance. The purpose of this research was to evaluate the impact of gamification on the intrinsic motivation and academic performance of students disaffected from high school ELA at SHS. Quantitative and qualitative data were collected and analyzed. The analysis of quantitative data revealed a significant increase in participants' intrinsic motivation and academic performance after exposure to gamification, while the analysis of qualitative data led to the assertion that *for students disaffected from high school ELA there is a direct correlation between feelings of competency and intrinsic motivation*. The following sections will present the (a) discussion, (b) implications, and (c) limitations for this study.

## Discussion

A full interpretation of the results from this study requires situating the findings in the existing research literature on gamification, motivation, and learning. To answer the research questions, the data were combined and considered through the lenses of motivational and sociocultural theories of learning and placed in dialogue with recent research findings in gamification. The discussion is organized according to the three research questions guiding the study.

**Research Question 1: How does gamification affect the intrinsic motivation of students disaffected from high school ELA?**

While gamification has been touted as a promising approach to motivating learners (Kapp, 2012), studies have raised concerns regarding its potentially harmful impact on learners' intrinsic motivation (Christy & Fox, 2015; Hanus & Fox, 2014). Moreover, research has indicated that the motivational effects of gamification may be less efficacious for disaffected or low-performing students than motivated or high-performing ones (Barata et al., 2017; Ding et al., 2018). The impetus for this research question, therefore, was to determine the impact of gamification on the intrinsic motivation of disaffected students. These were the students who already perceived high school ELA as unmotivating, so it was hoped that gamification might improve—and at the very least would not worsen—their experiences with this subject.

To answer this question, both quantitative and qualitative data were integrated. The findings showed that gamification positively impacted the intrinsic motivation of participants. For instance, for the interest/enjoyment subscale of the IMI (i.e., the self-report measure of intrinsic motivation), participants responded significantly higher on the posttest ($M$ = 4.60, $SD$ = 1.07) than on the pretest ($M$ = 3.69, $SD$ = 1.20), $t(18) = -3.75$, $p < .001$. Likewise, in the focus group interviews, participants repeatedly described gamification as "fun," "interesting," and "enjoyable." The integrated research findings discussed below may best be understood through the framework of self-determination theory (SDT; Ryan & Deci, 2020) and the three psychological needs of autonomy, relatedness, and competence. While gamification affected the intrinsic

motivation of participants through (a) supporting their feelings of autonomy and (b) relatedness, its greatest impact came through (c) supporting their feelings of competency.

**Supporting feelings of autonomy.** Autonomy, according to SDT, "concerns a sense of initiative and ownership in one's actions… [and] is supported by experiences of interest and value and undermined by experiences of being externally controlled" (Ryan & Deci, 2020, p. 1). On the IMI, participants responded higher on the posttest survey of perceived choice ($M$ = 3.52, $SD$ = 1.11) than on the pretest ($M$ = 3.06, $SD$ = 1.12), $t(18) = -2.31$, $p = .033$. Likewise, for the perceived tension/pressure subscale, participants responded lower on the posttest ($M$ = 3.23, $SD$ = 0.80) than on the pretest ($M$ = 3.78, $SD$ = 0.67), $t(18) = 2.35$, $p = .031$. While these results suggest that gamification had a positive impact on participants' feelings of autonomy (i.e., their perceived choice increased and their perceived tension/pressure decreased), it should be noted that the change was modest (the perceived choice mean score increased by 0.453 and the perceived tension/pressure mean score decreased by 0.547) and, following the addition of the Bonferroni correction, were not statistically significant. Moreover, even on the posttest, the perceived choice mean score fell below the scale's median point of *(4) Somewhat true*. From this data, one can conclude any impact of gamification on participants' feelings of autonomy was modest at best and did not necessarily indicate that participants felt a true sense of initiative or ownership in the learning tasks.

These findings may be understood, in part, according to the situated learning environment in which they occurred. The gamified instruction, after all, did not occur in isolation—far from it, in fact. School itself tends to be an environment wherein students do not experience a great sense of autonomy (Scherrer & Preckel, 2019). For instance,

students are legally required to attend school until at least the age of 16 (NCES, 2017), prescribed classes they have to take in order to graduate (NCES, 2018), and then face steep punishments (e.g., higher unemployment rates) should they fail to graduate (Rouse, 2007; Tyler & Lofstrom, 2009). In this larger environment, students learn to "play the grading and testing games that schools… encourage" (Shapiro, 2006, p. 38). Given the constraints of this larger institutional and standardized management culture of schooling (Joseph, 2011), it is reasonable to assume that any autonomy students experience within a particular classroom is a "relative autonomy" (Ryan & Deci, 2020, p. 4).

Nevertheless, participants did experience a relative autonomy, as demonstrated through the qualitative findings. Data indicating impact on the psychological need for autonomy were extracted from the categories of *situating learning in narrative and role-play* and *identified barriers* for Theme 1: Supporting Competency and Theme 2: Hindering Competency, respectively. While participants expressed feelings of purposefulness (Rebecca: "[Our book] had a lot of real life experience going on it, so you could relate to it easy"), choice (Lucy: "Working at our own pace… was nice because some days you're busier than others..."), and reduced tension/pressure (Anna: "[Role-play] makes the project a lot less heavy") through the game elements of narrative and role-play--all feelings which align with autonomy (Ryan & Deci, 2020)--they expressed feelings of reduced autonomy when faced with an increased workload due to peer absences (Rebecca: "...[some of our teammates] weren't here when we presented so we had to take on more stuff… by ourselves") and multiple assignments occurring simultaneously (Robert: "We didn't get enough time for [independent reading] time… so it was kind of hard to keep up").

These findings demonstrate what van Roy and Zaman (2018) referred to as the "ambivalent motivational power of gamification" (p. 38) and what Deterding (2011) described as the situated motivational affordances of different game elements. Basically, van Roy and Zaman (2018) and Deterding (2011) argue that the effect of individual game elements and gamification as a whole depends on a variety of situational factors (e.g., how users experience them in a particular context) and a game element that supports one psychological need may simultaneously hinder another. For instance, while the game element of teamwork supported the psychological needs of relatedness and competence, as discussed further below, the absence of team members resulted in a greater workload for the present teammates, which hindered their feelings of autonomy (i.e., they felt forced to do work that their teammates should have done).

**Supporting feelings of relatedness.** Relatedness involves feelings of belonging and connection to others (Deci & Ryan, 2001; Ryan & Deci, 2020). Data indicating support for this psychological need were extracted from Theme 1: Supporting Competency and the category of *building knowledge through interaction*. These data showed that participants interacted frequently with other students within and across teams and with the teacher. These interactions were enjoyable because they supported feelings of competency, but they were also enjoyable because they supported feelings of relatedness. Simply put, participants enjoyed working with their teams. For instance, Jason described feeling excited when completing an assignment "because it's kinda fun, 'cause you get to do stuff with your group." Gamification created a collaborative learning environment supportive of participants' feelings of relatedness.

These findings align with the substantial research literature demonstrating the positive impact of the social aspects of gamification on learners' intrinsic motivation (e.g., Dominguez et al., 2013; Hamari et al., 2014; Hansch et al., 2015; Knutas et al., 2014; Shi et al., 2014; Smith et al., 2014). Through the progression of the instructional unit, participants developed relationships with their team members (Steven: "...you know each person's mind on something") due to their interdependence and shared responsibilities (Lucy: "...we all wanted to do our part"). Rather than competing against one another, which may have led to disengagement for the losers of the competition (Aldemir, 2018; de-Marcos et al., 2014; de-Marcos et al., 2016; Dominguez et al., 2013; Kopcha et al., 2016; Sánchez-Martín et al., 2017; Turan, Avinc, Kara, & Goktas, 2016), participants worked with one another. This occurred most frequently within teams (Steven: "It was a lot of teamwork…. Everyone was trying to help everyone."), but it also occurred across teams (Rebecca: "...getting to see other groups, seeing how they did on their stuff. It helped.").

In addition to expressing positive reactions to their interaction with other students, participants expressed positive reactions to their interactions with me. For instance, Anna stated that "you're the only English teacher that's ever gotten me to read a book…. 'Cause you actually teach us. You don't just sit at your desk." These findings align with research literature indicating teachers can support students' intrinsic motivation through specific interactive behaviors such as listening to students, responding to comments and questions, and acknowledging their perspectives (Reeve, Bolt, & Cai, 1999; Reeve & Jang, 2006).

**Supporting feelings of competence.** Competence involves feelings of mastery, success, and growth (Ryan & Deci, 2020). The data indicate that gamification supported participants' feelings of competency and strongly suggest that this contributed to the observed impact on participants' intrinsic motivation. For instance, the paired t-test revealed that participants' perceived competency increased significantly from the pretest ($M$ = 4.35, $SD$ = 1.05) to the posttest ($M$ = 5.30, $SD$ = 0.72) $t(18) = -3.76$, $p <$ .001. Moreover, the qualitative analysis resulted in the assertion that *for students disaffected from high school ELA, there is a direct correlation between feelings of competency and intrinsic motivation.* This assertion was supported by Theme 1: Supporting Competency, which included the categories *situating learning in narrative and role-play* and *building knowledge through interaction*, and Theme 2: Hindering Competency, which included the categories *identified barriers* and *proposed solutions*.

These findings align with the research literature on gamification and competency need fulfillment in general and that of gamification's effects on disaffected students in particular. For instance, previous studies have indicated that teachers can support students' feelings of competency through well-structured learning environments (Aelterman et al., 2019; Grolnick et al., 2014) with optimal levels of challenge (Csikszentmihalyi, 1975b; Shapira, 1976) and adequate instructional supports (Anderson, Nash, & McCauley, 2015; Vygotsky, 1978), positive and constructive feedback (Deci & Ryan, 2001; Malone & Lepper, 1987), and frequent opportunities for growth (Reeve & Jang, 2006; Ryan & Deci, 2020). Through the collaborative structure of teamwork, participants were able to distribute knowledge (Maria: "...you can know what other people know also.") as they progressed through the sequenced instructional levels (Anna:

"...the presentation was almost based off of the letter and the annotated bibliography…. It was based off of what you had already done."). With the exception of one instructional activity in particular (i.e., a speech analysis described in detail in the discussion for research question three), participants indicated that the instructional supports of teamwork, narrative, and role-play ensured they were appropriately challenged (Steven: "[Teamwork] makes it a lot easier because you have other people helping you."). Moreover, the presence of informative feedback and the opportunity to revise work ensured that participants had opportunities for growth (Anna: "You would give us comments and say 'resubmit it'... That helped a lot.").

In regards to disaffected students in particular, the research literature supports the finding that competency correlates with and is, putatively, key to intrinsic motivation. For instance, in their longitudinal study of gamification and student types, Barata et al. (2017) found that six distinct student types emerged based on performance and participation patterns. Two of these groups, the Halfhearted and Disheartened, share similarities to the participants in the present study in that they exhibited slightly lower levels of engagement than their peers (i.e., the Achievers and Regular student types). As their study progressed, Barata and colleagues noticed that these student types participated less; consequently, the researchers hypothesized that this may have been a result of the competitive aspects of gamification and the negative effects of social comparison. Because the students did not feel competent, in other words, they withdrew and disengaged from the instruction.

The reliance on collaboration instead of competition as an interpersonal motivator (Malone & Lepper, 1987) in the present study may account for participants' increased

motivation and feelings of competence. Instead of being negatively contrasted with higher-achieving peers, they worked with their classmates; consequently, this provided powerful academic support, supported feelings of competency, and led to higher levels of intrinsic motivation. This conclusion pares with the findings of Harold (2014) in his case study of the impact of gamification on high school students, which concluded that gamification supported the self-efficacy and intrinsic motivation of low- and high-performing students in particular.

Game elements can support or hinder multiple psychological needs simultaneously (van Roy & Zaman, 2018). While the game elements of narrative, role-play, and teamwork supported participants' feelings of autonomy and relatedness, they also supported participants' feelings of competency. In fact, the data indicated that fulfillment of the psychological need for competency is key for the motivation of disaffected students in secondary ELA. By using game elements that support students' feelings of autonomy and relatedness (e.g., narrative, role-play, and teamwork), teachers can also support students' feelings of competency. For instance, when students collaborate, they learn from each other and distribute knowledge (Bandura, 1977; Gee, 2007; Polat & Öz, 2017; Ramirez & Squire, 2014; Swan & Shea, 2005). A collaborative classroom helps form a community of practice wherein all students can develop a sense of belonging and, in the same process, develop feelings of mastery and growth (Gee, 2007; Lave & Wenger, 1991).

**Research Question 2: Does gamification affect the academic performance of students disaffected from high school ELA?**

Gamification is theorized to function as a mediating or moderating influence on learners (Landers, 2014; Landers, Armstrong, & Collmus, 2017). For instance, the integration of game elements into instruction might directly influence students' motivation and indirectly influence their academic performance. The impetus for this research question, therefore, was to determine whether gamification did, in fact, affect the academic performance of participants.

To answer this research question, quantitative data were collected from the ARSA. The findings showed that gamification positively impacted the academic performance of participants. Participants scored significantly higher on the posttest assessment of content knowledge ($M$ = 16.89, $SD$ = 2.78) than they scored on the pretest ($M$ = 9.17, $SD$ = 4.20), $t(17) = -8.55$, $p < .001$. The correlation test results indicated negative but insignificant associations between participants' academic performance and interest/enjoyment ($p = .502$, $r = -.17$), academic performance and perceived choice ($p = .153$, $r = -.35$), and academic performance and felt tension/pressure ($p = .167$, $r = -.34$); however, the correlation test results indicated a positive but insignificant association between participants' academic performance and perceived competence ($p = .562$, $r = .15$).

These findings align with the research literature indicating gamification positively impacts academic performance (Hew et al., 2016; Huang & Hew, 2018; Meng & Hew, 2016; O'Connor & McQuigge, 2013; Tenório, 2016; Tsay et al., 2018; Turan, Avinc, Kara, & Goktas, 2016; Yang, Quadir, & Chen, 2016; Yildirim, 2017). However, because

no significant correlations were found between academic performance and constructs related to intrinsic motivation, it is impossible to say whether the mediating or moderating influence of gamification led to the observed increase in participants' academic performance as theorized (Landers, 2014; Landers et al., 2017). Previous studies have indicated that gamification, while resulting in increased academic outcomes for learners, does not outperform other instructional approaches such as traditional e-learning (De-Marcos et al., 2014, 2016). This raises the question of the degree to which gamification affects academic performance and whether it is needed, in terms of academic performance, if more traditional approaches yield equal or better results.

**Research Question 3: What recommendations can students offer after reflecting on their experiences with gamification?**

As a systematic and participatory form of knowledge construction, action research values the voices of participants (Lawson, 2015; Mertler, 2017). Participants' voices were incorporated into the findings for this study through focus group interviews. Throughout the interviews, participants were asked to provide recommendations based on their experiences with gamification. These recommendations will be used to improve future iterations of this particular instructional unit as well as future implementations of gamification in general. Answering research question three, students offered two specific recommendations after reflecting on their experiences with gamification. These recommendations included (a) implementing measures to address absence and accountability issues and (b) streamlining instruction.

**Implementing measures to address absence and accountability issues.** As demonstrated in the previous chapter's presentation of research findings, participants

raised absences and accountability as twin issues negatively impacting their feelings of competency. While on the one hand participants strongly suggested that they found the presence of teamwork to be supportive of their feelings of competency, on the other they indicated that the absences and lack of participation from some group members hindered their feelings of competency. For instance, Rebecca stated that her group

> struggled with getting our presentation together, especially since we had people absent a lot in my group. So when we presented, we had certain stuff people were gonna do but then they weren't here when we presented, so we had to take on more stuff we had to do by ourselves.

The frequent absences of team members made it difficult for the remaining team members and resulted in them having to take on additional responsibilities in order to complete the task.

In response to the issue of absences and accountability, participants recommended that future iterations of this instructional unit include a requirement for students to complete annotations or some other form of note-taking (e.g., double-entry journals) as they read their novels. As participants explained, this requirement would act as both an instructional support for all students and an accountability measure for absent or non-participating students:

> Anna: I think you should… make [students] take annotations while they're reading because [though] it doesn't seem like it's gonna help… when it comes around to writing, you want something to look back on… once you're all the way through the book.

Rebecca: I think that making us take notes…. [would help] especially 'cause some partners in my group they weren't here a lot, so they didn't really know anything so that we could catch them back up on it.

This recommendation mirrors those of participants in other studies (e.g., van Roy & Zaman, 2018) and further highlights the situated and ambivalent nature of game elements on psychological need fulfillment (Deterding, 2011; van Roy & Zaman, 2018). Requiring annotations may detract from students' feelings of autonomy; however, participants' comments indicate that this loss in autonomy would be well worth the corresponding gain of support for competence (e.g., scaffolding for argumentative writing and reading comprehension) and relatedness (e.g., accountability for absent and non-participating team members).

**Streamlining instruction.** In addition to raising the issue of absences and accountability, participants expressed frustration and feelings of being overwhelmed at the number of assignments occurring simultaneously. Notably, these experiences of frustration related to one assignment in particular: an analysis of a speech, Dr. King's 1967 "A Time to Break the Silence," in which they did not feel adequately supported.

Lucy: I didn't like how we were still doing stuff on top of [reading the speech], if that makes sense, it was just kind of hard going from the regular class stuff back to Voice of Protest and back and forth. I'd rather just focus on four days on this and then one day on that, you know? Or like a week on this instead of spreading it out. We could stay focused on what we were doing because it was hard to see how things connected.

Maria: Like one day we didn't read the speech, and then we read it again and I was confused. We skipped a day.

Robert: We didn't get enough time for [independent reading] sometimes, like some days we'd have it, like some days I couldn't read my book all the way, like I couldn't read it at the house, and then you wouldn't give us AIR time here, so it was kinda hard to keep up with it.

Research indicates that when students feel overwhelmed by or inadequately supported in a challenging task (e.g., analyzing the speech), they are less likely to be motivated or engaged in the task (Csikszentmihalyi, 1975b).

In response to this issue, participants recommended that future instruction be streamlined to provide more time for engaging or interesting tasks (e.g., reading the novels) and more focus and depth on challenging tasks (e.g., analyzing the speech). These recommendations align with the research literature which indicates that teachers can support student autonomy by making time for independent work (Reeve & Jang, 2006). Additionally, game elements such as levels can be used to better structure and scaffold student learning (Anderson, Nash, & McCauley, 2015) so that students are supported and prepared for challenging tasks (Jang, Reeve, & Deci, 2010).

## Implications

This research has implications for me, practitioners, and scholarly practitioners and researchers. Three types of implications are considered: (a) personal implications, (b) implications for teaching high school ELA, and (c) implications for future research.

## Personal Implications

As a result of this study, I have learned several lessons that will enable my continued growth and effectiveness as an educator and help me make informed decisions regarding curriculum and instruction and the use of educational technology. These lessons include (a) conducting a critical review of research literature, (b) collecting and analyzing quantitative and qualitative data, and (c) valuing the voices and perspectives of students.

**Conducting a critical review of research literature.** It is important to make decisions based on existing research. Policymakers and scholars have long lamented the divide between research-based best practices and actual classroom practices (Boser & McDaniels, 2018) and have proposed action research and the development of scholarly practitioners as one means of bridging this divide (Mertler, 2017). Throughout this study, I have consulted research literature in order to inform and justify the decisions I made regarding the identified problem of practice (i.e., lack of student engagement), the resulting instructional innovation (i.e., gamification), and the methods for evaluating the impact of the innovation (i.e., mixed methods data collection and analysis). Conducting an in-depth and comprehensive review of the research literature on gamification and motivation prior to designing my instructional innovation allowed me to understand and apply research-based knowledge to my instruction. For instance, due to my review of the research literature, I understood the potentially harmful effects of rewards on intrinsic motivation (Ryan & Deci, 2001). This, in turn, informed what game elements I incorporated into the design of my instruction. I chose, for instance, to avoid many of the structural features of gamification (e.g., points, badges, leaderboards) and instead rely on

its content features (e.g., narrative, teamwork, challenge). Had I not comprehensively reviewed the research literature prior to designing instruction, then I would have made less-informed decisions, which likely would have led to poorer outcomes.

In addition to learning how to conduct a comprehensive literature review, I have also learned to be a critical consumer of research literature. This involves examining the method and limitations of studies rather than accepting their findings at face-value and also considering whether the findings of a study are applicable in different contexts. For instance, a study reporting the positive effects of gamification for college students may not be applicable to high school students. Likewise, the findings for a study taking place over the course of a few weeks may not be replicable in the context of a longer study. Understanding the nuances and limitations inherent in all methods and studies will enable me to critically evaluate research and use this knowledge to make informed decisions in my own classroom.

**Collecting and analyzing quantitative and qualitative data.** A second lesson I have learned as a result of this research is the importance of making data-driven decisions. This includes the collection and analysis of both quantitative and qualitative data. While quantitative data (e.g., test scores) allows for valuable insights and can be useful with large populations, qualitative data provides depth and detail not possible with numerical data. For instance, when I collected quantitative data via the IMI, it indicated that gamification positively impacted participants' intrinsic motivation; however, it did not provide insight into the particular mechanisms by which gamification had this effect. Analyzing participants' responses to focus group interviews, on the other hand, allowed me to understand precisely how role-play, narrative, teamwork, and challenge

variously affected participants' experiences with gamification. The combination of both types of data allowed for a more comprehensive and reliable understanding of the research phenomenon.

Through this research, I also learned valuable skills in how to analyze these types of data. While in the past I relied solely on descriptive statistics for my analysis of quantitative data, I now know how to make inferences using statistical methods such as a paired t-test. With qualitative data, I have learned how to conduct inductive analysis (Creswell, 2014) to construct categories, themes, and assertions from data. In the future, I will be able to use these skills to analyze a variety of data, such as tests of student learning and surveys of student opinions. The analysis and interpretation of these data will enable me to plan and develop effective instruction for my students.

**Valuing the voices and perspectives of students.** A third lesson I have learned as a result of this research is the importance of valuing the voices and perspectives of students. As Freire (1975) argued, students are not empty receptacles waiting to be filled with the knowledge of the teacher; rather, in a participatory and empowering learning environment, they are co-creators of knowledge. Through engaging students in dialogue through focus group sessions and soliciting their honest feedback on how to improve instruction, I was able to gain valuable insights into my own instructional practices that I would not have gained through mere observation or analysis of test scores. Moreover, while I do not currently have the data to verify this, I suspect that the very act of enlisting students' help in improving the instruction and listening intently to them during focus group sessions empowered them and increased their feelings of autonomy. At the very least, it confirmed to me that students and teachers alike are learners and co-researchers

in pursuit of better understanding their environment. In the future, I will continue to value the voices and perspective of students, particularly those who may feel disaffected or marginalized, and engage in dialogue with them to learn and to improve my craft as a teacher.

## Implications for Motivating Students in High School ELA

This study suggests two major implications for motivating students in high school ELA. These include (a) avoiding deficit thinking and (b) cultivating a community of practice.

**Avoiding deficit thinking.** Deficit thinking (i.e., deficit ideology) obscures systemic inequities and misrepresents these inequities as individual shortcomings (Gorski, 2012; Ladson-Billings, 2007). Valencia (1997) defined deficit thinking in the following terms:

> Deficit thinking is a person-centered explanation of school failure among individuals linked to group membership (typically, the combination of racial/ethnic minority status and economic disadvantagement). The deficit thinking framework holds that poor schooling performance is rooted in students' alleged cognitive and motivational deficits, while institutional structures and inequitable schooling arrangements that exclude students from learning are held exculpatory. Finally, the model is largely based on imputation and little documentation (p. 9).

While it may be tempting for educators to blame students for lacking motivation, this form of deficit thinking ignores the true culprit: the learning environment itself.

Learning, after all, is a natural process which humans undertake for purely intrinsic reasons (Lave & Wenger, 1991; Ryan & Deci, 2020). There is no inherent reason why students would not be intrinsically motivated to learn. However, research has continuously shown that student motivation and engagement decline with each successive year they are enrolled in school (Brenneman, 2016; Gillet et al., 2012; Scherrer & Preckel, 2019; Wang et al., 2015). If educators truly want to understand the issue of student motivation, they must examine their own practices and the culture of schooling. They cannot merely lay the blame at the feet of their students.

It is for this reason, that I have avoided labeling participants in this study as disaffected students. Rather, I have referred to them as students disaffected from high school ELA. While this difference in phrasing may appear nuanced and even frivolous, it is my hope that it verbally avoids placing a deficit lens on the problem of student motivation. Instead of portraying students as inherently unmotivated or disaffected, it acknowledges that the problem lies with how they are taught. If we are to remedy the problem of motivation, then educators must first identify the root of the problem (i.e., the learning environment), and then work within our spheres of influence (e.g., the school, the classroom) to make a difference. Moreover, such work often requires working *with* students and enlisting their help through methods such as focus groups or even participatory action research. Students, after all, are not the problem, but they can certainly play a role in developing solutions.

**Cultivating a community of practice.** Lave (1991) argued that the traditional structure of school results in the "alienation of knowledgeable skill from the construction of identity" (p. 77). In contrast to organic apprenticeship models in which humans

learned from one another for the majority of our history (Lave & Wenger, 1991; Wenger, 1998), school deracinates knowledge and skill from authentic contexts, hindering the transfer of learning to novel situations (Brown et al., 1989) and contributing to disengagement with the learning experiences presented in school settings (Gee, 2004). Wenger-Traynor (2015) defined communities of practice as "groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly" (p. 1).

Gamification, as implemented in the present study, formed a classroom community of practice. Through the game elements of narrative and role-play, students were able to learn knowledgeable skills (e.g., conducting research, forming persuasive arguments) in authentic contexts (e.g., defending a banned book against censorship efforts, presenting arguments to a school board). Through the game elements of teamwork and challenge, students learned to work together, share knowledge and skills, and reach their objectives (i.e., reading and defending their chosen books). The findings and interpretations for this study indicate that this development of a classroom community of practice positively impacted the intrinsic motivation of students previously disaffected from high school ELA and supported their feelings of autonomy, relatedness, and competency.

It is possible that students who are disaffected with traditional instructional practices have not developed the identities necessary for academic success (Gee, 2004, 2007). Because communities of practice facilitate learning through legitimate peripheral participation (Lave & Wenger, 1991) and the development of identity (i.e., participants become members of the community), they have the potential to positively impact these

learners in particular. ELA instruction can benefit from cultivating communities of practice through the deliberate incorporation of student collaboration in authentic and engaging contexts.

## Implications for Future Cycles of Action Research

The findings and interpretations of this study suggest three implications for future cycles of action research: (a) examining the impact of gamification on different student groups, (b) incorporating additional game elements into the instructional design process, (c) lengthening the duration of study, and (d) adapting a more participatory action research model.

**Examining the impact of gamification on different student groups.** While the present study examined the impact of gamification on students who were disaffected from high school ELA, future studies might examine the impact of gamification on a variety of different student groups. For instance, previous studies have indicated varying effects of gamification based on gender (Christy & Fox, 2015; Koivisto & Hamari, 2014). It would be useful, therefore, to understand how gender influences the perspectives of students towards different aspects of gamification (e.g., competition, collaboration, fantasy). Likewise, future cycles of action research could examine how gamification impacts students based on their personality traits (Buckley & Doyle, 2017; Codish & Ravid, 2014) or player types (Bartle, 1996). Finally, another potential avenue for future research includes the examination of how gamification impacts students based on prior academic performance. For instance, several previous studies have found that players/learners experience and engage with gamification differently based on their academic performance (Barata et al., 2013, 2017; Ding et al., 2018). Additional action

research could determine whether these differences are observed in the setting of high school ELA.

**Incorporating additional game elements into the instructional design process.** A second implication for future cycles of action research is incorporating additional game elements into the instructional design process. In the present study, the game elements of narrative, role-play, teamwork, and challenge were incorporated into the instructional design. These content game elements (Kapp, 2013) were chosen largely based on their hypothesized effects on intrinsic motivation (van Roy & Zaman, 2017) and their uses in previous studies (e.g., Harrold, 2014; Hudiburg, 2016). However, other game elements and combinations thereof may further enhance learning outcomes and merit future study. For instance, a substantial body of research literature has examined the effects of badges on learner motivation and performance (Abramovitch et al., 2013; Antin & Churchill, 2011; Ding et al., 2017; Ding et al., 2018; Hamari, 2017; He, 2017; Kyewski & Krämer, 2018; Yang et al., 2016). While the effects of badges, like all game elements, depend on how they are perceived by users (Ding et al., 2017; Hamari, 2017), future research cycles could enlist the help of students themselves in the design and implementation of badges (Davis & Klein, 2015; Davis & Singh, 2017). Future studies could examine how high school students in particular perceive game elements such as badges and how these game elements affect student learning and motivation. Furthermore, the study of different combinations of game elements in an actual classroom setting responds to the calls of researchers such as Deterding (2011), Nacke and Deterding (2017), and van Roy and Zaman (2018) for more gamification studies conducted in field settings. Rather than studying the effects of isolated game elements in

laboratory environments, such studies reveal how game elements impact learners in authentic situations.

**Lengthening the duration of study.** A third implication for future cycles of action research is lengthening the duration of the study. This implication mirrors the call of several researchers for more longitudinal studies in gamification research (de-Marcos et al., 2016; Kocadere & Çağlar, 2015; Nacke & Deterding, 2017). A major limitation of many previous studies has been the potential novelty effect of gamification. In fact, Hanus and Fox (2015) found that after brief increases during the initial implementation of gamification, learners' intrinsic motivation declined significantly as time progressed. This implies that careful consideration and observation is needed for the long-term effects of gamification. Future cycles of gamification might observe its impact over the course of a semester rather than one instructional unit.

**Adopting a more participatory action research model.** A final implication for future cycles of action research is the adoption of a more participatory action research model. The present study most closely aligned with the tradition of teacher action research (Mertler, 2017); however, if a goal of gamification is to increase students' feelings of autonomy and ownership over their own learning experiences, then it may be advantageous to incorporate them into the research process as co-investigators (Freire, 1975). Accordingly, future research cycles might adopt a participatory action research approach (Lawson, 2015) wherein students themselves play a crucial role in identifying the problem of practice, collecting and analyzing data, and developing solutions based on critical reflection, evaluation, and action.

## Limitations

As with any research, this study is not without limitations. One limitation pertains to the action research approach itself. Given its goal of effecting change, action research is inherently localized and embedded in real-world contexts (Mertler, 2017; Mills, 2018). While I took measures (e.g., maintaining a researcher's journal) to minimize any bias arising from my twin roles as teacher and researcher, it is possible that my presence may have biased participant responses or otherwise affected the study's outcome. The findings of this study are not generalizable to other learning environments or populations. As for the research process employed in this study, its applicability to other contexts resides in the reader's interpretation and knowledge of his or her own situational needs.

A second limitation to the study related to its relatively small sample size and method for selecting participants. The study included 19 participants purposefully selected from one semester of a course. While this sample size allowed for inferential statistics, a larger sample size might yield more reliable results. At the same time, the fact that participants were selected on the basis of their disaffection relative to their peers rather than a more absolute measure (e.g., scoring below the midpoint on the EvsD Survey) is a significant limitation. This decision was made in part to allow for a larger sample size but also because any psychometric measure is inherently relative and dependent upon a larger context (Christ & Hintze, 2007). Nevertheless, while a smaller sample size based on stricter criteria for inclusion in the study may have prevented inferential statistics, it may have allowed for a richer and more detailed study of participants' experiences (i.e., a case study approach).

A third limitation to the study pertains to its data collection methods. While data were triangulated to answer the first research question, data answering the second and third research questions were limited to one source. Moreover, the test used to evaluate the impact of gamification on participants' academic performance was teacher-created and may need additional revisions and testing to ensure and enhance its validity and reliability.

Finally, the study was limited to one instructional unit of five weeks in duration. Given the potential novelty effect of gamification and other technologies, it is possible that a longer study may have yielded different results as participants became more accustomed to the instructional innovation and less susceptible to any novelty effect.

## Closing Thoughts

This study began with my own ponderings on how to transform my classroom learning environment and better reach students who may have felt disaffected from high school ELA. The events of the past few months—a global pandemic, the widespread closing of schools, the precipitous implementation of distance learning—have only added urgency to the need to transform my classroom learning environment in particular, not to mention school learning environments in general. While educators will undoubtedly face changes and challenges in the future, they will also be presented with opportunities to redefine and redesign learning environments. As Gee (2004) has argued, rather than starting with instructional content when designing learning environments, perhaps we should start with the following set of questions:

> ‘What experiences do I want the learners to have? What simulations do I want them to be able to build in their heads? What do I want them to be able to do? What information, tools, and technologies do they need?’ Another way to put these questions is: ‘What games do I want these learners to be able to play?’ (p. 107).

We have spent decades encouraging students to “play the grading and testing games” (Shapiro, 2006, p. 38). Now is the time, if ever there was one, to encourage students to play a new type of game, one that does not result in successive declines of engagement and motivation with each year of schooling (Brenneman, 2016; Lepper et al., 2005; Scherrer & Preckel, 2019; Wang et al., 2015), but, rather, one that empowers and prepares them to solve problems in authentic environments. Gamification is one way, though not the only, for educators to cultivate communities of practice wherein students can engage in such “situated, embodied, problem-based learning” (Gee, 2011, p. ix).

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# APPENDIX A

# INSTITUTIONAL REVIEW BOARD APPROVAL

UNIVERSITY OF
SOUTH CAROLINA

OFFICE OF RESEARCH COMPLIANCE

**INSTITUTIONAL REVIEW BOARD FOR HUMAN RESEARCH**
**DECLARATION of NOT RESEARCH**

Michael Jett
[redacted]USA

Re: **Pro00089380**

Dear Mr. Michael Jett:

This is to certify that research study entitled ***Leveling Up Instruction: Action Research Evaluating the Impact of Gamification on the Intrinsic Motivation and Academic Performance of Students Disaffected from High School English Language Arts*** was reviewed on **6/10/2019** by the Office of Research Compliance, which is an administrative office that supports the University of South Carolina Institutional Review Board (USC IRB). The Office of Research Compliance, on behalf of the Institutional Review Board, has determined that the referenced research study is not subject to the Protection of Human Subject Regulations in accordance with the Code of Federal Regulations 45 CFR 46 et. seq.

No further oversight by the USC IRB is required. However, the investigator should inform the Office of Research Compliance prior to making any substantive changes in the research methods, as this may alter the status of the project and require another review.

If you have questions, contact Lisa M. Johnson at lisaj@mailbox.sc.edu or (803) 777-6670.

Sincerely,

Lisa M. Johnson
ORC Assistant Director and IRB Manager

# APPENDIX B

## ENGAGEMENT VERSUS DISAFFECTION WITH LEARNING

## STUDENT SELF REPORT SURVEY

*Note. The following survey was administered to all students in my senior ELA courses and was used to identify potential participants for the study. The survey was uploaded to Google Forms and posted on the school district's LMS.*

**Directions:** The following survey is designed to measure your feelings and attitudes towards school and high school English (ELA). Consider your past experiences in school and ELA. Read each of the following statements, and indicate how true it is for you using the following scale:

| **1** | **2** | **3** | **4** | **5** | **6** | **7** |
|---|---|---|---|---|---|---|
| not at all | | | somewhat true | | | very true |

Behavioral Engagement
1. I try hard to do well in school.
2. In ELA, I work as hard as I can.
3. When I'm in ELA, I participate in class discussions.
4. I pay attention in ELA.
5. When I'm in ELA, I listen very carefully.

Behavioral Disaffection
6. When I'm in ELA, I just act like I'm working. (-)
7. I don't try very hard at school. (-)
8. In ELA, I do just enough to get by. (-)
9. When I'm in ELA, I think about other things. (-)
10. When I'm in ELA, my mind wanders. (-)

Emotional Engagement
11. When I'm in ELA, I feel good.
12. When we work on something in ELA, I feel interested.
13. ELA is fun.
14. I enjoy learning new things in ELA.
15. When we work on something in ELA, I get involved.

Emotional Disaffection

16. When we work on something in ELA, I feel bored. (-)
17. When I'm in ELA, I feel worried. (-)
18. When we work on something in ELA, I feel discouraged. (-)
19. ELA is not all that fun for me. (-)
20. When I'm in ELA, I feel bad. (-)

# APPENDIX C

# CONSENT AND ASSENT FORMS

## Parental Consent Form

September 2, 2019

Dear [Parent]:

This semester, I will be conducting a research study to examine the impact of a gamified instructional unit on the intrinsic motivation and academic performance of students enrolled in high school English. Gamification, or gameful instructional design, attempts to incorporate game elements (e.g., teamwork, points, badges) into classroom instruction in order to optimize learning outcomes. Specifically, I am interested in whether gamification can improve students' motivation to learn and achievement of learning objectives in high school English. I plan to collect data from students and am asking for your child's participation in this research.

Your child's participation will involve responding on a weekly basis to journal prompts regarding instruction. Students will be asked to provide their thoughts regarding specific aspects of the instruction (e.g., what they found challenging about it, what they found enjoyable about it). At different stages in the instructional unit, I will select a few students to respond to a brief, 10-question interview. These interviews will allow me to gain additional insight from students regarding what aspects of the instruction, if any, they found to be motivating and what recommendations they would provide to improve the instruction.

If you or your child chooses not to participate, there will be no penalty. It will not affect your child's grade, treatment, services rendered, and so forth, to which you or your child may otherwise be entitled. Your child's participation is voluntary and he/she is free to withdraw from participation at any time without suffering any ramifications. The results of the research study may be published, but your child's name will not be used. Data collected will be kept confidential. A summary of the research findings will be provided to participants orally and in writing at the end of the study.

If you have any questions concerning this study or your child's participation in this study, please feel free to contact me at 864-949-2355 ext. 61012 or michael.jett@spart5.net.

Sincerely,

*Michael Jett*

Michael Jett

By signing below, I give consent for my child to participate in the above-referenced study.

Parent's Name: _____ Child's Name: _____

Parent's Signature: _____

**Assent Form**

September 2, 2019

Dear [Student]:

This semester, I will be conducting a research study to examine the impact of a gamified instructional unit on the intrinsic motivation and academic performance of students enrolled in high school English. Gamification, or gameful instructional design, attempts to incorporate game elements (e.g., teamwork, points, badges) into classroom instruction in order to optimize learning outcomes. Specifically, I am interested in whether gamification can improve students' motivation to learn and achievement of learning objectives in high school English. I plan to collect data from students and am asking for your participation in this research.

If you agree to participate, I will ask you to respond on a weekly basis to journal prompts regarding instruction. You will be asked to provide your thoughts regarding specific aspects of the instruction (e.g., what you found challenging about it, what you found enjoyable about it). At different stages in the instructional unit, I will select a few students to respond to a brief, 10-question interview. These interviews will allow me to gain additional insight from students regarding what aspects of the instruction, if any, they found to be motivating and what recommendations they would provide to improve the instruction.

If you do not want to participate in my study, no one will be angry with you and there will be no penalty. It will not affect your grade in any way. Your participation is

voluntary, which also means you can change your mind and stop participating at any time. Your name will not appear on any of the data presented to others (e.g., in the published report or in a presentation of the research findings).

If you have any questions about my study, you can ask me at any time. Please feel free to discuss your questions after class or via email at michael.jett@spart5.net.

Sincerely,

Michael Jett

Michael Jett

Please check one of the following:

| | |
|---|---|
| __ YES. I want to be in the study. I understand the study will be done during class time. I understand that, even if I check "yes" now, I can change my mind later. | __ NO. I do not want to be in the study. |

Your name: _____ Signature: _____

# APPENDIX D

## INTRINSIC MOTIVATION INVENTORY

*Note. The following survey was administered to participants before and after the instructional treatment. The survey was uploaded to Google Forms and posted on the school district's LMS. Directions were slightly modified from the pre- and posttest in order to accurately assess participants' attitudes towards the content of the instructional treatment; however, the scale items remained the same. As the instrument creators advise (SDT, n.d.), items were modified to fit the assessed task. Specifically, the phrase* research project *replaced the original wording of* task *(e.g., "While I was working on the task I was thinking about how much I enjoyed it" became "while I was working on the research project I was thinking about how much I enjoyed it."). Scoring information is provided following the items.*

**Directions (Pretest):** The following survey is designed to measure your feelings and attitudes towards past instruction. Consider the last school-assigned research project your participated in. Read each of the following statements, and indicate how true it is for you using the following scale:

**Directions (Posttest):** The following survey is designed to measure your feelings and attiutudes towards instruction. Consider the research project you just completed. Read each of the following statement, and indicate how true it is for you using the following scale:

| **1** | **2** | **3** | **4** | **5** | **6** | **7** |
|---|---|---|---|---|---|---|
| not at all | | | somewhat true | | | very true |

1. While I was working on the research project I was thinking about how much I enjoyed it.
2. I did not feel at all nervous about doing the research project.
3. I felt that it was my choice to do the research project.
4. I think I am pretty good at research projects.
5. I found the research project very interesting.
6. I felt tense while doing the research project.
7. I think I did pretty well at this research project, compared to other students.
8. Doing the research project was fun.
9. I felt relaxed while doing the research project.

10. I enjoyed doing the research project very much.
11. I didn't really have a choice about doing the research project.
12. I am satisfied with my performance at the research project.
13. I was anxious while doing the research project.
14. I thought the research project was very boring.
15. I felt like I was doing what I wanted to do while I was working on the research project.
16. I felt pretty skilled at the research project.
17. I thought the research project was very interesting.
18. I felt pressured while doing the research project.
19. I felt like I had to do the research project.
20. I would describe the research project as very enjoyable.
21. I did the research project because I had no choice.
22. After working at the research project for awhile, I felt pretty competent.

**Scoring information**. Begin by reverse scoring items # 2, 9, 11, 14, 19, 21. In other words, subtract the item response from 8, and use the result as the item score for that item. This way, a higher score will indicate more of the concept described in the subscale name. Thus, a higher score on pressure/tension means the person felt more pressured and tense; a higher score on perceived competence means the person felt more competent; and so on. Then calculate subscale scores by averaging the items scores for the items on each subscale. They are as follows. The (R) after an item number is just a reminder that the item score is the reverse of the participant's response on that item.

Interest/enjoyment:
1, 5, 8, 10, 14(R), 17, 20
Perceived competence:
4, 7, 12, 16, 22
Perceived choice:
3, 11(R), 15, 19(R), 21(R)
Pressure/tension:
2(R), 6, 9(R), 13, 18

# APPENDIX E

# ARGUMENTATIVE RESEARCH SKILLS ASSESSMENT

*Note. The following assessment was administered before and after the gamified instructional unit. The assessment was posted on the school district's LMS, Schoology. After taking the pretest, students were able to view their score but were not able to view which specific questions they missed. The only difference between the pretest and posttest were the directions. Answers are denoted with an asterisk.*

**Pretest/Posttest**

**Directions (Pretest):** Answer the following questions to the best of your ability. A grade will not be given for this test. The purpose of this test is to evaluate your prior knowledge of the upcoming instructional unit's content. Each question is worth 5 points.

**Directions (Posttest):** Use the knowledge and skills you have gained in the completed instructional unit to answer the following questions. Each question is worth 5 points.

1. Which of the following answer selections BEST explains the difference between primary and secondary sources? Primary sources...

    a. are found before secondary sources.
    b. are more important than secondary sources.
    c. provide direct or first-hand information, while secondary sources provide indirect or second-hand information.*
    d. provide information from an author's childhood or adolescent years, while secondary sources provide information from an author's adult years.

2. Consider the following scenario: You are writing a research paper on high school students' study habits.

    Under this scenario, which of the following is a SECONDARY source?

    a. A newspaper article providing interview excerpts from high school students regarding their study habits.
    b. A research article interpreting the relationship between high school students' study habits and academic performance.*
    c. Journal reflections on your own study habits as an adolescent.
    d. Photographs documenting where students tend to study in the library.

3. Which source would provide the MOST relevant and reliable information about high school students' study habits?

    a. Research journal article published in 2017, "Correlation between Amount of Time Spent in Library and Academic Performance"*
    b. Blog post published in 2019, "What Works: My Experiences as an A+ Student"
    c. Newspaper article published in 2018, "S.C. Test Scores Increase"
    d. Encyclopedia article published in 2005, "Study Habits"

4. Consider the following scenario: You are writing a research report on high school students' study habits.

    Under this scenario, which of the following would be the MOST effective research question?

    a. What subject is most important to study?
    b. What are the answers to next week's test?
    c. How do people all over the world study?
    d. What study habits are most effective for high school seniors?*

5. Consider the following scenario: You are writing a research paper on high school students' study habits. Your guiding research question is "what study habits are the most effective for high school seniors?"

    Under this scenario, which of the following would be the MOST effective thesis statement?

    a. The most effective study habits for high school seniors are chunking material into small segments, studying a little bit each night instead of "cramming" the night before, and eliminating distractions such as televisions and phones.*
    b. The most effective study habits for high school seniors is studying hard, being positive, and getting plenty of rest.
    c. High school seniors should study because this will help them earn good grades and pursue their dreams.
    d. In this essay I will answer the question what study habits are the most effective for high school seniors.

6. If given a choice of research questions to investigate in your British Literature class, which of the following would be **too narrow** to write about in a five-page paper?[6]

[6] Questions 6 and 11-15 are adapted from Trails (2019) and retrieved from https://trails-archive.org/assessment-downloads/

a. Should high school students study Shakespeare?
b. How has Shakespeare's work influenced contemporary literature?
c. Which of Shakespeare's plays are tragedies?*
d. Why do some experts believe Shakespeare was not soley responsible for the works credited to his name?

7. Consider the following scenario: You are writing a research paper on the stage history of famous productions of William Shakespeare's play, *Hamlet*.

   If you began your research by using an internet database, which search terms would be MOST helpful for finding useful sources for this topic?

   a. famous playwrights and essayists
   b. the life and times of William Shakespeare
   c. famous stage productions of Shakespeare's greatest plays*
   d. literary criticism of Shakespearean tragedies and comedies

8. Consider the following scenario: You are writing a research report about how the internet changed the lives of Americans. One source for your paper is an interview with a family member who grew up in America before the internet was widely available.

   Which of the following questions would be MOST effective for this interview?

   a. When was the internet invented?
   b. What is your favorite thing about the internet?
   c. What types of things did you do differently before the internet?*
   d. Which websites do you use most frequently and why?

9. Which of the following answer selections BEST defines bias?

   a. An interpretation of a subject based on the consideration of multiple viewpoints.
   b. An interpretation of a subject based on the consideration of statistics.
   c. A prejudice or inclination towards a subject; lack of objectivity.*
   d. A set of statements that contradict one's own beliefs.

10. The following excerpt is from a recently published New York Times editorial on gun control. Read the passage carefully, and then identify which words BEST indicate the author's bias.

"[Members of Congress] reject even mild, sensible laws--such as background checks and bans on gun ownership by domestic abusers or the mentally ill--that would help reduce the country's staggering toll of gun violence."[7]

a. "background checks and bans"
b. "domestic abusers and the mentally ill"
c. "mild, sensible laws... staggering toll of gun violence."*
d. "reject...help reduce"

11. Consider the following scenario: You are writing a five-page paper related to the importance of physical activity. You select the topic "the importance of physical education classes in schools." After preliminary research, you conclude the topic is too broad. Which of the following research questions narrows the research topic?

a. The cost of physical education classes in a school budget
b. The importance of physical activity for all Americans
c. The effect of school physical education classes on childhood obesity*

12. Identify the fact that is not supported by the following paragraph.

One of the several reasons behind the obesity crisis has been the development of suburban America and the urban sprawl trend. As suburbs began to expand in the 1980's, automobile dependence became pronounced. People in suburbs no longer walk to get a loaf of bread and their children no longer walk to school. This trend toward dependence on automobiles and the resulting impact on the obesity crisis is demonstrated in a study done by Reid Ewing, a research professor at the National Center for Smart Growth at the University of Maryland. He surveyed people living in both the most populated counties in the United States and the least populated. He found that the residents of sprawling Geauga County in Ohio were an average of 6.3 lbs. heavier than the residents of crowded Manhattan County in New York.

a. Dependence on cars became pronounced in the 1980's.
b. People who live in Geauga County, Ohio, are 6.3 lbs. heavier than people who live in Manhattan County, New York.
c. People who live in suburbs do not walk anywhere.*
d. Urban sprawl is one of several causes behind the rising obesity rate.

13. Which sentence most strongly supports the statement "Small changes that people make in their lives can have an impact on the fight against obesity?"

[7] Excerpt from The New York Times Editorial Board (2016, October 10). Opinion | When the People Choose Gun Control. The New York Times. https://www.nytimes.com/2016/10/10/opinion/when-the-people-choose-gun-control.html

a. I think that people who want to lose weight need to exercise by walking a minimum of thirty minutes 5 times a week.
b. Studies show that people who walk often can reduce their weight.
c. A 1995 study demonstrated that placing a sign between a flight of stairs and an escalator stating "Stay Healthy, Save Time, Use the Stairs," increased stair use from 8% to 16%.*
d. It's easy to lose weight if you join an exercise club and do what a trainer tells you.

14. You are being asked to argue for or against the death penalty in a five-page paper for your U.S. Government class. You are against the death penalty and must find support for your argument. Which group of questions will BEST guide your research and help you find support for your position?

    a. Group 1:
        i. How many prisoners have been put to death in the U.S. before evidence surfaced to prove their innocence?
        ii. How long has the death penalty been used as a form of punishment?
        iii. What other option exists for sentencing if the U.S. abolished the death penalty?
    b. Group 2:*
        i. How many prisoners have been put to death in the U.S. before evidence surfaced to prove their innocence?
        ii. What recent complications have arisen during execution procedures in the U.S.?
        iii. What other option exists for sentencing if the U.S. abolished the death penalty?

15. Compare the following two paragraphs, then identify which author discusses the statement below.

    Author 1: "Although many scientists who worked to create this weapon and many of the military who would have to use it opposed its use to some degree, the general public backed Truman in his decision to call for unconditional surrender. In a June 10th Gallup Poll, 82% of Americans surveyed stated that the Japanese were a more heartless country than the Germans (18%). Many felt that destroying one of Japan's cities with this new weapon would simply be retaliation for the devastating attack of Pearl Harbor which brought the United States into the war in December of 1941. With only 20% of Americans surveyed believing that the war would end by the end of 1945, the idea that a single weapon would bring a quick and definite end to the war in Japan also confirmed the belief held by Truman and his Cabinet that the atomic bomb should be used."

    Author 2: "During World War II, President Truman had to make many difficult decisions regarding military matters, including, most importantly, the decision to

utilize the new atomic bomb. In order to make these decisions, he looked to military authorities, his cabinet members, scientists and the views of the American public. Most of the American public, 80%, believed that the war would not end within the year 1945. Despite the objections of others, Truman felt he had the firm backing of the general United States population and his Cabinet; he believed that the use of the atomic bomb would be justified in order to end the war quickly."

Which author discusses this statement: "More Americans thought that the Japanese were more heartless than the Germans as of June 10, 1945"?

a. Author 1*
b. Author 2
c. Both Author 1 and 2
d. Neither Author 1 or 2

16. Read the passage below and identify the rhetorical device being used.

"We shall not flag or fail. We shall go on to the end. We shall fight in France, we shall fight on the seas and oceans, we shall fight with growing confidence growing strength in the air, we shall defend our island, whatever the cost may be, we shall fight on the beaches, we shall fight on the landing grounds, we shall fight in the fields and in the streets, we shall fight in the hills. We shall never surrender."

--Winston Churchill, Speech to the House of Commons, June 4, 1940

a. allusion
b. anaphora*
c. antithesis
d. loaded language

17. Read the passage below and identify the rhetorical device being used.

"A true revolution of values will soon cause us to question the fairness and justice of many of our past and present policies. On the one hand we are called to play the Good Samaritan on life's roadside, but that will be only an initial act. One day we must come to see that the whole Jericho Road must be transformed so that men and women will not be constantly beaten and robbed as they make their journey on life's highway."

--Martin Luther King Jr., Speech on the Vietnam War, April 4, 1967

a. allusion*
b. anaphora
c. antithesis
d. loaded language

18. Read the passage below and identify the rhetorical device being used.

"And so, my fellow Americans: ask not what your country can do for you—ask what you can do for your country. My fellow citizens of the world: ask not what America will do for you, but what together we can do for the freedom of man."
--John F. Kennedy, Inagural Address, Jan. 20, 1961

a. allusion
b. anaphora
c. antithesis*
d. loaded language

19. Read the following excerpt from MLK's "Letter from a Birmingham Jail." Which rhetorical appeal does King most strongly use?

"But more basically, I am in Birmingham because injustice is here. Just as the prophets of the eighth century B.C. left their villages and carried their 'thus saith the Lord' far beyond the boundaries of their home towns, and just as the Apostle Paul left his village of Tarsus and carried the gospel of Jesus Christ to the far corners of the Greco-Roman world, so am I compelled to carry the gospel of freedom beyond my own home town."

a. an appeal to ethos*
b. an appeal to logos
c. an appeal to pathos
d. an appeal to kairos

20. Read the following excerpt from MLK's "Letter from a Birmingham Jail." Which rhetorical appeal does King most strongly use?

"Let us consider a more concrete example of just and unjust laws. An unjust law is a code that a numerical or power majority group compels a minority group to obey but does not make binding on itself. This is difference made legal. By the same token, a just law is a code that a majority compels a minority to follow and that it is willing to follow itself. This is sameness made legal. Let me give another explanation. A law is unjust if it is inflicted on a minority that, as a result of being denied the right to vote, had no part in enacting or devising the law. Who can say that the legislature of Alabama which set up that state's segregation laws was democratically elected? Throughout Alabama all sorts of devious methods are used to prevent Negroes from becoming registered voters, and there are some counties in which, even though Negroes constitute a majority of the population, not a single Negro is registered. Can any law enacted under such circumstances be considered democratically structured?"

a. an appeal to ethos
b. an appeal to logos*

c. an appeal to pathos
d. an appeal to kairos

21. Inductive reasoning is a method of argument in which the writer…

    a. first presents evidence about an issue or problem and then draws a conclusion.*
    b. states a thesis and then supports it with reasons and evidence.
    c. uses words with strong connotations in order to sway the audience.
    d. appeals to logic, emotion, and credibility.

**Questions 22-25.**[8] Use the style guide entries and the passage to answer the questions that follow.

**Works Cited Lists**

Book with one author:
Name of author inverted. Title of book. Place of publication: Name of publisher, Year of publication.

Edited anthology or collection:
Title. Ed. Editor's first name Editor's last name, Editor's first name Editor's last name, and Editor's first name Editor's last name. Place: Publisher, Year.

**Writing In-Line Citations**

If author is mentioned in the text:
Wordsworth stated that Romantic poetry was marked by a "spontaneous overflow of powerful feelings" (263).

If author is not mentioned in the text:
Romantic poetry is characterized by the "spontaneous overflow of powerful feelings" (Wordsworth 263).

22. The book referenced below was reissued in 1967 by R.R. Donnelly & Sons, publishers located in Chicago. How would you show this book in a Works Cited list?

    a. Lynch, Jeremiah. Three Years in the Klondike. Chicago: R.R. Donnelly & Sons, 1967.
    b. Jeremiah Lynch. Three Years in the Klondike. Chicago: R.R. Donnelly & Sons, 1967.

[8] Questions 22-25 adapted from the *Collections 12* ELA textbook materials (Houghton Mifflin Harcourt, 2015).

c. Three Years in the Klondike, by Jeremiah Lynch. Chicago: R.R. Donnelly & Sons, 1967.
d. Lynch, Jeremiah. Three Years in the Klondike. Chicago: R.R. Donnelly & Sons, 1967.*

23. What is the correct in-line citation for this sentence?

    In The Call of the Wild, Jack London describes the fall of 1897 as a time "when the Klondike strike dragged men from all the world into the frozen North."

    a. In The Call of the Wild, Jack London describes the fall of 1897 as a time "when the Klondike strike dragged men from all the world into the frozen North" (6).*
    b. In The Call of the Wild, Jack London describes the fall of 1897 as a time "when the Klondike strike dragged men from all the world into the frozen North." (London, p. 6)
    c. In The Call of the Wild, Jack London describes the fall of 1897 as a time "when the Klondike strike dragged men from all the world into the frozen North" (London 6)
    d. In The Call of the Wild, Jack London describes the fall of 1897 as a time "when the Klondike strike dragged men from all the world into the frozen North." (6)

24. What is the correct style for an in-line citation for this quotation from Three Years in the Klondike?

    One gold rush prospector described Klondike winters as "so cold, so cold, that energy, ambition, and even life itself, seem not worth the value of a warm fire."

    a. One gold rush prospector described Klondike winters as "so cold, so cold, that energy, ambition, and even life itself, seem not worth the value of a warm fire" (Lynch 65).*
    b. One gold rush prospector described Klondike winters as "so cold, so cold, that energy, ambition, and even life itself, seem not worth the value of a warm fire (Lynch 65)."
    c. One gold rush prospector described Klondike winters as "so cold, so cold, that energy, ambition, and even life itself, seem not worth the value of a warm fire." (Lynch 65)
    d. One gold rush prospector described Klondike winters as "so cold, so cold, that energy, ambition, and even life itself, seem not worth the value of a warm fire" (65).

25. Information about Jack London can be found in a reference book titled Benét's Reader's Encyclopedia of American Literature. This book was edited by George Perkins, Barbara Perkins, and Phillip Leininger. The publisher is HarperCollins in

New York. It was published in 1991. How would you include this book in a Works Cited list?

a. Ed. Perkins, George, Perkins, Barbara and Leininger, Philip. Benét's Reader's Encyclopedia of American Literature. New York: HarperCollins, 1991.
b. Benét's Reader's Encyclopedia of American Literature. Ed. George Perkins, Barbara Perkins, and Phillip Leininger. New York: HarperCollins, 1991.*
c. Benét's Reader's Encyclopedia of American Literature. George Perkins, Barbara Perkins, and Phillip Leininger. New York: HarperCollins, 1991.
d. Benét's Reader's Encyclopedia of American Literature. Ed. Perkins, George; Perkins, Barbara; and Leininger, Phillip. New York: HarperCollins, 1991.

# APPENDIX F

# FOCUS GROUP INTERVIEW PROTOCOL

**Focus Group Interview #1**

Date: _____ Location: _____ Interviewer: _____ Interviewees: _____

Thank you for consenting to participate in this study. Before we begin, let's quickly review the purpose of the study. The purpose is to examine the impact of a gamified instructional unit on the intrinsic motivation and academic performance of students enrolled in high school English.

This interview will focus on your past experiences with high school English in general and research projects in particular. Your feedback will be valuable for better understanding how to improve instruction in high school English. I will be recording our interview, as well as taking notes, to ensure the data is accurate. The interview should take approximately 30 minutes. Do you have any questions before we start? (Clarify for the participants as needed.)

1. Tell me about your past experiences with high school English Language Arts (ELA).
2. What do you enjoy most about high school ELA?
    a. Why do you enjoy this aspect the most?
    b. What else do you most enjoy about this high school ELA?
3. What do you least enjoy least about high school ELA?
    a. Why do you enjoy this aspect the least?
    b. What else do you least enjoy about this high school ELA?
4. What do you feel like you do well with in high school ELA?
    a. What makes you good at this activity or aspect of high school ELA?
    b. How do you know you do well at this activity or aspect of high school ELA?
5. What activity or aspect of high school ELA do you find most interesting?
    a. Why do you find this activity or aspect interesting?
    b. What makes it different from other activities or aspects of high school ELA?
6. What activity or aspect of high school ELA do you find least interesting?
    a. Why do you find this activity or aspect uninteresting?
    b. What makes it different from other activities or aspects of high school ELA?
7. In what activity or aspect of high school ELA do you put forth the most effort?

    a. Why do you put forth more effort in this particular activity or aspect of high school ELA?
    b. What makes it different from other activities or aspects of high school ELA?
8. In what activity or aspect of high school ELA do you put forth the least effort?
    a. Why do you put forth less effort in this particular activity or aspect of high school ELA?
    b. What makes it different from other activities or aspects of high school ELA?
9. Tell me about research projects or papers you've completed in past ELA classes.
    a. What did you enjoy the most about these projects?
    b. What did you enjoy the least about these projects?

Before we conclude the interview, is there anything you would like to add? (Allow the participants time to consider the question and respond.) Thank you again for participating in this interview and study. I appreciate your insight and feedback!

**Focus Group Interview #2**

Date: _____ Location: _____ Interviewer: _____ Interviewees: _____

Welcome and thanks again for your help in this study. I truly appreciate your help in improving my instruction. As a reminder, the purpose of this study is to examine the impact of a gamified instructional unit on the intrinsic motivation and academic performance of students enrolled in high school English.

You have been participating in the gamified instructional unit for a few weeks now, so I would like to hear your insights on the instruction and curriculum. What has worked and what has not? What should I keep and what should I scrap? How can I change this to make it better? I will be recording our interview, as well as taking notes, to ensure the data is accurate. The interview should take approximately 30 minutes. Do you have any questions before we start? (Clarify for the participants as needed.)

1. Tell me about your experiences in this instructional unit so far.
2. What have you enjoyed most about the instructional unit so far?
    a. Why did you enjoy this aspect the most?
    b. What else did you most enjoy about this instructional unit?
2. What did you least enjoy least about this instructional unit so far?
    a. Why did you enjoy this aspect the least?
    b. What else did you least enjoy about this instructional unit?
3. What do you feel like you did well with during this instructional unit so far?
    a. What made you good at this activity or aspect of the instructional unit?
    b. How did you know you did well at this activity or aspect of the instructional unit?

4. What activity or aspect of the instructional unit did you find most interesting so far?
    a. Why did you find this activity or aspect interesting?
    b. What made it different from other activities or aspects of the instructional unit?
5. What activity or aspect of the instructional unit did you find least interesting so far?
    a. Why did you find this activity or aspect uninteresting?
    b. What made it different from other activities or aspects of the instructional unit?
6. In what activity or aspect of the instructional unit so far did you put forth the most effort?
    a. Why did you put forth more effort in this particular activity or aspect of the instructional unit?
    b. What made it different from other activities or aspects of the instructional unit?
7. In what activity or aspect of the instructional unit so far did you put forth the least effort?
    a. Why did you put forth less effort in this particular activity or aspect of the instructional unit?
    b. What made it different from other activities or aspects of the instructional unit?

Thank you for your responses to this first set of questions regarding your experiences with the instructional unit. I only have a few questions left, and these deal with your recommendations for improving the instructional unit. Before we move on, is there anything you would like to add regarding your experiences with the instructional unit? (Allow participants time to consider the question and respond). Great, let's proceed with the final questions.

8. What would you change about this instructional unit?
    a. Why would you make this(these) change(s)?
9. What would you not change about this instructional unit?
    a. Why would you keep this(these) aspects of the instructional unit?
10. What recommendations can you provide to teachers who want to use gamification to improve their instruction?

Before we conclude the interview, is there anything you would like to add? (Allow the participants time to consider the question and respond.) Thank you again for participating in this interview and study. I appreciate your insight and feedback!

**Focus Group Interview #3**

Date: _____ Location: _____ Interviewer: _____ Interviewees: _____

Thank you for consenting to participate in this study. Before we begin, let's quickly review the purpose of the study. The purpose is to examine the impact of a gamified instructional unit on the intrinsic motivation and academic performance of students enrolled in high school English.

We'll begin the interview by focusing on your experiences with the instructional unit. At the conclusion of the interview, we'll discuss your recommendations for improving this instructional unit. I will be recording our interview, as well as taking notes, to ensure the data is accurate. The interview should take approximately 30 minutes. Do you have any questions before we start? (Clarify for the participants as needed.)

1. Tell me about your experience working on the activities in this instructional unit.
2. What did you enjoy most about this instructional unit?
    a. Why did you enjoy this aspect the most?
    b. What else did you most enjoy about this instructional unit?
3. What did you least enjoy least about this instructional unit?
    a. Why did you enjoy this aspect the least?
    b. What else did you least enjoy about this instructional unit?
4. What do you feel like you did well with during this instructional unit?
    a. What made you good at this activity or aspect of the instructional unit?
    b. How did you know you did well at this activity or aspect of the instructional unit?
5. What activity or aspect of the instructional unit did you find most interesting?
    a. Why did you find this activity or aspect interesting?
    b. What made it different from other activities or aspects of the instructional unit?
6. What activity or aspect of the instructional unit did you find least interesting?
    a. Why did you find this activity or aspect uninteresting?
    b. What made it different from other activities or aspects of the instructional unit?
7. In what activity or aspect of the instructional unit did you put forth the most effort?
    a. Why did you put forth more effort in this particular activity or aspect of the instructional unit?
    b. What made it different from other activities or aspects of the instructional unit?
8. In what activity or aspect of the instructional unit did you put forth the least effort?
    a. Why did you put forth less effort in this particular activity or aspect of the instructional unit?
    b. What made it different from other activities or aspects of the instructional unit?

Thank you for your responses to this first set of questions regarding your experiences with the instructional unit. I only have a few questions left, and these deal with your recommendations for improving the instructional unit. Before we move on, is there anything you would like to add regarding your experiences with the instructional unit? (Allow participants time to consider the question and respond). Great, let's proceed with the final questions.

9. What would you change about this instructional unit?
    a. Why would you make this(these) change(s)?
10. What would you not change about this instructional unit?
    a. Why would you keep this(these) aspects of the instructional unit?
11. What recommendations can you provide to teachers who want to use gamification to improve their instruction?

Before we conclude the interview, is there anything you would like to add? (Allow the participants time to consider the question and respond.) Thank you again for participating in this interview and study. I appreciate your insight and feedback!

Table F1 *Alignment of Research and Focus Group Interview Questions*

| Research Question | Focus Group Interview | Interview Questions |
|---|---|---|
| How does gamification affect the intrinsic motivation of students disaffected from high school ELA? | Interview #1 | 1-9 |
| | Interview #2 | 1-7 |
| | Interview #3 | 1-8 |
| What recommendations can students offer after reflecting on their experiences with gamification? | Interview #2 | 8-10 |
| | Interview #3 | 9-11 |

# APPENDIX G

# INSTRUCTIONAL MATERIALS

*Note. Instructional materials include the (a) Voices of Protest Project Overview, (b) Citizens for Morality Letter, (c) Teamwork Rollcall Instructions, (c) School Board Role Sheet, (d) School Board Agenda, and (d) book club talk show.*

## Voices of Protest Project Overview

This project will require you to work as a team to learn more about your book and the genre of argumentative writing. Specifically, this project includes three major assignments: (a) Annotated Bibliography, (b) Argumentative Letter, and (c) Argumentative Presentation.

As you and your team read your banned book, consider why the book may have been deemed controversial, subversive, or dangerous. Make a list of topics the book addresses, and then work with your team to research one or more of these topics. Ultimately, you will use your knowledge of the book and the issues it addresses to form a research-based argument for why the book should be read or censored. Each team will present its argument in a mock school board meeting before we leave for Thanksgiving Break.

## Learning Objectives

- Evaluate Internet sources for credibility, accuracy, and bias (I.3.3; RI.10)
- Gather, organize, and summarize research findings and create an annotated bibliography (I.3.3-4; RI.6.1)
- Write well-crafted and logical arguments that develop claims and counterclaims and use a variety of credible evidence (W.3)
- Plan, develop, and create presentations or texts (e.g., public service announcements, speeches) that employ rhetorical strategies to communicate a message to a specific audience (C.2-3, 5)

## Instructions

1. Get to know your team members. Complete the Teamwork Roll Call assignment and submit it to Schoology for a daily grade.
2. **Read your book.** As you get past the first few chapters, form a list in your Writer's Notebook of topics the book addresses. **Share this list with your team** during the second book club meeting, and decide which topic(s) your team wants to research in more detail.

3. Once your team has chosen a topic to research, **submit your topic proposal** on Schoology. You will need to clearly state your topic and explain why you chose it. Include research questions that will guide your search for information. See the rubric below for expectations on this assignment and the Unit 3 Schedule for due dates.
4. After your topic has been approved, **begin researching** it. The purpose of this research is not to find evidence in support of your preexisting viewpoint. Rather, it is to become more informed on your topic so that you can form an educated and critical viewpoint. Therefore, your team will need to **gather credible and accurate information from multiple sides** of the debate surrounding your topic. Have each team member **find a credible and relevant article** on the research topic. Individually, each team member will read his/her article and write an objective summary. Collectively, your team will share and discuss the findings from each article and put the summaries together in the **Annotated Bibliography** assignment. See the rubric below for expectations on this assignment and the Unit 3 Schedule for due dates.
5. After gathering research and creating an annotated bibliography, your team can **begin forming an argument** regarding why the book should be read or censored. Using the argumentative and rhetorical elements we study in class as well as your research findings, **compose an argumentative letter to the District Five School Board**. Your letter can be a response to this (fictional) letter from the Citizens for Morality.
    a. Your letter should clearly and convincingly explain your team's position. It should include compelling reasons supporting your claim and strong evidence with citations. Include your references as an enclosure to the letter.
    b. In addition to your own research, you may want to use references from the Censorship Hyperdoc. If your group needs help organizing your argument, use the Argumentative Writing graphic organizer (example).
    c. See the rubric below for expectations on this assignment and the Unit 3 Schedule for due dates.
6. Work with your team to **create a presentation** for your argument. You will present your argument in a mock school board meeting, so plan accordingly. Consider how best to convince school board members, principals, teachers, and parents that your book should (or should not) be read. You may want to create a slideshow (e.g., PowerPoint, Google Slides) that presents the major components of your argument. You may also want to supplement this with a more creative presentation of your book (e.g., a Public Service Announcement style video, a dramatic reading, a multigenre adaptation, etc.). **Be prepared to defend your position and counter the arguments of those who disagree with you**. See the rubric below for expectations on this assignment and the Unit 3 Schedule for due dates.
7. Lastly, complete the Group Evaluation. This evaluation will factor into your final grade for the project, so please take your time and answer thoroughly and honestly.

## Assessment

This project will include several individual grades leading up to the culminating product, which will be a presentation of students' arguments. Students may present their arguments in the format(s) of their choice (e.g., a public service announcement video, a speech, a dramatic reading) but are expected to use logical reasoning, credible evidence, and effective rhetoric no matter the form. The rubrics for the topic proposal, annotated bibliography, argumentative letter, and argumentative presentation are listed below. See the Unit 3 Schedule for all due dates.

**Topic Proposal Rubric**

| Expectations | Meets Expectations (100) | Needs Improvement (0) |
|---|---|---|
| -Topic is clearly and unambiguously stated.<br>-A detailed explanation is provided of why the team chose this topic and why the topic is important to the book.<br>-Research questions are included. | Meets or exceeds all expectations. Students may proceed to research the topic. | Does not yet meet expectations. Students need to revise and resubmit the topic proposal before researching the topic. |

**Annotated Bibliography Rubric**

| | Excellent | Good | Satisfactory | Needs Improvement |
|---|---|---|---|---|
| **Content**<br>-Includes at least one source and annotation from each group member<br>-Annotations objectively summarize each source<br>-Annotations evaluate the credibility and authority of each source's author(s)<br>-Annotations comment on how each source impacts or affects | 70 pts.<br><br>Meets or exceeds all expectations. | 65 pts.<br><br>Meets most expectations. May have a few minor errors. | 60 pts.<br><br>Meets some expectations. May have several minor errors. | 0 pts.<br><br>Does not yet meet expectations. Student may revise and resubmit within 5 days for a higher grade. |

| | | | | |
|---|---|---|---|---|
| the student's own understanding of the topic | | | | |
| **Organization & Format**<br>-Sources are cited in MLA format<br>-MLA format is used for the paper as a whole (i.e., Times New Roman 12 pt. font, double-spaced, etc.)<br>-Proper indentation is used (i.e., hanging indent for the citations, one-inch indentation for the annotations)<br>-Sources are organized alphabetically | 30 pts.<br><br>Meets or exceeds all expectations. | 25 pts.<br><br>Meets most expectations. May have a few minor errors. | 20 pts.<br><br>Meets some expectations. May have several minor errors. | 0 pts.<br><br>Does not yet meet expectations. Student may revise and resubmit within 5 days for a higher grade. |

**Argumentative Letter Rubric**

| | Excellent | Good | Satisfactory | Needs Improvement |
|---|---|---|---|---|
| **Content & Style**<br>-Introduction effectively grabs the reader's attention and clearly states the author's claim<br>-Body paragraphs support claim with logical reasons and credible evidence.<br>-Opposing claims are acknowledged and countered. | 50 pts.<br><br>Meets or exceeds all expectations. | 45 pts.<br><br>Meets most expectations. May have a few minor errors. | 40 pts.<br><br>Meets some expectations. May have several minor errors. | 0 pts.<br><br>Does not yet meet expectations. Student may revise and resubmit within 5 days for a higher grade. |

| | | | | |
|---|---|---|---|---|
| -Conclusion includes a call for action.<br>-Citations are included as needed.<br>-Effectively uses rhetoric (e.g., through parallelism, questions, and appeals to logic, emotion, and credibility) | | | | |
| **Format & Organization**<br>-Uses the correct format for a formal letter, including the correct address and salutation for the recipient (see this resource for formatting guidelines)<br>-Includes paragraphs and a clear introduction, body, and conclusion<br>-Each paragraph focuses on a single idea related to the claim | 30 pts.<br><br>Meets or exceeds all expectations. | 25 pts.<br><br>Meets most expectations. May have a few minor errors. | 20 pts.<br><br>Meets some expectations. May have several minor errors. | 0 pts.<br><br>Does not yet meet expectations. Student may revise and resubmit within 5 days for a higher grade. |
| **Mechanics**<br>-Composition has been proofread and is largely free of any spelling or grammatical errors (e.g., run-on sentences, fragments, | 20 pts.<br><br>Meets or exceeds all expectations. | 15 pts.<br><br>Meets most expectations. May have a few minor errors. | 10 pts.<br><br>Meets some expectations. May have several minor errors. | 0 pts.<br><br>Does not yet meet expectations. Student may revise and resubmit within |

| | | | | |
|---|---|---|---|---|
| uncapitalized proper nouns). | | | | 5 days for a higher grade. |

**Argumentative Presentation Rubric**[9]

| | Excellent | Good | Satisfactory | Needs Improvement |
|---|---|---|---|---|
| **Rhetoric & Organization**<br>-A clear argument is established and a focus is maintained throughout the presentation. The presentation is organized to draw the audience into the argument.<br>-Information is accurate and reasoning is logical<br>-Appeals are made to logic, emotion, and/or credibility<br>-A variety of rhetorical devices are used | 50 pts.<br><br>Meets or exceeds all expectations. | 45 pts.<br><br>Meets most expectations. May have a few minor errors. | 40 pts.<br><br>Meets some expectations. May have several minor errors. | 0 pts.<br><br>Does not yet meet expectations. Students may revise and resubmit within 5 days for a higher grade. |
| **Media**<br>-Media is used effectively to enhance the presentation and support the evidence presented. There may be a combination of photographs and video (or recorded voice-over), as well as text slides when needed and music, that appropriately matches the tone of | 30 pts.<br><br>Meets or exceeds all expectations. | 25 pts.<br><br>Meets most expectations. May have a few minor errors. | 20 pts.<br><br>Meets some expectations. May have several minor errors. | 0 pts.<br><br>Does not yet meet expectations. Student may revise and resubmit within 5 days for a higher grade. |

[9] Adapted from Gallagher, K. & Kittle, P. (2018). *180 Days.* Portsmouth, NH: Heinemann.

| | | | | |
|---|---|---|---|---|
| the argument. Music and video are adjusted to maintain a comfortable sound level for the audience.<br>-Presentation includes at least <u>two</u> modalities (e.g., slideshow and PSA video) | | | | |
| **Pacing**<br>-Presentation time is used effectively. No parts of the presentation appear rushed. Audience interest is maintained. | 10 pts.<br><br>Meets or exceeds all expectations. | 7 pts.<br><br>Meets most expectations. May have a few minor errors. | 4 pts.<br><br>Meets some expectations. May have several minor errors. | 0 pts.<br><br>Does not yet meet expectations. Student may revise and resubmit within 5 days for a higher grade. |
| **Editing**<br>-Spelling and punctuation are correct on all text used in the movie. Transitions are smooth and do not distract viewers between sections of the video. | 10 pts.<br><br>Meets or exceeds all expectations. | 7 pts.<br><br>Meets most expectations. May have a few minor errors. | 4 pts.<br><br>Meets some expectations. May have several minor errors. | 0 pts.<br><br>Does not yet meet expectations. Student may revise and resubmit within 5 days for a higher grade. |

**Citizens for Morality Letter**

November 11, 2019

Dear [Southern High School Principal]:

As parents, grandparents, aunts, and uncles of students in [County School District] and [Southern High School], we, like many adults, enjoy hearing what our children learn while they are in your care. Imagine our surprise and outrage, therefore, when we recently picked up copies of our childrens' independent reading material and found it full of objectionable content. Why are our children reading obscene and political novels? Is your school deliberately attempting to corrupt our youth?

Two books located in the [Southern High School] Media Center, *The Absolutely True Diary of a Part-time Indian* and *Some Girls Are*, have both been banned or challenged recently due to obscenities. Mrs. Frances Wood of Ash, NC, petitioned her local school board to remove the former book due to its being "profane and not redemptive" (Williams). This woman's brave moral crusade resulted in the book being pulled from library shelves in the district; in that district, students who desire to read the filthy novel are now required to obtain parent permission prior to checking it out. Bravo, Mrs. Wood! Likewise, concerned parents at West Ashley High School in Charleston, SC, recently persuaded their high school principal to remove Courtney Summers' trashy novel *Some Girls Are* from summer reading lists due to its frank portrayal of sex and drug use ("National Groups"). Bravo to these concerned citizens! Bravo to these schools! More schools need to follow their example, listen to the concerns of upright citizens, and remove obscene books from library shelves.

However, as concerned citizens, we do not merely demand the removal of obscene novels; we also demand the removal of books that deal with objectionable political issues. Three such books— *All American Boys*, *The Hate U Give*, and *Mexican Whiteboy*— have been challenged and banned due to their political content. Police unions in Charleston, SC, challenged the former two titles due to their depictions of brutality which promote distrust of the police (Flood). We whole-heartedly agree with police union representative John Blackmon's sentiment:

> Freshmen, they're at the age where their interactions with law enforcement have been very minimal. They're not driving yet, they haven't been stopped for speeding, they don't have these type of interactions. This is … almost an indoctrination of distrust of police and we've got to put a stop to that (Flood).

Teenagers— even high school seniors— are much too impressionable to read such controversial political content. Even a book such as Matt de la Peña's *Mexican Whiteboy* is too much for impressionable minds. Though the book does not deal with the police, it was banned in Arizona due to promoting "resentment toward a race or class of people" (Martinez). The book, which we have been told deals with a biracial student learning more about his Mexican heritage, like *All American Boys* and *The Hate U Give* promotes

a politics of resentment and hate towards America. Our schools need to be teaching students how to read and write, not indoctrinating them with anti-police or anti-American propaganda.

While reading is important, there are so many great books out there that students could be reading instead of this trash. Accordingly, we demand the immediate removal of these objectionable novels from the [Southern High School] Media Center shelves and all classroom curricula. This is in the best interest of our children, our most precious resource and the future of our dear country.

Sincerely,

*Citizens for Morality*

Citizens for Morality

Enclosure: Works Cited

Works Cited


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## Teamwork Roll Call

An imagined, yet all too plausible, scenario undergirds the Voices of Protest Project:

> Concerned members of the [County School District] community have raised objections to books in the [Southern High School] library. Consequently, the books have been temporarily pulled from the library shelves. At the next school board meeting, a vote will be held regarding whether the books should be permanently banned. It is up to you and your team to read your banned book and present a research-based argument regarding why the book should be read or censored.

As your team works to prepare for the school board meeting, each member of the team will adopt a specific role or persona. This will help ensure that team members contribute unique skills and work together effectively to achieve success (i.e., a successful presentation of your argument in the mock school board meeting at the end of the unit). Your team will also need to create a team name. This will help give your team an identity and sense of cohesion in your shared purpose.

## Learning Objectives

- Interact effectively and efficiently with others to explore ideas and develop new understandings (C.1)

## Instructions

1. Read over the descriptions of each of the roles listed below, and then have each team member select a role. While everyone in the team is responsible for reading, researching, and writing, the role each member selects will define his or her principal duty. For instance, it will be the Chief Editor's duty to proofread all work and make final decisions about what is submitted and presented. Likewise, it will be the Detective's duty to hunt down obscure sources and leads and ensure justice is served (which will require making an ethical decision regarding reading and censorship).
2. Once all team members have selected a role, form a unique name for your team. Submit your team name and member roles to Schoology.

## Roles

1. **Chief Editor**
    a. Skills include editing, revising, and making final decisions regarding publishing.
    b. Concerned with quality and clarity of writing and communication.
2. **Detective**
    a. Skills include making inferences and hunting down sources and leads.

b. Concerned with the pursuit of justice and doing what is right.

3. **Journalist**
    a. Skills include fact-checking, verifying information, and citing sources
    b. Concerned with the objective facts and understanding all sides of the story.
4. **Market Researcher**
    a. Skills include conducting audience research and forming persuasive messages.
    b. Concerned with marketing ideas and messages to a specific audience.
5. **Professor**
    a. Skills include teaching and researching.
    b. Concerned with deep knowledge and expertise on a subject and how to communicate this knowledge and expertise to others.

**Assessment**

This will count as a daily grade. Students will earn full credit if they submit a document to Schoology that includes a creative team name and identifies the role of each team member.

**School Board Role Sheet**

**Instructions:** As each team presents, the stakeholders in [County School District]—i.e., parents, students, teachers, administrators, concerned citizens—will listen and consider the merits of the team's arguments. Prior to the presentations, you will receive a colored chip which will determine the role you will play in this school board meeting. Your chip will also include a number, which will determine your position on censorship prior to the meeting: the number 1 is for banning the books and the number 2 is against banning the books. The goal of each team is to persuade you to accept their position regarding censorship.

Consider the concerns of your stakeholder. What arguments will he/she find most persuasive? What are his/her concerns regarding censorship?

**Roles**
Blue- Parent
Green- Student
Orange- Teacher
Purple- Administrator
Red- Concerned Citizen

#1- For censorship BEFORE the meeting
#2- Against censorship BEFORE the meeting

**What role did you receive? Give your character a name and a little background info. :)**

**What is your character's concerns regarding censorship? Why is he/she for or against censorship?**

## School Board Meeting Agenda

1. Opening Statement from Superintendent (see below)
2. Student Presentations
3. Question and Answer Session
4. School Board Vote

Dear [County School District] Stakeholders,

It is my pleasure to welcome you all here tonight. Active participation in one's local government is a civic duty and an essential aspect of democracy. I thank each and everyone of you for being here today.

As you likely know, the school board recently received a complaint from the Citizens for Morality group. In their letter, the group raised concerns regarding books on the shelves in the Southern High School Media Center. Specifically, the group alleged the books to be obscene and politically objectionable. Accordingly, the group demanded the immediate removal of these titles from the library shelves. The titles under question include *The Absolutely True Diary of a Part-time Indian*, *All American Boys, The Hate U Give, Mexican Whiteboy,* and *Some Girls Are.*

In response to the concerns of this group of citizens, [the Southern High School principal] decided to rely upon student groups to read the books and research the issues they address. These student groups are present today and will present their findings regarding the issue of whether these books should be banned or remain on the library shelves.

I ask that all stakeholders in attendance at this meeting listen carefully to the arguments of these students. In the spirit of democracy, we will hold a vote at the end of the meeting regarding whether the books will be removed from the shelves. I ask that each of you keep an open mind and hold his or her judgment until all the books have been discussed.

Sincerely,

[County School District Superintendent]

## Book Club Meeting #5: Talkshow[10]

### Goals

1. Share important aspects of characterization, plot, and theme in your novel
2. Think about the novel in a deeper way

### The Task

Each group will be responsible for writing and preparing a "talk show" style presentation based off of the characters for its novel. Each student must participate in both contributing to the writing of the script as well as speaking during the talk show. Each student will have a role as either an interviewer or a character from his/her novel.

### Requirements

- Active participation in the creation of the script
- Have an intro to the "talk show" and conclusion
- Minimum of 10 questions and appropriate answers
- Everyone must speak during the talk show
- Props are allowed within reason
- Everyone's script will be submitted to Schoology for grading.

### Checklist

- Gather ideas for possible intro, questions, and conclusion.
- Each student collaborates to write out a single script and make sure everyone has the same script written out.
- Assign roles: one or two interviewers allowed and everyone else will be characters from their group's novel.
- Practice! Run through the script as you will in front of the class.

### Assessment

| | Excellent | Good | Satisfactory | Needs Improvement |
|---|---|---|---|---|
| **Script**<br>-Includes at least ten questions and answers<br>-Demonstrates a deep | 70 pts.<br><br>Meets or exceeds all expectations. | 65 pts.<br><br>Meets most expectations. May have a | 60 pts.<br><br>Meets some expectations. May have | 0 pts.<br><br>Does not yet meet expectations. Students may |

[10] Adapted from Daniels, H., & Steineke, N. (2004). *Mini-lessons for literature circles.* Portsmouth, NH: Heinemann.

| | | | | |
|---|---|---|---|---|
| understanding of plot, characterization, and theme in the novel | | few minor errors. | several minor errors. | revise and resubmit within 5 school days for a higher grade. |
| **Presentation**<br>-Each group member participates<br>-Presenters read lines audibly | 30 pts.<br><br>Meets or exceeds all expectations. | 25 pts.<br><br>Meets most expectations. May have a few minor errors. | 20 pts.<br><br>Meets some expectations. May have several minor errors. | 0 pts.<br><br>Does not yet meet expectations. Students may re-present within 5 school days for a higher grade. |