Playable Cases as Authentic Practice in Online Classrooms

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ABSTRACT

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Playable cases are a new type of mixed-reality serious game (SG), combining elements of alternative reality games (ARGs) and education simulations to offer an immersive, transmedia story. Participants advance the plot through interactive gameplay and characters with the goal of creating products and experiencing real-world business situations. This study investigates the effectiveness of the playable case Microcore as a tool specifically for online writing instruction (OWI).

Fifty students in online sections of a technical communication course participated in Microcore, in which they responded to pre- and post-survey questions and prompts directed at their perceptions about writing, understanding of workplace communication, and levels of engagement. Responses to the survey were collected, coded for thematic trends, and analyzed. Results from this survey study suggest that playable cases like Microcore may be effective at countering primary OWI difficulties, including disengagement, lack of social presence and humanity, faltering self-efficacy, and unclear, unproductive perceptions about writing assignments. Students responded positively to the playable case and appeared to develop more nuanced views about workplace communication and writing through this immersive narrative and interface.

ACKNOWLEDGMENTS

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Introduction

How to best educate online students—in such a way that combats and overcomes the challenges of online teaching—is a question that has generated significant scholarly attention in recent years. Given our "greater reliance on computers in society" and the ubiquity of educational technology (Vogel 230; Stella and Corry 171), the number of students who are taking online courses continues to rise yearly. This has led to the development of new and refined instructional techniques and technologies that offer a wide range of pedagogical opportunities.

The Committee for Best Practices in Online Writing Instruction defined online writing instruction (OWI) as the following:

> Writing instruction that occurs—at least partially if not fully—in a computer-based, Internet, or intranet instructional setting. It uses online/digital media to provide instruction; to talk about writing; or to distribute, share, and/or collect writing-related materials. OWI can occur in either the synchronous or asynchronous modality using a variety of electronic media, platforms, and technologies. (Hewett and DePew 2)

Traditional, in-person writing instruction has several distinct advantages over OWI. For example, students in traditional classrooms often have more familiarity with instructors and peers, face-to-face visual cues and verbal discussion, and clearer rules and expectations of behavior and participation. In online classrooms, unique challenges emerge for both students and teachers—uncertainty about identity as interaction is entirely relegated to a screen, lack of engagement due to detachment, and frequently unclear expectations (Kebritchi et al. 21; Cunningham 34), with some studies expressing concern that a lack of social presence, engagement, humanity, and training affects the learning value of online writing courses (Gouge

357; Hewett and Bourelle 217–18; Hewett and DePew 9). Educational studies have long stated that interest—engagement and motivation—is necessary for active, lasting learning: "students who are engaged and motivated learn almost effortlessly. Those who are not almost always struggle, resist, and often fail" (Sullivan 120). This same finding is echoed by Meyer, who said that "authentic" learning in online classrooms requires engagement in the situation at hand—in the case of playable cases, solving a problem and encouraging deeper analysis (29). As mentioned, engagement is difficult to maintain in online classrooms—writing classes in particular. Failure to do so results in students "seldom think[ing] of assignments in reading and writing as problem-solving tasks" and thus "often perceiv[ing] the content knowledge they learn as independent bits of information rather than as parts of larger related constructs," leading to a failure to integrate and transfer writing skills (Boiarsky 252–53).

How to remedy this issue of engagement, along with other difficulties associated with digital learning, is still debated by researchers. OWI scholarship, according to Hewett and DePew, has little information available "relative to OWI and practices that might possibly be called 'effective,' let alone 'best,'" with ideas and local developments that don't transfer broadly to other institutions (34). Many studies insist on the necessity of improving the quality of online education in overall design structure and focus and offer largely broad suggestions (Kebritchi et al. 22; Greer and Harris 22). For example, Cunningham advocated for strong "instructor presence and interactivity," to help students feel like they are communicating with "real people" to create a missing sense of community (45), which Meyer agreed with in regards to the significance of communal discourse (71). Stella and Corry found and recommended a greater emphasis, structurally, on engagement—especially "agentic engagement"—for insights into online learning generally (171), while Greer and Harris desired structure to be less reliant on systems and more

directed at individual users (22). In a survey study, Hewett et al. asked respondents what the most important principles, theoretical or pedagogical, are for OWI. Reponses included, in order of importance based on the number of responses, writing focusing on audience and purpose, writing being taught as a (social) process, and face-to-face interaction with students still being important for true education (49–50). These findings reflect what Hewett and Depew said about OWI, that the field has research but little in the way of established best practices, which it sorely needs.

This gap in education research may have answers in a developing technology that has received attention for its use in online instruction: serious games, which Girard et al. defined as "digital games, simulations, virtual environments, and mixed reality" that are concerned with education over entertainment through responsive narrative and story (208–10). Under the umbrella of serious games are alternative reality games (ARGs) and education simulations. ARGs have been defined as "a genre of transmedia storytelling, comprised of interactive elements. . . . To engage with an ARG, players . . . solve puzzles and [find] clues to reassemble the fragments of a story" (Bonsignore et al. 1). Gredler defined education simulations as "open-ended evolving situations with many interacting variables. The goal for all participants is to each take a particular role, address the issues, threats, and problems that arise in the situation, and experience the effects of their decisions" (571). The use of simulations as instruction has been a staple of both business and medical education since the 1950s (Gredler 571), and its usage is spreading to other educational fields. In the last two decades, since the development of the first fully formed game in the early 2000s (Whitton 1), researchers and subject experts have further considered the utilization of computer-based interactive games for writing instruction.

Findings in education and technology studies have suggested that serious games can promote engagement and responsibility for one's own learning (Bagley and Shaffer 113; Finseth 245; Vogel et al. 231). Some even claim that these types of games may even teach people more effectively that traditional methods in classroom instruction (Girard et al. 214; Kebritchi et al. 13; Silvia 58; Sitzmann 490). Alexander recommended that instructors "consider using complex computer games as primary 'texts' in composition courses as a way to engage with students" (37). A restrictive belief has persisted in the academic field that the "social motive of schooling . . . is fundamentally different than that of work. And schooling cannot represent the activity of workplaces, even in simulations" (Russel and Fisher 164). This belief came into being with the advent of the Internet and alternative teaching methods, but as more time and research has been applied to the topic, the conversation has shifted more toward an advocacy for serious games and their "intrinsically motivating" aspects being utilized in classrooms (Sitzmann 490), though certain divergent views have stated that simulations are not necessarily more intrinsically engaging and motivating, contradicting the findings of Sitzmann and others (Wouters et al. 261). The research surrounding serious games is still in development, and consensuses are not yet entirely established, though many researchers lean toward the positive benefits that the technology can have in classrooms.

One aspect of serious games that has *not* been sufficiently investigated is how they can function in and potentially counter the challenges of online writing instruction. The inherent problems with OWI—namely, expectations on feedback and structure, disconnection and lack of identity, and passive or nonexistent engagement (Kebritchi et al. 7–11)—need to be addressed in this digital age. "Education is . . . at a prime point in its relationship with games: if we, as practitioners and researchers, can find and apply approaches which can be cheap and easy to

produce, and yet increase engagement with—or the effectiveness of—learning, we would be likely to find a sizeable captive audience" (Moseley 32–33). Moseley went on to suggest that instructional games address a number of key concerns and areas of interest to truly effective online education: engagement and motivation, narrative, problem-solving, and a sense of community (33).

Simulation-based serious games, where students are placed in new environments outside of school, could be a new solution to this problem of online engagement. There has not been much scholarship directly tying the two topics (serious games and engagement within OWI) together, though both have been explored separately. Games such as SimCity have been used in traditional, in-person classrooms (Bagley 113), as have more directly educational simulations like MyCase by Russel and Fisher, with the desire to "create environments in which students can develop a fuller feel for what it is like to participate in discourse-demanding contexts outside the classroom . . . sensing new genres from the 'inside'" (169). We know that these sorts of serious games are designed to transport participants into a fictitious story environment, where they must learn to succeed in specific circumstances, interact with strangers, and deliver products in a way that mimics the real world. ARGs focus primarily on the immersive quality of games and are not often replayable, while simulations are more known for their educational value and real-world situations (Balzotti et al. 105).

Against this backdrop of research, Jon Balzotti and Derek Hansen have developed a new breed of educational game called a playable case. The goal of the playable case is "to provide a playful, yet realistic, entryway into real-world experiences, . . . to participate in an immersive fictional, yet realistic, experience that connects theory and practice and serves as a novel learning platform, . . . [and] to develop an immersive, transmedia simulation to prepare . . . students to

apply critical thinking and argumentative writing skills in a workplace context" (Balzotti et al. 104, 112). These immersive stories require the participants—here, students—to be a part of something that feels authentic, active, and personalized. This design creates ownership of learning, interest, and engagement through narrative, which stimulates knowledge acquisition and comprehension (Abrahamson 450; Hidi 77–78; Meyer 6; McDaniel et al. 492). The open-ended approach of the playable case is designed to increase the level of challenge and intellectual demand on those participating, imitating the business world. The most effective learning requires a developed sense of challenge and individual involvement in order to remain situationally interested in computer-based assignments (Tulis and Fulmer 44; Finseth 248). The playable case—known as Microcore—was developed by Balzotti and Hansen for advanced writing courses. Two years ago, in one of the early iterations, the developers found strong evidence to suggest that students were successfully engaging with the narrative in traditional, face-to-face classrooms (108).

We wondered if the same results would be found if Microcore were run in entirely online writing courses, addressing the pressing concern of interest and engagement in digital classrooms. In order to investigate and begin to fill the existing hole in the field, we arranged, with permission from its creators, for a case study of Microcore through two online sections of advanced technical writing at a university. We created two online questionnaires: a pre-survey and a post-survey. The two surveys asked questions to students to determine if there would be a change—positive or negative—in perception and self-efficacy because of their engagement with the playable case. More specifically, we aimed to answer the following research focus and questions:

1. In what ways does a simulated professional context—through a playable case—impact student writing, engagement, and self-efficacy in an online course?

2. Will this simulated writing instruction have a positive impact on student learning and how they approach authentic writing and communication?

Microcore

In the playable case, Microcore is a fictitious startup tech company, specializing in revolutionary medical nanotechnology that is on the verge of breaking into the market. Acting as new interns for the company, participants are asked to investigate a serious problem that occurs—a test pig explodes due to malfunctioning nanomachines—and present a solution to ensure no future similar problems. Using style guides, prerecorded but interactive video interviews, clickable images, and other tools shown in Figures 1 and 2, participants investigate the incident and draw conclusions to present to company management in the form of a business proposal.

Figure 1: Microcore Features. These include information about the (fictional) team, the library of materials—style guides and templates—an email system, and a virtual crime scene photo with clickable items. This figure showcases the most current version of the Microcore system.

Figure 2: Microcore Corporate Intranet. Progress through the five virtual days and daily tasks are shown on the left. Student (bottom-right of central image) is interviewing fictional character Caroline by selecting options from the Question Bank. Notes can be taken on the right.

As shown in Figure 2, there are five total "days" in the playable case, each giving participants a series of tasks to complete before moving on to the next day, as well as providing new information to assist them in their cumulative goal of determining the cause of the problem and recommending a solution in the form of a written proposal. It is not mandated what solution should be presented. The open-ended setup is meant to encourage greater creativity and engagement. "High interactivity and the opportunity to make choices while participating in simulation games may result in trainees [participants] feeling empowered, ultimately enhancing [their] self-efficacy" and personal investment in their own learning and end product (Sitzmann 495). Participants in Microcore have a company contact named Bob, who provides instruction on

how to navigate the website and assigned daily tasks. In the course of their investigation, participants interact with several other employees at the company, who present differing viewpoints, priorities, and interpretations of events, which students evaluate and consider in order to come up with their final solution and recommendation. This interactive element utilizes principles of ARG combined with the open-ended, ever-evolving component of simulations to create a playable case.

According to CCCC's principles for online writing instruction, "An online writing course should focus on writing and not on technology orientation" and "appropriate composition teaching/learning strategies should be developed for the unique features of the online instructional environment" (CCCC Executive Committee). This principle was echoed in a recent article by Greer and Harris, who stated that instructors must "focus on users first, technology second" to be truly effective (17). Serious games must first and foremost be about education. ARGs are "collaborative, . . . active and experiential, and provide an authentic context and purpose for activity" (Whitton 34). Microcore was created to function similarly, and thus meet the CCCC requirements and expectations. If students connect with the playable case and it counteracts online writing instruction issues, Microcore could serve as a reliable technology and method of teaching in digital classrooms. OWI needs effective best practices—ones that aim at engaging and creating authentic skills and self-efficacy and investment in personal learning.

Methods

Study Participants and Timeline

Study participants consisted of two online sections of Technical Communication, an advanced writing course taught at Brigham Young University, Provo. Each section contained twenty-five students, totaling fifty. Populating these sections were students of both sexes between twenty and twenty-five years of age, in their junior or senior years of college, and frequently pursuing more technical degrees. These academic pursuits varied from neuroscience and civil engineering to public health and communication disorders, allowing for a wide spectrum of intellectual diversity. The aim of the Technical Communication course is to instruct students on how to produce clear, effective communication commonly used in professional environments, with the students learning genre conventions and creating a variety of technical documents, including literature reviews, presentations, and business proposals. Microcore leads students through the latter, among other smaller documents such as press releases and memos.

The students in both sections of Technical Communication were required to take part in the playable case for the class, which was conducted and played in November 2018 over a two-week period. This was the penultimate unit, after the unit on writing instructions and before the final one focusing on literature reviews, so students had over half a semester of exposure to the course and online environment. The instructor who ran Microcore for both sections has previous experience with the Technical Communication course and OWI. However, he does not have as much prior experience with teaching this specific course online.

Survey Implementation and Design

To introduce students to the Microcore playable case, they filled out an electronic pre-survey, which asked a series of questions regarding views on communication, the writing

process, and self-efficacy. Then, after the playable case was completed two weeks later, students were asked to complete a post-survey, which asked similar questions to the pre-survey. Some minor changes in wording were necessary to encourage deeper reflection and accommodate for varying levels of workplace experience coming in to the playable case. Both surveys were written in-character from the perspective of a company contact in the HR department to allow for authenticity and a more pronounced sense of verisimilitude. (See the appendix for the pre- and post-survey questions.)

The questions in the surveys can be divided into two parts, based on type. In one part, students were asked open-ended questions about applicable prior experiences (for verisimilitude), perceptions about communication and how to solve problems therein, and writing processes. In the second part, students were given prompts and asked to select their level of agreement, with the levels ranging from "Strongly Agree" to "Strongly Disagree." These modified Likert scale prompts dealt with self-efficacy in business writing, confidence in personal capacity to function well in a more professional setting, and feelings of engagement. Slight adjustments to a select few questions were necessary, as students would have differing levels of experience with workplace communication and the proposal writing genre. We reasoned that some students would have limited experience with real-world workplace environments. Therefore, small changes in wording were made to a two post-survey questions, after everyone was guaranteed to have some level of workplace interaction and exposure to proposals. The majority stayed exactly the same between the pre- and post-surveys.

Included in the post-survey was the option for students to opt out of their survey responses being used and analyzed as a part of this study. Fifty online students participated in Microcore. Due to a technical error (discussed in the "Limitations" section), some early

responses were lost. A handful of students did not complete either survey. After the playable case finished, a significant number of participants chose to exercise their right to not have their responses used. In the end, we used pre- and post-survey responses from twenty students for the study.

The student responses were collected organized onto a multi-tab spreadsheet. IDs being provided to students in order to deidentify the data (for example, "344"). With the pre-survey responses next to the post-survey ones, two researchers developed coding schemes for the data, searching for relevant changes in wording and ideas between the two sets of responses. These researchers had no specific changes for which they were specifically looking. Rather, as they went through each question and compared pre- and post-survey responses, themes became distinct between the responses before and after the playable case. They tested a code on one set of questions, found the code to be effective as an overall trend in the responses, and then repeated the process for the remaining open-ended questions and prompts. For the Likert scale prompts discussing self-efficacy and engagement, they determined the overall shift toward positive or negative for each prompt, based change in level of agreement, and then they looked closer at the degree of change for each response. The purpose of this coding process was to see if consistent themes could be found in student survey responses before and after the playable case and whether Microcore had a clear, positive impact on student perceptions about writing and professional communication.

Results

We collected twenty student responses to the pre- and post-surveys and analyzed them in accordance to our research questions: how the playable case affected student writing perceptions and engagement and whether its impact was positive on their online learning experience. Comparing responses between the surveys for our open-ended questions suggested trends in expanded understanding of the social demands and humanity of workplace communication, developed nuance in the scope of resolution required for solutions to miscommunication, and greater sense of purpose and meaning with the Microcore proposal project. For the Likert scale prompts, we found an overall positive increase in online student engagement and confidence with writing assignments and business communication.

Understanding of the Social Dimension

Student definitions of what it means to communicate professionally saw a pronounced change between the pre- and post-surveys, with students identifying a social dimension to communication. Many of the responses to the question before the playable case were impersonal in tone and generic in content. After the playable case, students appeared to see a human element in workplace situations, coloring their responses and offering more professional answers. Table 1 (and the tables hereafter) provides the question or prompt, assigned student identifier, the pre-survey response, and the post-survey response.

Pre- and Post-Survey: What is the goal of professional communication?		
Student ID	*Pre-Survey Response*	*Post-Survey Response*
344	"To allow people to communicate in a structured way that can be standard across	"To express your feelings, thoughts, and concerns to others in a professional manner. This often entails

	many companies and industries."	following a pattern or style that has been developed within [a] company."
529	"The goal of professional communication is to discuss matters of importance and work through the everyday challenges of a work environment."	"The goal of professional communication is to be clear, approachable, and open in your interactions with others via email, phone, and face-to-face conversation."
636	"The goal of professional communication is to ensure cooperation and efficiency in professional environments."	"To ensure that all levels of an organization interact in a professional manner and without misunderstandings."
152	"Communicate clearly any and all details pertinent to business."	"To clearly communicate information so that recipients of the information can completely understand what is going on."

Table 1: Professional Communication Responses. The above comparative answers are a subset of all responses for both the pre- and post-surveys to the survey question, "What is the goal of professional communication?"

This theme of social dimension and humanity reoccurred among the responses we gathered for this question. Students at first appeared to see professional communication as something technical, objective, and aloof. After the playable case, original definitions and conceptions about communication seemed to expand, with students adding elements of socialization and humanity being prominent. They latched onto the social dimension, with their answers reflecting real-world interaction and complication possibly better than could be achieved in a traditional, lecture-based classroom environment. There was greater awareness of

audience—the other side of the conversation—and social necessities in professional

communication. Responses included expanded ideas and terms that were not present before, such

as collaboration ("team," "coworkers," "leadership," "all levels of an organization," "interact,"

and "help each other"), clarity ("flow of information," "no ambiguities or misunderstandings"

and "limit miscommunication"), and personality ("open," "approachable," "timely," and

"professional"). As Finseth stated, "Technical writing does not happen in a bubble" (258), and

these kinds of themes and changes in word choices—repeated across the responses we

received—suggest that students came to understand this, likely through their interactions with

the playable case's characters and personalities. This theme was almost entirely consistent, with

only two of the post-survey responses not mentioning the involvement of others or

demonstrating any substantial changes between pre- and post-survey responses.

Varied Solutions

Our student participants latched onto the social dimension of professional communication,

and the elements of social interaction can lead to miscommunication. Microcore was built to

present its users with workplace communication problems, which we specifically asked students

about to determine if their methods of addressing such problems would change. This question

about communication problems was presented to them generally with the pre-survey (before

exposure to workplace communication could be *guaranteed* for all participants), then it was

specifically applied to workplace communication with the post-survey. Students had to first have

guaranteed experience in a more professional setting, which was why the context was adjusted

for the post-survey question. A theme emerged between the two surveys of greater nuance in

their scope of what it means to resolve communication problems, with larger-scale fixes—

beyond just themselves—being necessary for successful solutions to these kinds of issues, as reported in Table 2:

Pre-Survey: How do you solve communication problems you encounter? Post-Survey: How do you solve communication problems in the workplace?		
Student ID	*Pre-Survey Response*	*Post-Survey Response*
152	"By trying to understand the disconnect and fixing it."	"By communicating. Try different methods of communication, go to other employees, managers, etc."
344	"I prefer to speak with people and figure out what went wrong and discuss how to fix it moving forward."	"You have to determine what is causing the problem, and then develop a method that will allow all people within the organization to communicate effectively and then implement it."
404	"I consider who I am communicating with, what we are discussing and how to best deliver the information I need to share. If there is a problem, I first look to see what I can change on my end to ensure that proper communication is re-established."	"Accountability. Documentation. If I need to speak with someone I reach out in more than one way. If something needs to be clarified I seek out the necessary authority and ask for help. I do not simply 'wing it' to prevent uncomfortable conversations."

| 560 | "When communicating through writing, I revise to make sure I am clear and concise. For large projects, I have others review my writing. I ask for clarification if I do not understand the others' communication." | "Communication requires a shift in company culture. Individuals should understand the importance of working on a team and that each member has a valuable role which can't be completed unless everyone cooperates. Rules will be set in place until communication is more fluid in the work environment." |

Table 2: Communication Problems Responses. The above comparative answers are a subset of all responses for both the pre- and post-surveys to the survey questions, "How do you solve communication problems you encounter?" and "How do you solve communication problems in the workplace?"

Students seemed to develop a more nuanced perspective about miscommunication and what it takes to fix communicative problems, along with varied solutions to address such issues. The responses in the pre-survey offered simple, general solutions that often simply involved discussing the miscommunication with someone via an unspecified dialogue method. However, after the playable case was completed, students offered more precise and varied solutions to communication problems and took personal responsibility for the issues they encountered. We found a pronounced trend of needing to implement solutions to prevent future problems ("setting specific regulations," "approachable leaders," "rules set in place," and "build trust and foster communication between team members"). Previously, responses largely suggested that a communication problem, once addressed just by the students, would not thereafter be a reoccurring issue. This viewpoint appeared to evolve. Even responses that didn't seem to change as much had some greater degree of nuance expressed through wording, including the importance of speaking "directly," replying in a "timely manner," and trying "different methods

of communication" if one does not work to ensure that the needed information is conveyed. While there was a change in the wording of this question between the pre- and post-surveys, we do not believe students would have had the degree of nuance and growth in perspective without the playable case, and we thus attribute the change to Microcore.

Greater Sense of Purpose

Having addressed workplace communication, we wanted to determine the effect of the playable case on the writing process, which is where the final open-ended survey prompt was introduced. The pre-survey prompt was somewhat generalized, asking about how they prepare to write writing assignments. The post-survey question narrowed in on writing a proposal and how their process writing it was different from other writing assignments. This adjustment was necessary, as it was assumed that not many students would have had any experience with the genre. We addressed this change by including the follow-up question, "How is the writing process you used during the Microcore internship different from other writing assignments you've done in school?" We were more interested in seeing how this particular writing assignment affected their writing process and how the students felt about it compared to other schoolwork. What stood out from the responses after the completion of the playable case is the level of enjoyment and sense of realism and purpose with the end product. One student wrote, "The nature of these documents [proposals] being centered around events and actions to be taken in response was something new and something I very much enjoyed." Another stated, "It was more enjoyable [than other writing assignments]. I was actually engaged in the process and was curious about what was going on." Proposals were unfamiliar to students, but they felt grounded and engaging.

Whitton wrote, "A crucial element in the design of [playable cases] is the notion that 'this is not a game'" (32). This came through with the responses we received. As one student wrote, "I felt that the writing assignments during the Microcore internship were actually meaningful and are . . . like what I could potentially be writing down the line of my future career." Another wrote about how the nature of the information they presented was important: "My proposal could get someone fired. That is life changing. It also could be a mistake for the company, should any of the proposal turn out to be incorrect information or a bad process." It seemed to feel real, with some even comprehending that their proposals—their suggestions of company action—could have drastic, real-world consequences, from company expenses to the firing of employees. This developed sense of purpose was reflected across most of the responses, with only three expressing superficial differences such as templates and style guides that were provided with the playable case.

All of these expanded definitions and conceptions about professional communication and writing, submitted by students, indicate an overall positive, rounded change in perspective, one more in keeping with a professional context. The students appeared to identify social themes, explore larger intricacies, and develop real-world investment from the Microcore playable case, based on the responses collected before and after.

Engagement and Self-Efficacy

Serious games require sufficient engagement to be effective teaching tools. When students take *online* courses, there is an even greater need for engagement, with the classroom sense of community and identity all but absent from conscious thought. Through Microcore and the agree or disagree Likert scale prompts, we were able to evaluate student perceptions about writing, self-efficacy, and overall engagement with the playable case in an exclusively online

setting. Statements addressed student feelings of confidence in solving workplace problems with writing and professional communication skills, the place writing has in their future careers, how writing functions in the workplace, and opinions on ability to navigate people and tasks in the business world. They responded as shown in Table 3:

Pre- and Post-Survey: Select the appropriate level of agreement with each of the following statements.		
Prompt	*Total Pre-Survey Responses*	*Total Post-Survey Responses*
I am confident in my ability to solve workplace problems with writing.	• Strongly Agree: 2 • Agree: 7 • Somewhat Agree: 7 • Neither Agree nor Disagree: 2 • Somewhat Disagree: 2 • Disagree: 0 • Strongly Disagree: 0	• Strongly Agree: 3 • Agree: 10 • Somewhat Agree: 7 • Neither Agree nor Disagree: 0 • Somewhat Disagree: 0 • Disagree: 0 • Strongly Disagree: 0
Writing is critical to my future career.	• Strongly Agree: 5 • Agree: 8 • Somewhat Agree: 4 • Neither Agree nor Disagree: 1 • Somewhat Disagree: 0 • Disagree: 2 • Strongly Disagree: 0	• Strongly Agree: 7 • Agree: 7 • Somewhat Agree: 4 • Neither Agree nor Disagree: 1 • Somewhat Disagree: 0 • Disagree: 0 • Strongly Disagree: 1

I am confident in my communication skills in a workplace environment.	• Strongly Agree: 5 • Agree: 11 • Somewhat Agree: 4 • Neither Agree nor Disagree: 0 • Somewhat Disagree: 0 • Disagree: 0 • Strongly Disagree: 0	• Strongly Agree: 2 • Agree: 13 • Somewhat Agree: 4 • Neither Agree nor Disagree: 1 • Somewhat Disagree: 0 • Disagree: 0 • Strongly Disagree: 0
I understand how professional writing functions in a workplace environment.	• Strongly Agree: 5 • Agree: 8 • Somewhat Agree: 5 • Neither Agree nor Disagree: 1 • Somewhat Disagree: 1 • Disagree: 0 • Strongly Disagree: 0	• Strongly Agree: 4 • Agree: 11 • Somewhat Agree: 4 • Neither Agree nor Disagree: 1 • Somewhat Disagree: 0 • Disagree: 0 • Strongly Disagree: 0
I am confident in my ability to navigate people, tasks, and difficulties related to communication in a business environment.	• Strongly Agree: 2 • Agree: 10 • Somewhat Agree: 6 • Neither Agree nor Disagree: 0 • Somewhat Disagree: 2	• Strongly Agree: 4 • Agree: 13 • Somewhat Agree: 2 • Neither Agree nor Disagree: 1 • Somewhat Disagree: 0 • Disagree: 0

	• Disagree: 0	• Strongly Disagree: 0
	• Strongly Disagree: 0	

Table 3: Self-Efficacy Responses. The above responses to Likert scale prompts show student perceptions and self-efficacy in regards to writing and communication before and after the playable case. Shifts in agreement lean toward positive increase overall, with the only decrease being for the prompt, "I am confident in my communication skills in a workplace environment."

Of the five Likert scale prompts, only one saw overall lower levels of agreement from before Microcore to after, with the other questions showing minor to major rises in level of agreement. The negative shift in level of agreement was almost never drastic, normally only move down a single level in individual responses—for example, "Agree" to "Somewhat Disagree." All of the statements assessing self-efficacy and perspectives on the importance of writing showed increases in confidence and agreement besides one. However, for every statement with positive increase or negative decrease, there was a similar number of responses who had unchanging feelings. Their responses after the playable case mirrored those from before.

This generally positive response count continued with the final section of Likert scale prompts, in which we assessed student engagement and recommendation for this method of instruction. This was especially important to determine if this method of OWI would be able to counteract one of the inherent problems associated with online learning. The results are as follows in Table 4:

Post-Survey: Select the appropriate level of agreement with each of the following statements.	
Prompt	*Total Post-Survey Responses*
I found this digital internship to be interesting.	• Strongly Agree: 7 • Agree: 8

	• Somewhat Agree: 4 • Neither Agree nor Disagree: 1 • Somewhat Disagree: 0 • Disagree: 0 • Strongly Disagree: 0
I was engaged with the assignments I was given.	• Strongly Agree: 4 • Agree: 10 • Somewhat Agree: 4 • Neither Agree nor Disagree: 1 • Somewhat Disagree: 1 • Disagree: 0 • Strongly Disagree: 0
The resources provided to me were helpful in understanding my assignments.	• Strongly Agree: 5 • Agree: 8 • Somewhat Agree: 4 • Neither Agree nor Disagree: 2 • Somewhat Disagree: 1 • Disagree: 0 • Strongly Disagree: 0
I would recommend the Microcore internship to others.	• Strongly Agree: 3 • Agree: 8 • Somewhat Agree: 8

	• Neither Agree nor Disagree: 0
	• Somewhat Disagree: 0
	• Disagree: 1
	• Strongly Disagree: 0

Table 4: Engagement Responses. The above responses to Likert scale prompts show student responses to and engagement with Microcore. The overall consensus suggests that online students reacted positively to Microcore, showing interest in the assignments and experience.

Many of these students had feedback to offer in the post-survey on how to better improve the internship experience in the playable case, which suggests some degree of disconnect and issues with engagement for some students. However, based on the large-scale trend toward positive change in student responses, it would seem that Microcore is able to generate sufficient engagement with the majority of online students. Improvements can be made, but the increases in self-efficacy and feelings of engagement indicate positive impact on student writing in this online use of the playable case.

Discussion

Our intent with this survey study was to test this playable case to see what kind of impact it would have with online students and their perceptions about writing, communication, and engagement and whether that impact was positive. Results from the study indicate that the Microcore playable case created an effective simulated environment that positively impacted student perceptions and feelings about business communication, writing assignments, and and engagement. There were certainly outliers, but it seemed that the majority of students who participated in this study saw increases in self-efficacy, felt engaged and invested in the material, and had their worldviews expanded with social elements and nuanced ideas about professional communication principles and solutions to problems.

As previously mentioned, the surveys can be broken into two parts: open-ended response questions that were focused on student perceptions about their writing and their ability to solve communication problems and modified Likert scale prompts that gauged confidence in navigating new environments and overall engagement with the playable case. Early definitions of professional communication were significantly more general and detached. Perhaps this is in part due to expectations in technical writing, enhanced by the online environment of the sections. However, with the completion of the playable case, students seemed to describe a greater level of humanity and social interaction necessary for effective business communication. Pre-survey resolutions to communication problems were often simple and limited to their own selves with one-and-done solutions, but these views changed in the post-survey, where they provided greater depth and variety of answers, with the need for systemic alterations and follow-ups. Students appeared to grasp that writing and interaction within a workplace is not isolated—even a simulated work environment—and responded accordingly. With the final open-ended questions,

we aimed to see if student approaches and feelings about Microcore writing projects were distinct from those of other school assignments. In her book, Meyer expressed that, for engagement to be achieved with online students, there must be clear educational objectives, with active and collaborative learning (90–92); Gredler supported this, adding that roles must be defined, with responsibilities and complexities (571). Our Microcore students reported a greater sense of enjoyment with the final proposal product and work they did, compared to other school assignments, along with a developed sense of personal responsibility. It was different, but focused and directed toward a concrete sense of reality. Their roles were defined and their responsibility for the situation clear, which seemed to contribute to a greater investment in their own learning, along with the nature of the product they were creating.

The Likert scale prompts aimed to measure how students interacted with and responded emotionally to the playable case. We wanted to see if they felt more confident in their perceptions about communication and writing after the playable case and determine how engaged and interested they were. Hidi and Renninger stated, "Interest [engagement] as a motivational variable refers to the psychological state of engaging or the predisposition to reengage with particular classes of objects, events, or ideas over time" (112). In online classes, students have a far greater degree of control over their choices and amount of conscious participation (Stella and Corry 166). According to Balzotti et al., "For writing assignments, applicability to life outside of school can be crucial to student engagement and motivation" (109). This idea (at the forefront of the design of Microcore) was also addressed by Williams and Beam, who—looking at the interaction of technology and writing and student engagement within—stated that "proficiency with writing is crucial to academic achievement, employment, and promotion in the workplace" (227). Serious games like ARGs, simulations, and playable

cases have been reported to increase overall engagement through a greater sense of interaction and control over learning, immersion, and complex, compelling narrative and real-world situations (Balzotti et al. 108; Bonsignore et al. 2; Gredler 571; Russell and Fisher 169–75). The majority of students reported back increases in self-efficacy and pronounced engagement with the playable case, with only a few declines. Only one statement saw a dip in self-efficacy, "I am confident in my communication skills in a workplace environment." This change may be due to having perspectives changed on what exactly business communication entails after being exposed to the complexity and intricacy of the workplace. Microcore seemed to have effectively altered and expanded their definitions and mental perceptions about communication, which may have had an effect on their sense of confidence.

Our findings offer intriguing insights into student perceptions about communication and writing within the confines of online classes. Whitton suggested that there are three integral components with ARGs in order for them to be effective: exposition, interaction, and challenge (33). Sitzmann agreed with Whitton, stating that these narrative and design elements create a digital space for "engaging and engrossing" content (493). The Microcore playable case meets these criteria with a clear fictitious setting that places students in an important and interactive role, which expects them to produce a final product: a proposal—a genre with which few students had any prior experience. This sense of challenge is important for immersion, engagement, and active learning and retention (Dorn 60; Tulis and Fulmer 44; Meyer 90). Of the twenty responses recorded and analyzed in this study, only one said that he or she found the playable case uninteresting, and two others were not as engaged by the assignments given to them as part of the game. The rest seemed to find Microcore to be engaging and worthy of recommendation for similar classes (see Table 4). Limited numbers of students dropped in self-

efficacy or engagement when questioned. If they did, on average only one dipped for every three who felt improvement or positive about the statement.

Based on these findings from our surveys, it seems that the playable case positively impacted online student writing, self-efficacy, and engagement, with visible upward trends from the responses we received. A 2006 study by Vogel et al. similarly found that "those using interactive simulations or games report higher cognitive gains and better attitudes toward learning compared to those using traditional teaching methods." They do mention that, at the time, this claim was considered to have an insufficient research base to be entirely stated with confidence (239). However, this conclusion was independently reached by a number of other researchers (Sitzmann 520; Russell and Fisher 182; Meyer 71). Our results seem to align, with students demonstrating clearer and more nuanced approaches to communication and writing and only one self-efficacy prompt resulting in a notable decrease between pre- and post-survey, which could be explained by a developed sense of complication that exists in real-world communication. After the playable case, students generally seemed more confident and rounded in their skills and aware of the importance of writing and effective communication in workplace environments.

Limitations

With this study, there are three noteworthy limitations. The first was brought up in the "Methods" section: there was a technical error that resulted in some of our preliminary responses to survey questions being unusable. After the students completed Microcore, a significant number of participants chose to exercise their right to not have their data used. This left us with a smaller sample size of twenty students—under half of the original number who were selected to participate between the two online courses. Ideally, a greater number of students would lead to

more choosing to allow their responses to be used, resulting in more defined trends and more accurate conclusions.

The second limitation is the scope of the study. The findings apply to one playable case at one university in one type of class. A broad examination and comparison of playable cases like Microcore being used in different kinds of online writing courses could reveal more rounded and conclusive data and results. This same method could be applied to a multitude of classes, perhaps even comparing different kinds of simulations and determining a model that is most effective for online writing instruction.

The final limitation stems from the research pool itself. The majority of students who were involved with this study come from similar economic, ethnic, and social backgrounds. This could have a degree of influence and restriction on the results gathered, though it does not inherently discredit the trends we found and applications we have made. Meyer, in her research, determined that no consistent evidence of gender, ethnicity, or other differences affected student engagement or learning (60–61).

Future Research

Self-efficacy and the development of writing skills both happen slowly (Bruning et al. 27–28), so serious games are not one-and-done solutions, but based on research from a plethora of scholars investigating other serious games and the preliminary results found in this study, the possibility exists for playable cases to help online writing instructors develop greater engagement with students and authentically learn and practice their writing skills. Sitzmann (520), Girard et al. (214), and others seem to reflect this claim with traditional classrooms and ARGs and educational simulations. As we found with this study, Microcore also appears to alleviate struggles typically found in *online* courses: lacking identity, disassociation and disengagement,

and lacking control and interactive elements. A "social presence" is needed in every classroom to create sufficient interest, personal and situational (Cunningham 35). This effort to engage learners through narrative, to build connections through stories—as Abrahamson advocated (446)—can create a sense of community and allow for increased retention and confidence within a program (Meyer 71). Trends in student responses suggest that playable cases like Microcore could be useful to online writing instructors in rounding out student perceptions on writing assignments, increasing engagement and self-efficacy overall (though this will vary from student to student), and having a positive impact on the mentality of their students in regards to the written word.

Future research is recommended to confirm these findings, as well as develop on them. The sample size could be made larger and possibly more diverse to allow for more rounded data and interpretation. It may also be worth comparing responses to playable cases between traditional classrooms and online ones so as to determine if the method is better suited to certain teaching venues. Also, it could be beneficial to compare this playable case to others in the field to see how students of various locations and levels of ability respond to each in order to best engage writing students. Wouters et al. suggested in an article that serious games (like playable cases) are not inherently more motivating than traditional methods of instruction, concluding that "serious games are more effective when they are supplemented with other instructional methods than they are when used as [the] sole instruction method" (260). Perhaps this ought to be investigated across an entire semester of an online class to determine if these researchers are correct in their claim.

In the end, we believe, based on our results from this study, that the possibilities with playable cases are vast for in-person, traditional classrooms and especially online writing

courses, serving as effective and authentic practice for students and possibly as a needed best

practice for the OWI field.

Appendix: Survey Questions

Pre-Survey:

Congratulations on your acceptance to Microcore! HR needs a little information from you before

your first day on the job. Please complete the following questionnaire. We're thrilled you're

joining our company family and expect great things from you. —HR Team

1. What is your first name and last name?

2. What is your gender? (Male, female)

3. What is your year of birth?

4. What is your current class in school? (Freshman, sophomore, junior, senior)

5. What is your major?

6. List and concisely describe any prior applicable internships or jobs you have had.

7. What is the goal of professional communication?

8. How do you solve communication problems you encounter?

9. Describe how you prepare to write writing assignments?

10. Select the appropriate level of agreement with each of the following statements. Know

    that your responses will not affect your evaluation or participation; this is only intended

    to help us improve the Microcore internship program. [*This question was measured on a*

    scale of strongly agree to strongly disagree.]

    - I am confident in my ability to solve workplace problems with writing.

    - Writing is critical to my future career.

    - I am confident in my communication skills in a workplace environment.

    - I understand how professional writing functions in a workplace environment.

- I am confident in my ability to navigate people, tasks, and difficulties related to communication in a business environment.

Post-Survey:

Well done completing your Microcore internship. We hope that you have gained some valuable

experience and knowledge about professional business writing. Please conclude your internship

by filling out this exit questionnaire. —HR Team

1. What is your first name and last name?

2. What is the goal of professional communication?

3. How do you solve communication problems in the workplace?

4. How is the writing process you used during the Microcore internship different from other writing assignments you've done in school?

5. Having completed the Microcore internship, select the appropriate level of agreement with each of the following statements. Remember that your responses will not affect your evaluation; this is only intended to help us improve the Microcore internship program. [*This question was measured on a scale of strongly agree to strongly disagree.*]

   - I am confident in my ability to solve workplace problems with writing.

   - Writing is critical to my future career.

   - I am confident in my communication skills in a workplace environment.

   - I understand how professional writing functions in a workplace environment.

   - I am confident in my ability to navigate people, tasks, and difficulties related to communication in a business environment.

6. Select the appropriate level of agreement with each of the following statements. Again, your responses will not affect your evaluation. [*This question was measured on a scale of strongly agree to strongly disagree.*]

   - I found this digital internship to be interesting.

   - I was engaged with the assignments I was given.

- The resources provided to me were helpful in understanding my assignments.

- I would recommend the Microcore internship to others.

7. Provide us with specific feedback on the internship. What did you like?

8. How could we improve the Microcore internship experience?

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