Serious Interactive Fiction: Constraints, Interfaces, and Creative Writing Pedagogy

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INTRODUCTION

In this article, we consider the ways student writers perceive the challenges involved in writing interactive fiction (IF) as creative writing and how they perceive the efficacy of IF as a tool for persuasion. We contend that approaching creative writing through serious IF creates interconnection among creative writing craft, performing research, and working with interface/code. Our students’ experiences demonstrate that engaging with the hypertextual interface enhanced their ability to purposefully redeploy and reflect on creative writing techniques and to engage players through procedural rhetoric.

To better understand how writing serious IF interacted with students’ composition and research practices, we both surveyed and conducted a roundtable with volunteer participants from an upper-division class, Writing Strategies for Game Design. The participant responses articulated the relationships each forged among creative writing practices, research practices, and digital technologies. When analyzed holistically, the participant survey responses and roundtable discussion show that serious IF offers a productive way to experience how digital tools can provide structure while fostering creativity. The results of our study help fill a gap in creative writing studies previously articulated by Bronwyn Williams and Adam Koehler (discussed in later sections) by explicitly interrogating the role of tools and interface (as we discuss later, we use Collin Brooke’s definition as frameworks for agency rather than single contact points for human-computer interaction) in students’ composing process. To ground our discussion, we first provide background on interactive fiction and serious games before turning to an in-depth consideration of interface and the affordances and constraints provided by using the tool Twine to create serious IF in creative writing classes.
Although the definition of “interactive fiction” is debated (see Andrew Plotkin’s “Characterizing, If Not Defining, Interactive Fiction”), we define it broadly as a primarily text-based branching narrative that takes input from a user, either through a parsing prompt where users type actions for their character to perform or through hypertext links users click to select an action or choice. This input allows the reader/player some agency to make choices about the narrative (though the actual effect of these choices can vary significantly based on the writer’s design). Currently, parser-based IF is often developed using Inform 7 while hyperlink-based texts are often developed using Twine. For the writing course we discuss here, we selected Twine because its use of lightweight markup language as well as HTML and CSS better matched our students’ pre-existing knowledge of web development and their lack of experience with other programming languages.

We define serious games, another hotly contested term, as games whose primary focus is on informing and persuading the reader/player about an issue or perspective through the actions taken in the game. In serious games, players actively construct knowledge of the topic through problem-based and experiential learning via the games’ procedures and affordances. This method is often referred to as procedural rhetoric, a term introduced by Ian Bogost in his 2007 book *Persuasive Games*, which is “the practice of persuading through processes in general and computational processes in particular” (3). A game persuades its players not just through traditional rhetorical appeals but also through enabling players to engage with, act upon, and affect the problems the game presents. As Richard Colby explains, the procedures the game—or, for our purposes here, a work of IF—creates for the reader/player “provide a context for embodied action and choices . . . [P]rocedural rhetoric is the leveraging of the affordances of those rules and mechanics to communicate, express, and (re)present” the possible actions and affordances of the world (44).

A central goal of a serious game is to use procedural rhetoric to enable players to perceive a new positionality. As Egenfeldt-Nielsen, Smith, and Tosca argue, video games “make it possible for the learners to approach a subject in an active way and construct their own representations. In an ideal game, [...] the learning experience of the students draws on different perspectives, gives rise to a variety of actions, and offers a fuller understanding of the given topic” (249-250). For example, a famous predecessor to the modern serious game movement, *Oregon Trail*, provides a mostly historically inaccurate simulation of 19th century westward expansion, but as players navigate the game, the procedures and actions presented to them influence their understanding of what structured that journey, including hunting, fording

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1 Scholarly discussion about IF as literature is well established already; those interested in the debate over IF’s literary qualities and its relationship to hypertext and electronic literature might reference Espen Aaserth’s *Cybertext*, J. Yellowlees’s *The End of Books—or Books Without End?*, Nick Montfort’s *Twisty Little Passages*, and Anastasia Saller’s *What Is Your Quest?* as well as the *IF Theory Reader* collected and edited by Kevin Jackson-Mead and J. Robinson Wheeler.
rivers, bartering, and suffering from disease and starvation. *Oregon Trail* severely limits the possible experiences available when compared to the range of real-world solutions during the actual experience. This limitation reduces the efficacy of the procedural rhetoric and highlights the importance of ethical decision making by writers of IF and the influence of ethics on persuasiveness. In more modern games, such as the 2018 virtual reality title *Wheelchair Simulator*, the developer explains that even though it is an unrealistic, comedic representation of navigating the world in a wheelchair, “This game will help you delve into the wheelchair’s world a bit” (ViRa Games). Of course, issues concerning the accuracy and realism of the choices in games like *Oregon Trail* and *Wheelchair Simulator* are quite significant (and are something that might be addressed through the teaching of ethical research strategies). However, even in these unrealistic representations, serious games offer productive constraints by challenging developers to craft an experience where the player generates meaning through their ability to act (or lack thereof). Importantly, the persuasiveness of IF is created both through the player’s agency and through the interface the writer/designer uses to structure the procedures of the game.

To develop effective serious IF, writers must combine the storytelling strategies of traditional creative writing pedagogy (e.g., character development, plot structures, vivid language) with research strategies (e.g., primary interviews, geographical, historical, sociological, psychological, tool affordances) to create a meaningful choice-based experience. They must capture in their story the embodied experience of their problem or topic and position the reader/player as an active party within that experience. Since serious IF depends primarily on written words to craft the story-world the reader/player inhabits, it acts as an effective site for applying creative writing concepts while incorporating them with digital tools and coding literacies. Serious games, likewise, can provide student writers with “interactive engagement with an issue that other modes [of persuasion] cannot fully afford alone” (Colby 46). This interactive engagement gives students a different framework to reconsider the application of the typical research strategies learned for more familiar genres like the FYC research essay.

To better understand what writing serious IF provides creative writing pedagogy, we first consider the role interface plays in providing affordances and constraints. Second, we discuss the ways teaching serious IF foregrounds the benefit of digital tools for creative writing. Third, we examine the interrelationship among research, interface, and procedural rhetoric. Fourth, we present our research study.
including our methodology and instrument design. Finally, we summarize and discuss examples from roundtable feedback, focusing on students’ perception of the affordances of serious IF and concluding with three ways serious IF provides productive constraints for creative writing practice.

**Twine, Interface, Affordances and Constraints**

Twine, the development tool our students used, played an essential role in their perceptions of the challenges and efficacy of serious IF because its interface affordances and restrictions acted as a productive constraint on the ways the writers constructed their IF. Twine structures itself using visual squares called passages (as illustrated in Figure 1). Writers/developers can move these squares around to create a visual layout for their game. Hyperlinks connect passages to propel both the plot and character development to create an experience from the many possible paths from passage to passage. Twine represents those hyperlinks with visible lines between the passage squares; it redraws these lines each time the writer/developer visually rearranges the passages.

In this screenshot of a student’s game (Figure 1, used with permission), the structure represents the flow of customer and service agent interactions, including the forks in the conversation the writer envisioned as possibilities the player might want or need to explore. As the tree diagram demonstrates, a player might have an entirely different experience in each play through by making different choices. However, while many possible outcomes are available, our student used Twine’s interface to visualize and structure her game in what Melissa Ford calls an hourglass story shape, using “chokepoints” to lead the player to versions of the same story place (25-26). For writers, this reduces the variables being tracked before moving on to the next plot point. Our student placed her chokepoints at the end of each customer service interaction, using them as points where players can reflect on their interactions before moving on. What the player sees will vary based on what occurred during each interaction, but the chokepoints restrain the narrative and reinforce reflection as a procedure. Players may always return to the passage reviewing the customer service procedures/rules they received at the beginning of the game, reinforcing those rules as procedures to unpack how successful each action might be (visualized by the single box “Rules” in the upper left).

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3 Although we focus on creative writing, teachers of technical and professional writing may recognize that the structure is similar to topic-based authoring platforms such as MadCap Flare and Adobe Framemaker, offering a productive overlap with technical writing pedagogy.
Fig. 1: Screenshot of Twine interface story layout from the writer/designer’s view
This tree structure is never explicitly shown to the player. Rather, the player sees something like Figure 2, a screenshot from the beginning of the same piece of IF. Here, the player, in the role of a customer service trainee at a resort, meets her/his first customer. The possible choices are indicated by the three hyperlinked options the player can select as well as the ability to “check the three rules” of customer service. Ultimately, the player’s procedural experience is restricted by the ways in which the student chose to represent the possible actions the player can undertake.

For instance, while the dialog and actions triggered by clicking on “relate to Mary’s experience” may be clear in the writer’s mind, the limited way that choice is represented restricts the player’s potential understanding of what the procedure of “relating to” entails and, more importantly, means. Though the student did extensive research into the best practices of tourism customer service, the way she chose to limit and describe those choices affects the persuasive potential of the game’s procedures. For example, rather than creating these action-driven choices, the writer could have offered dialogue lines to choose from. This change in approach would draw the player’s attention to making decisions based on keywords and tone rather than by applying a rule of customer service to guide customer relationships. A significant challenge in teaching using serious IF is helping students understand what the interface of Twine (or other digital platforms) enables them to do. We adopt Collin Brooke’s broad definition of interface, which goes beyond simply the medium or “contact point between people and machine” to incorporate the ever-shifting frameworks for agency that “include, incorporate, and indeed constitute” what is possible and not possible within the framework (23-24). Considering the role of interface is vital for writing serious IF because the writer is designing for agency, developing meaningful procedures, and constructing a compelling game world.

Fig. 2: Early choice in our student’s customer service IF
To create a persuasive experience through IF, a writer needs not only write fascinating characters, render interesting worlds, and provide genuine dialogue, she/he also has to envision and enable all the player’s potential actions. The meaning of the story must be produced through the procedure of playing. Moreover, IF’s hypertextuality means that no static, commonly-agreed-upon text exists for all readers. Ten players may encounter ten different narratives and structures. Importantly, this also means the writer should consider how providing support for agency means writing from many directions, creating not only the preferred story they hope the player will follow, but a multiplicity of interconnected substories players might follow despite the consequences of those choices.

**Creative Practice and Digital Tools**

Serious IF provides creative writers an opportunity to experience how an interface can influence their writing and how digital tools fit with and alter creative practice. This reflection on the role of tools and interface is an underserved need within creative writing pedagogy. In 2013, Adam Koehler observed that “creative writing scholars stand poised to consider the role that technology—and the creative writer’s playful engagement with technology—has occupied in the evolution of its practices” (380). Similarly, in 2015 Bronwyn Williams argued that given the prevalence of digital tools and technology, “[it] is imperative . . . to explore in both innovative and critical ways how to best connect digital technologies with creative writing pedagogy” (243). Teaching creative writing through serious IF challenges students to both manipulate and reflect on working within the confluence of creative writing craft, digital tools, topical research, and persuasive purpose, all as enabled by Twine’s hypertextual interface. Incorporating serious IF games into creative writing classes helps to counter “[the] perception” by those outside creative writing pedagogy “that many creative writing faculty are, if not curmudgeonly Luddites, certainly dragging their feet in terms of engaging with digital technologies in their teaching” (Williams 244).

Importantly, both Twine and Inform 7 are both freely available, making game development “small, personal, and made by people’s own hands and mouths” because using them reduces “the technical knowledge required to teach game logic to computers and the high cost of [development]” (Anthrophy 141, 42). The result of this freedom from extensive technical knowledge or software cost shifts the writing/development focus to smaller games, much like the typical focus on shorter, more manageable forms (e.g., short stories, shorter poems, one-act plays) in most creative writing courses. Furthermore, as composition scholar Annette Vee argues in *Coding Literacy*, teaching video game development in a setting like a creative writing classroom, as opposed to a computer science program, opens the experience of learning about and using code to those who may have never seen themselves as “programmers.” It challenges student writers to consider how the writing they know and writing code are highly
related activities. For Vee, this is important because of the growing importance of coding in day-to-day life and for fundamental issues of access and social power (141-142). The result, as game developer and social activist Anna Anthropy indicates, is that we could gain a “real diversity, a plethora of voices and experiences, and a new avenue for human beings to tell their stories and connect with other human beings” (161) by embracing IF in the creative writing classroom.

Aaron A. Reed has argued for the efficacy of IF for teaching creative writing, stating that “[making] interactive fiction requires a unique blend of creativity and logical thought, of writing prose and crafting code, and that duality makes it an exciting entry point into the creative writing process for a generation weaned on digital games” (141). We expand on this discussion of what IF can offer by examining student perceptions of procedural rhetoric, interface, research, and the use digital composition tools, particularly because interface demands writers anticipate player actions in constructing and experiencing the story. Writing serious IF adds further complexity to this writer-game-player interaction by emphasizing persuasion and research as essential components for creating a believable subjectivity for the player to inhabit. Based on a study of our combined graduate/undergraduate course, we argue that coding serious IF games provides a way for creative writing studies to engage students with digital tools that challenge them to think strategically about the interrelationship between persuasion and creative writing elements such as character development and world-building.

**Research, Interface, and Procedural Rhetoric**

While writing any IF can develop creative writing craft and coding literacy, writing serious IF games offers additional benefits. For students, thinking of IF as a persuasive space better helps them understand what procedural rhetoric is, what it can do, and how it can draw upon the skills they have used in other writing situations, especially in seeing how to use research strategies gained from various iterations of the “research paper” in a new way. To create procedures players might recognize and engage with, writers/designers need to compellingly represent places, people, issues, motivations, and historical context—a kind of research creative writers use extensively already and a way of engaging with subject research beyond direct quotation or paraphrasing. Andrea Barrett argues that, in creative writing, “research is simply a way of understanding what our characters understand,” and that by working through the process of applying research to represent characters’ worlds and perspectives, we may “be able to feel ourselves into the states of our characters” (48, emphasis original). For the persuasive element of serious IF to be more than “ideologically transparent activist” experiences (Colby 44), writers must develop meaningful procedures and choices built from sources such as interviews, artifacts, personal experiences, and expert data.
The role of research in achieving this effect is illustrated well in *Choice: Texas*, a 2014 title by Carly A. Kocurek and Allyson Whipple. It explores the ramifications of Texas’s increasing restrictions on access to abortion services, placing players as different characters:

each of whom reflects specific socioeconomic, geographic, and demographic factors impacting abortion access in Texas. Although billed as interactive fiction, *Choice: Texas* is based on extensive research into healthcare access, legal restrictions, geography, and demographics, and is reflective of the real circumstances facing women in the state. (emphasis added)

While enacting the stories five different women, players of *Choice: Texas* experience both wanted and unwanted pregnancies, including as the victim of sexual assault. Although no player is forced to seek an abortion, should the player choose to seek one out and then attempt to move through the game’s representation of Texas’s new regulatory system, the procedural rhetoric illustrates the massively restrictive effects of those regulations. The developers’ choice to communicate this through IF draws from the belief that experiencing the procedures involved in seeking an abortion persuades in a way that nothing else but experience could.

Kocurek and Whipple’s work demonstrates why writing serious IF contextualizes research skills. Doug Hesse, a composition studies scholar, notes that although creative writing has possibly been less concerned with writing across the disciplines or knowledge transfer than composition and writing studies, the disciplines may have reached a point where their shared values intersect. He states that “composition’s current interest in multimodality emphasizes the ancient ‘available means in a given case’ to focus on ALL the available means, in whatever media, or, I’ll add, in any genre, including the nonfactual, nonpropositional, noncompelled by rhetorical situation” (48). These “available means,” the classic Aristotelian definition of rhetoric, include the ways in which interface shapes those means. As Brooke’s framework for a new media rhetoric makes clear (see *Lingua Fracta*), a digital text, like a piece of IF, is significantly different in the ways it goes about persuading than a traditional persuasive essay.

Because of its interactive nature, each IF game may unfold in many different ways. Brooke recounts how after experiencing one run through of Michael Joyce’s hypertextual *Afternoon, A Story*, Steve Johnson’s “initial enthusiasm” faded because the hypertext did not create a stable, shared reader experience (11). Different ‘readers’ had experienced entirely different stories based on the forks they had chosen. The problem, Brooke notes, is criticism – rhetorical or otherwise – “depends on the shared experience of a text, something that the standardization of print publication [allowed] us to take for granted,” something we cannot take for granted with all hypertextual documents, including serious IF (11). For instance, while the procedural rhetoric of *Choice: Texas* is meant to illustrate the effects of regulation on abortion, it is entirely possible for the player to make the choice to embrace their...
pregnancy. A player/reader who follows this path misses the arguments and research Kocurek and Whipple have constructed, but it remains a perfectly valid ‘reading’ of the IF text.

To understand the rhetorical ability of IF, we need “a rhetoric that can account for the dynamics of the interface” – in this case, the dynamic possibilities of interactive fiction (Brooke 26). We need to move away from “examining the choices that have already been made by writers” (building a static, text-based argumentative essay that assembles research established by other writers, such as teaching students to write a thesis-driven essay by looking at the ways in which it has been done in a number of model essays). Instead, we need to teach that writing persuasive IF requires a framework that “prepare[s] us as writers to make our own choices” as we perceive what the interface allows us to do, both as writers/designers and as architects of the player’s experience (Brooke 15, emphasis original). Considering how to teach this duality of interface (as a space used by both the writer/designer to create the IF and by the player to enact the IF) is difficult.

Richard Colby’s 2014 study of how students understood and produced procedural rhetoric in video games they developed in a FYC course helps illustrate this teaching challenge. While Colby stated the students in his study “seem[ed] to understand procedural rhetoric as a means of analysis” and to understand how games worked to persuade, they struggled with it as a conceptual way to produce texts (50). One of the projects produced for his course was titled Novadia. The students intended the game to persuade players about making “sustainable choices” to lead a “sustainable life.” Unfortunately, the “sustain-a-choices” the students described in their game design document were didactic correct/incorrect options that were not procedural representations of their research, instead becoming choices and perspectives selected by other writers. Despite clearly engaging with the assignment’s multimodal aspect, producing a massive 563 slide interactive PowerPoint, these students “did not seem to transfer procedural rhetoric into the multimedia composition” (49-50) because they created no meaningful procedures for the player to enact. Instead, the students represented the game’s culmination as a battle against a “consumption monster,” a convention known as a “boss fight” mechanic that is commonly encountered in video games (49-50).

These students failed to consider what new rhetorical possibilities and affordances their multimedia interface might provide them to represent the procedures of sustainability. They approached their game thinking only of the rhetorical structures they had seen before. Thus, they adopted choices already made by other writers/designers rather than considering the larger question of what procedures and choices they might derive from the affordances of the interface, their topic, and their creative choices.

In comparison, Zoe Quinn et al’s Depression Quest (DQ) (see Figure 3) made use of some interface elements from video games (including status bars) but also considered how Twine might represent the limiting effects of depression through the procedures of its interface. As with most
Twine-based IF, *DQ* presents its reader/player with a series of clickable choices. However, Quinn used that feature of Twine-based IF’s interface (see Figure 2 and the options our student provided) in a procedurally effective way by offering choices rendered “unclickable” by the player character’s depression. Specifically, the “obvious” good choice (the selection someone not limited by depression would perceive) is present but cannot be chosen (and is even visually struck through), procedurally demonstrating how depression can limit (see Figure 3). Quinn uses the interface’s affordances to persuade through meaningful (in)action rather than through the didactic approach Colby’s students presented. It is, in Brooke’s conception of interface as rhetoric, a representation of a writer “sorting through the strategies, practices, and tactics available” within a platform’s interface (22).

**OUR STUDY**

We wanted our students who were creating serious IF to think about what Twine and its interface enabled them to do that other genres and modalities might not. We asked them to explore, as Quinn did, what choices might be open for them to make as they crafted an experience. To that end, we designed our study to help us understand how students perceived the following:

- the affordances of serious IF and Twine,
- the connections among writing elements, including the craft concepts they knew from creative writing, the research skills of their academic/FYC writing courses, and the use of technical writing elements,
- the challenge and benefits of writing serious games.
We introduced them to a wide variety of approaches within IF (including both *Depression Quest* and *Choice: Texas*) as part of the class’s survey of existing IF titles. Then, we asked them to draft at least one serious game. Finally, we administered a survey and hosted a roundtable discussion to better understand their perceptions (approved as Armstrong State University IRB 1396). These instruments were administered near the end of the semester as students completed revisions of their serious games.

**Institutional Context**

This research was conducted at Armstrong State University, an approximately 7,000 student public doctoral-granting university in Savannah, Georgia (Office of Institutional Research 35). Writing courses are offered by an interdisciplinary department that awards English degrees in two forms: a literature-focused degree and a degree that offers creative writing, professional and technical writing, and journalism tracks. The professional and technical writing track is the most popular, though creative writing is not far behind. Both authors teach primarily in the professional and technical writing area, though both have training in and teach creative writing as needed. In addition to the two undergraduate English programs, the largest graduate program (with more than 70 students) is an interdisciplinary M.A. program called Professional Communication and Leadership (PCL), which allows students to take a limited number of the upper-level courses offered to undergraduates, resulting in mixed student populations.

Before our course, no course had been offered in creative writing that addressed digital or new media in any form. We taught the course as a special topic and advertised it through campus flyers, emails, and inclusion on the list of PCL electives. Student interest was high, though interest from graduate students was limited, with only two electing to take the course.

**Methods: Recruitment and Course Requirements**

In addition to game proposals and smaller exercises, each student was asked to produce 1-2 games over the course of the semester. Our course gave students the option to produce either serious games or other genres. However, because our institution requires that graduate students in a mixed course complete at least one additional project at a higher difficulty than undergraduates, we required that our graduates create at least one serious game and an annotated bibliography.

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4 Since this course was taught, Armstrong State University has consolidated with Georgia Southern University.
For the study, we indicated that each participant would be required to write a serious game that would draw from secondary research, to respond to both of our research instruments, and to give us permission to use their drafts and finished texts. In recompense, each participant received a $10 gift card of their choice funded by the researchers. Although a significant number of students expressed initial interest, many of them withdrew from consideration as they felt that their desire to write genre fiction (usually fantasy) excluded them from writing a serious game. Three undergraduate students and both graduate students chose to join the study. Of these five participants, all three undergraduates were white males in their early 20s. One of the graduate students was white while the other was African American, both females in their mid-20s. Two undergraduates were English majors and one was a Computer Science major. Of the group, only two of the students had previous coding experience and previous familiarity with markup languages.

**METHODS: INSTRUMENT DESIGN**

To understand how participants perceived and approached writing their serious games, we designed two instruments. The first, a survey, determined how the participants felt about, identified with, and evaluated (1) video games; (2) creative writing; and (3) questions of social justice. Questions were primarily five-point Likert scales that assessed agreement with statements such as “When playing a video game, the narrative or story is one of the things I value most.” These questions were designed to encourage participants to complete all questions; however, to address their limitations, participants were given open response areas where they could clarify any previous response (Driscoll 166-167). This survey was delivered electronically and each participant could choose to remain anonymous. This survey was informed partly by James Paul Gee’s approach to Discourse Analysis because we believed that how they associated themselves with many of these terms might illustrate how they approached the task of creating serious games in our class.5

The second instrument was a roundtable discussion guided by a set of six questions, as suggested by the moderation frameworks detailed by David Stewart and Prem Shamdasani (39-52). These six questions explored whether participants believed that media played a role in promoting social justice issues, the role of creative writing in that effort, the potential role of games in that effort (if any), and the challenges they faced in writing their serious games and drawing from their academic research skills while doing so. As moderators, we encouraged the participants not only to respond to these questions but to the comments made by other participants. The discussion was recorded and transcribed.

5 For more information on Gee’s framework, see Situated Language and Learning: A Critique of Traditional Learning (2012) and The Anti-Education Era (2013).
Although we had originally designed the six questions as part of the IRB process, shortly before the scheduled roundtable, we gave a presentation on the “utopic and dystopic possibilities of Interactive Fiction” at the South Atlantic Modern Language Association’s annual conference. During the Q&A, an audience member expressed disbelief that students would want to write creative writing that was also persuasive, as she saw these as two very different forms of writing. Other members of the audience seemed to share this concern. As a result, we adapted our questions to see if our participants saw this same divide.

**RESULTS**

After reviewing the transcribed responses and comparing them with the responses to the survey, we felt that the following three results represented how our students perceived the affordances and persuasive potential of serious interactive fiction:

1. First, we found that participants were receptive to the premise that serious IF, along with many other forms of media, could (and perhaps should) be used to persuade. Participants rejected any perception that games are not as effective as other media types. They also took seriously the challenges of writing/designing serious IF, with both their discussion and their final games representing substantial effort to create meaningful procedures that integrated their research.

2. Second, we found that the participants articulated the fundamental necessity of common creative writing concepts when discussing creating their IF. These elements included developing fully rounded characters, developing pacing and structure, and persuading through verisimilitude in world- and character-building. Our participants believed that their games’ persuasiveness directly resulted from their success in using the writing itself to present the situations and procedures involved over the representation of facts or figures from their secondary research. We further found that our participants felt that incorporating research into their games was productive rather than restrictive.

3. Third, the challenges of learning to code with Twine were significant, but it forced a shift in perspective as far as what writing meant and how to think about interface and audiences/players, especially in terms of enabling the player to have sufficient agency. Despite the sometime discomfort of the software’s constraints, they articulated that Twine’s interface caused them to approach creative writing in novel ways. Many of their final games, one of which we will discuss in detail here, demonstrated thoughtful consideration of how their game’s interface would affect how players would receive it.
RISING TO THE CHALLENGE OF WRITING MEANINGFUL GAMES

Our first finding illustrated that while academic research into the efficacy of serious games and procedural rhetoric is ongoing, our participants accepted the fundamental premise that games, like other media types, could be used for persuasive purposes. They reported that media interactions (film, games, books) had informed their range of political perspectives. In the words of one participant, persuasive media “sort of complicate or expand your approach to those issues . . . [They are] something that enhances your perspectives.”

Rejecting the idea that such approaches were purely didactic, our participants explained that the experience of the media was more persuasive than the strength of the message alone. As another of our participants commented,

>[The] best games, movies, films, writing, they make you feel, it lays out the argument in such a way that it’s not telling you to believe this, it leads you to where you come to believe it yourself

  . . . The good ones come at it not telling you to believe it, but to try to play out a scenario, but it’s up to you to accept [the argument] or criticize it.

Participants especially saw the potential for procedural rhetoric to enable “a new perspective that changes how you think about things and comes from within” not from the “external sources” of the media “yelling at you, do this, this is what you need to do” but rather allowing the player to “walk in someone else’s shoes.”

Our participants also felt that IF reinforced the value of primary and secondary research to increase their accuracy, spark creativity, and help writers work beyond their positionalities. Despite trepidations about learning code, the students were deeply engaged with their own writing; their final games far exceeded our expectations for depth and development given our 15 week development time. While there was no required length, the shortest game was 5,405 words with most participants writing more than 7,500 words and one participant writing an astonishing 24,771-word story. The participants earnestly articulated their writing and coding process, showing the development of their writing ethos. They discussed deliberate ways they sought to persuade players and the ways they could craft experiences to transform others’ thinking.

MELDING CHARACTER CREATION, WORLD-BUILDING, AND RESEARCH FOR PERSUASION

Our second finding demonstrated that while the concepts of coding and player agency may be new to students, the creative writing strategies we taught and that they had learned in other courses were just

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as important, if not more so, than the coding elements. While our initial survey revealed that participants were less willing to call themselves writers than they were gamers (only three of the five strongly agreed that they would identify themselves as a writer if asked, while all five strongly agreed with being called gamers), they all drew from a shared vocabulary when talking about what they hoped to achieve in their games. That vocabulary was grounded not in gaming concepts but in common creative writing lore.

This shared vocabulary was revealed in their discussion of characters, which multiple participants spoke about as the key to getting players to care. One of the graduate students explained that most engagement with social issues comes from connections to people, explaining that she “really connect[s] with the American Heart Association because [her] grandfather actually died of a heart attack.” Others echoed that while education in ethics and morality might help, it was the connection to an issue in the form of a person that mattered. For that reason, when asked about the challenges they faced in developing their serious games, they immediately brought up the necessity of crafting rounded characters with which the players would connect. One undergraduate participant responded, “It’s especially vital if you’re doing a serious game that your characters have to be really, really good because you’re dealing with social issues, so in order to care about the issue, they have to first care about the people who experience it. And all through the text of the game.”

As an example, the writer of the customer service training IF we discussed earlier expressed frustration with representing issues of accommodating disabilities and cultural conflicts, asking, “How do you get someone who isn’t flat? How do you create a fully rounded character so it isn’t like, ‘Oh well, it’s just a problem.’ I worried about how I could make it more than an ‘easy fix’ because in real-life, it’s never an easy fix because people aren’t ‘easy fixes.’” She desired that her game serve not only the professional application she imagined for it (being used at a hotel to train new employees) but also that it meaningfully promote sympathy and concern for the people requesting accommodations. She later argued, “You can write as much descriptive text as you want, but really, it’s the characters interacting that matters. They’re the representation of the social issue, so you really have to get them right.”

Similarly, Zachary Nadel, the author of Distance6 (a game discussed in the next section), responded that because “you can only make the story so long in a short period of time, but you also want a well-rounded character, so you have to find good show-don’t-tell ways of doing that. You need to have some items in their drawers that show who they are; you need to have some speech inflections that show who they are. It’s really, really difficult to get that 3D character,” which is essential to the success of the writer’s argument. His serious IF was designed to help players better

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6 Because Nadel chose to publish his game after our course ended, we requested and were granted additional permission to discuss his contributions and his game by name.
understand the challenges of maintaining a long-distance relationship, something he had struggled with on his own. As one of the more adept programmers in the class, Nadel considered the role of interface in his game with more depth, adopting a version of a text messaging app. The gameplay then became entirely about the choices made in texting between the two characters, meaning that their dialogue and reaction to dialogue was everything. As he noted, “My game is based on two people texting back and forth, so it’s all character. If the characters suck, it’s a sucky game.”

Similarly, our participants felt performing research helped them more successfully render their characters and world effectively. To some degree, they even felt that doing the research made developing the games more straightforward. The graduate student who wrote the training simulation commented, “When I was writing the second game, I thought, ‘Why didn’t I do a serious game for the first one? It would have made it so much easier!’” because her research and annotated bibliography helped her render more meaningful situations, procedures, and characters than the purely imaginative game she had written first.

Participants also felt that engaging in research for their game was more natural and more meaningful than it had been for other school assignments. The graduate student who wrote the training simulation said:

> What was alien about it was that it felt so natural, because normally, and I shouldn’t admit this in a school setting, but a lot of the time when I write research papers, I’m just like pulling random stuff. You know you might find the source, and you pull a sentence that works in your research paper, and that’s it. But this one flowed a lot easier than projects I’ve had in the past.

The other graduate student, who worked on campus as part of the athletic program, commented that “it would have been more challenging to accomplish my game if I didn’t look up these sources or go to our athletic trainer and talk about things.” She felt this was because she didn’t “have enough experience, so [she] would have just gone on speculation . . . and miss a lot of things as well.” The consequence of not doing research would be a loss of accuracy within and inspiration for the experiences they were trying to relate. Other participants agreed, with one noting, “It can be difficult to talk social issues when there’s problems with the information behind them,” so writers had to achieve believability through their research.

Participants felt that the degree of believability made a significant difference in their games’ persuasiveness. When discussing her training simulation, a graduate student commented that “a lot of it is making it true to life. That’s when games really succeed is when they reflect life.” An undergraduate who had developed a game to represent being a straight male being drawn into and trapped in an abusive relationship said that the key to games like his working was verisimilitude and “accuracy to real-world things,” and he felt that “you could not design a serious game without some kind of research in order for it to be believable.” Not only did our participants find their research productive for creating detailed worlds and believable characters but also for providing them with raw material to
spur creativity. Writing a game gave our participants a meaningful context for their research, providing a compelling reason to access multiple points of view. Research on their topics and on the game code itself gave participants concepts, language, actions, frameworks, and phrases to draw upon as they shaped dialogue and events. Importantly, they felt research helped them build connections to their issue, to go beyond things like “90% of people die or something if they use drugs, some made-up statistic like that” and instead build the “full thing, the ethos, pathos, logos, all working together.”

The blend of research and creative practice required to create a serious game benefited our participants’ writing. Creating the story and code for a serious IF game required multiple types of background research (primary and secondary; observation, interviews, and/or case studies; code manuals and tool information). While only the graduate students had formalized research tasks, all of the participants indicated that writing serious IF engaged the formal research skills they had learned in previous writing courses. They found that writing serious IF encouraged them to use these skills in a new way, leading the students to reflect on the added value research might bring to creative writing. Instead of thinking of research-as-citation, this approach required that they transform what they learned into a narrative, playable experience (research-as-generation). Their research became a way to inspire, generate, and constrain the action and description in their games. One student articulated that “You still have to do the research, not even the facts behind it, but the perspectives, experiences, other people’s views on the type of thing you’re writing about... And that was pretty interesting too, because nothing is going to tell you what’s right or wrong and you have to kind of figure out how your game is going to replicate that.” They had to find ways to embed their research within each passage to enhance its persuasion rather than quoting research as expert testimony. Research became more than a cold process of hunting down quotations or looking up geographical or historical facts—it involved multifaceted observation (both human and humane), something that speaks to Nigel McLoughlin’s argument that creative writing students need to connect observation with inspiration:

one must be aware that the process extends back beyond inspiration to the process of observation. Without observation ([including] apprehension by any of the senses and apprehension through reading), there can be no trigger for the inspiration. [...] So learning how we observe, and learning to look at things and to ‘see into them’ is clearly a skill we should be teaching students to develop. (74)

For serious IF, research was the foundation of observation. The more invested participants were in gathering observations about their issues, the more they felt their games were persuasive and that their stories were appropriately developed. The graduate students who were given formal research requirements found that their more strategic approach to combining research with their creative writing relieved some of the anxiety they felt about writing beyond their own positionality. Creating serious
games gave student writers reasons to reach beyond their own experiences and more confidence to accurately, convincingly, and ethically develop their characters and decision trees.

The participants engaged with their research as an inspiration for character development, descriptive language, and possible character interactions, highlighting for them the usefulness of research as a creative practice. This combination of research skills with creative production performs what Amy Letter describes as a primary goal of creative writing in the era of new media, “inspiring students to synthesize skills they already have but previously regarded as unrelated (e.g. narrative and design, code and poetry, social networking and storytelling)” (188). Writing serious IF provided participants with a context where their academic research skills had consequences for player engagement and the realism with which participants approached their social issues. By synthesizing research, storytelling, and social action, participants better understood how to enact creative strategies for world-building and character creation.

**Code, Interface, and Player as Productive Constraints**

Our third finding was that while participants found learning the logic of programming and Twine’s syntax to be difficult, especially when simultaneously working on creating characters and weaving research into their narrative, it did not prevent them from achieving their narrative goals. Two of our participants started the course with large amounts of antecedent knowledge, but for our remaining participants, this was the first time they had ever experienced more than very basic computer programming. However, even the task of creating something vastly more complicated was navigable. One participant said that for “someone with no programming experience . . . it was not that hard to grasp. It was a lot easier than [she thought it] was going to be.” Even when participants struggled with new concepts such as variables and arrays, none of them felt that having to learn code interfered with their writing.

On the contrary, our participants found that thinking in terms of the interaction between the code and the narrative along with the way the Twine’s interface presented that relationship caused them to reconsider what writing might do. One of our participants stressed how differently it had made him think about creative writing:

> It makes you think about how people would want to do something. I think this is a really important thing because you’re trying to write different characters with different perspectives. You can do that with any sort of writing, but with this, you have to think, “What does the person sitting down want to do? What choices are they going to want to make? How can I present those choices?”

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Considering player agency challenged the way participants crafted their writing. Another participant commented he felt that his creative writing courses had been “more focused on issues like word choice and what meaning could be extracted,” a kind of narrow text-focused interpretation, but that his time in this course had caused him to think about “how people will receive it” and “the different ways that writers might consider” what they’re representing, “especially when they’ve got multiple options and are encouraging the readers to interpret things in different ways.” Overall, in keeping with recognizing that the way they would interface with the text was significantly different, our participants stressed that writing serious IF challenged them to consider reception in ways that previous creative writing coursework had not.

Managing player and reader agency, central to hypertext and central to what the interface of IF provides, was a struggle for our participants. As one noted, when it comes to writers telling narratives through serious games, “The biggest challenge was that I want to give a message, I want to tell a story, but I don’t want to force them too directly down that path without giving them other routes.” However, while this was a challenge, they also saw it as a benefit because “giving [the player] that opportunity to diverge” from a singular path “makes it really hard to give a singular message but it can open the door to giving maybe multiple messages or a far, far broader message.” This feeling echoed their earlier statements that pointed to their rejection of didactic messages as persuasive and that to be effective, texts like theirs must “lead [players] to their own conclusions” rather than forcing those on the player. To that end, participants felt that the player agency required in serious IF made them consider multiple ways of representing complex issues and writing to persuade.

Although all of our participants considered the interface by which they provided that agency, only two of them went beyond the fundamental hyperlink structure that Twine provided (and was illustrated with the earlier customer service game). Of these two, Zachary Nadel’s Distance (which he published via the Interactive Fiction Database7), was more successful. Building on an open source layout provided by author 2ne8, Nadel rendered his IF with the look and feel of the Messages app from Apple’s iOS version 7. Although his game used an hourglass story shape like the customer service training title discussed earlier (see Figure 4), potentially illustrating how Twine’s writer/developer interface provides consistency with its passage visualization, the interface the player encountered was vastly different (see Figure 5).

While still based on hyperlinks and fundamentally no different in terms of actual code (using variables and arrays in the same ways that the other participants’ games did), Distance’s use of

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7Available for download via http://ifdb.tads.org/viewgame?id=dcwntqqwkqmg4wk
8Available for download/use via https://codepen.io/2ne/details/osvpj
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interface limits the player to only engaging the procedure of dialogue via text. A scripted segment of conversation appears, and then the player is given a choice of three dialogue options that establish further potential areas of conversation. As a result, Nadel’s challenge was to render the player characters (a working-class cisgender straight man involved in a long-distance relationship with a middle-class cisgender straight woman, both in their late teens) and their relationship entirely through their dialogue. The player’s challenge is to try to save the relationship, to engage in the procedure of communication, to make things work out.

In this way, we would argue that it is a much more successful title in terms of procedural rhetoric than the Novadia title produced by Colby’s students and discussed earlier, even if the scope of its seriousness is more local and limited than Novadia’s topic of sustainable living. This speaks exactly to our first finding and to a key element for teaching students to write successful serious IF. Where Colby’s students sought to write a larger issue with more social gravitas, the result ended up, as our participants said about didactic texts, “yelling at [the player] this is what you need to do” rather than focusing on procedural rhetoric through building a world populated with characters that
create a scenario the player inhabits and engages with via actions that matter within the context of that world. Moreover, by drawing on and transforming the type of interface that players likely knew from their phones, Distance’s procedures are likely much more instinctively persuasive. Distance never tells players what a successful long-distance relationship looks like; instead, players experience how myriad small choices about communicating with a partner shift a relationship. The interface becomes a compelling constraint—this story cannot be built with exposition, internal monologue, or physical description. While Nadel provided himself with more constraints by having Twine emulate the text messaging application, each of our respondents found that writing serious IF required them to consider how the interface was part of the persuasion and how the constraints created by its affordances could be used productively to create an experience for the player.

In discussing his experience teaching IF, Reed summarizes the benefit of coding as a constraint that “result[s] in both a heightened awareness of the act of construction and an output that breaks from the writer’s familiar style. [...] IF encourages the kind of intentional thinking that is just as useful in traditional writing, where helping the reader understand a character or concept can require equal care and precision” (143). Reed’s findings underscore our own in that the precision of language and attention to detail required by coding practices was a reminder to participants that their narrative needed to follow the same standards. Our participants’ roundtable comments show the thoughtfulness with which they approached their serious IF storytelling. The constraints imposed by the software pushed the participants to pay more attention to craft.

The students’ reaction to coding and how it transformed their processes highlights the importance of creative problem solving and the ways digital tools can play an essential rather than support role in the creative process. Our participants had to develop multiple strategies for responding to problems with the tool; in some cases, their skill with Twine dictated what player actions they could integrate into their narratives, and in other cases, their narrative demanded that they investigate new functions within Twine to uncover more affordances of the interface. When discussing teaching creative writing in new media, Letter talks about this kind of creative problem solving, agreeing that developing a mindset where the tool blends with creative practice is essential: helping students “to see, in many cases, their ‘technical difficulties’ as a form of artistic constraint, the possible spark of a new stage in their creative process, rather than a wall that stymies progress” (184). As Letter found with her students, we also found that we had to continually demonstrate for our participants how to problem solve with the tool. As they became more comfortable with task-switching between coding and writing (Letter 188), we found participants could derive new ideas for their narratives from the actions that Twine offered them, using the tool as creative inspiration. Strategically using the constraints created by their research, the limits of Twine’s interface, and the active audience, our participants produced nuanced but starkly different games that surprised us with their length, depth, and creativity.
Conclusion

Writing serious games requires students to confront major questions at the foundation of creative writing studies: “How do I compose an effective text? How do I engage an audience with story?” It challenges writers to assess the affordances of the medium and the desires and limitations of the audience while crafting their narrative experience. In “Digitizing Craft,” Adam Koheler aptly describes how digital forms require writers to critically assess their process and “the role new media play in the development of [the reader/text] relationship” (386). He goes on to say a digital text “requires, in a literal and material fashion, participation as well” where “how a writer crafts [a] narrative will require the skillful deployment of particular technologies that provide sensory immersion” (386). Writing serious IF made our participants more aware of their storytelling craft because they depended primarily on textual description to immerse players in the world while simultaneously providing a multi-path storyline. They had to think about intersecting decisions, the player’s logic, and the balance they need to create among actions players should take, are able to take, and want to take. Since the writers could not fully control the particular path any given player would select, our students found themselves weighing more carefully how they could cue the reader to available decisions through setting and sensory description. The challenge of writing serious IF honed participants’ ability to show instead of tell. Writing IF required participants to create and edit their prose to provide enough information to alert players to significant objects and possible decisions/consequences while not overwhelming players with environmental detail. As exposed by their anxiety, our participants took this task seriously because of the extra layer of responsibility that writing serious games added to their storytelling.

Effective serious games ask players to experience nuanced behaviors and points of view. Our participants found this to be a productive if frustrating constraint because it encouraged them to craft a story experience that let players explore the dynamics of the issue rather than stating a single, didactic message. Writers had to consider the readers’ knowledge and assumptions within every passage to help predict and shape what decisions should be offered. Serious IF games require the writer to give up some control over the story; the player must be offered authentic choices that make a difference to the story’s outcome, always with the risk that the player will not take the writer’s preferred route. The value of approaching creative writing as persuasion through procedural rhetoric is that it made our participants acknowledge the limitations of and, in some cases, write beyond their positionality.

Through our study, we discovered that students are not only receptive to developing serious IF, but they are also deeply invested in the challenging task it represents. Writing serious IF provided three levels of productive constraint that made participants integrate new elements into their creative practice. Developing serious IF required students to blend creative writing craft, digital tools, and
research in ways that made them reflect on the value of each and in the value of the three combined. Even when games did not reach their persuasive potential, the influence of the serious IF context invited students reflect on the shaping forces of player agency and procedural rhetoric. Finally, writing serious IF led students to a deeper understanding of how interface plays an essential role in creative practice. Incorporating serious IF into a creative writing curriculum allows for both the development of craft and for confronting the anxieties and adaptations required for digital creation. Serious IF provides a space for students to recognize what opportunities the interfaces of these new platforms open up for them as both writers and players.

**Works Cited**


