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Choose Your Own Education: Interactive Fiction and Online Instruction

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Choose Your Own Education

Interactive Fiction and Online Instruction

Presented at Online Northwest 2021
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Presentation Overview

1. What is Interactive Fiction?

2. Interactive Fiction and Education

3. Authoring Interactive Fiction

4. Case Study: ScholCom202X

5. Interactive Fiction Resources

What is Interactive Fiction?

Interactive Fiction is commonly abbreviated as "IF."

IF is "a kind of video game where the player's interactions primarily involve text" (source: IFTF)

In short, IF is a text-based game where players read descriptions of things, then type reactions or click on links to interact with their environment and advance the plot.

Two main types: parser games and choice-based IF.

Parser Games

The player is given information about their environment and must type commands into a "parser" interface to move about a map, talk to characters, and interact with objects.

Nearly all 'classic' IF games from the 1970s and 1980s are parser games.

Most parser games requires the player to solve puzzles of some sort.


```
ZORK I: The Great Underground Empire
Copyright (c) 1981, 1982, 1983 Infocom,
Inc. All rights reserved.
ZORK is a registered trademark of
Infocom, Inc.
Revision 88 / Serial number 840726

West of House
You are standing in an open field west
of a white house, with a boarded front
door.
There is a small mailbox here.

>
```

Choice-Based IF

You concentrate, and your insubstantial form grows a little more solid. You're the very image of a hungry customer!

The noodle seller looks up as you slide into one of his stools.

"Welcome, welcome," he says. "Not many people out tonight, even though the moon is so splendid."

You clear your throat murmur something vague in reply--it's been a while since you've spoken to a human.

"Now," he says. "What can I get you?"

"A bowl of soba."
"How about a face?"

The player reads text in a web browser and, when given choices on how to act, must select one to advance the story.

Many contemporary pieces of IF are choice-based.

Choice-based IF doesn't rely on puzzle-solving as much, although it can still be present.

Screenshot from "Untitled Nopperabou Game," created by the author.

Other IF Terms

1. Visual Novels – Novel-length pieces of IF combined with background and character images. Choice-based.

2. Idle game – Low-interaction games that you can play without paying much attention. Not always text-based.

3. Procedural Generation – Randomly generates some element of the text, creating a unique experience each time.

4. Hypertext Fiction – Fiction that uses elements of websites such as hyperlinks and formatting. May not technically be IF in all cases.

Interactive Fiction and Education

IF is not gamification, which is the use of "game design elements in non-game contexts" such as scoring students' mastery of a course's content ([Source](#)).

Rather, IF can be integrated into the curriculum as "learning games" or "serious games" ([Source](#)), that is: actual games used to teach.

Although results vary, learning games can be effective teaching tools, especially if they entertain and are of good narrative quality. ([Source](#))

Roleplaying/Simulations as Pedagogy

IF can be thought of as roleplaying games or simulations. Studies show that role-playing exercises can be much more effective at imparting knowledge to students than lectures or reading static text.

Examples:

- MBA students performed better on an assessment test after a role play exercise than those who listened to a lecture (Source)

- Nursing students performed better on a cardiac arrest simulation after a role play than those who listened to a lecture (Source)

- Students in a music teacher training program reported feeling more prepared and professional after engaging in an 'alternate reality' simulation over the course of an academic term (Source)

Why does Roleplaying Improve Test Scores?

Roleplaying games encourage "cognitive problem solving," ([Source](#)) which may allow players to engage more directly with problems than simply hearing them described.

The psychological concepts of "grounded cognition" and "embodiment" suggest that when engaging in roleplay the brain treats the experience similarly to a real one, which may trigger more effective memory. ([Source](#))

Depression Quest: A Critically Successful Learning Game

Written and developed by Zoë Quinn, Patrick Lindsey, and Isaac Schankler in 2013, *Depression Quest* aims to simulate the experience of clinical depression.

As players proceed through the game, their choices are limited by how depressed their character is.

The game received good reviews from critics, who called it "gripping" and said it allowed them to understand depression better than they had before. (Source)

The game can be played for free online at depressionquest.com
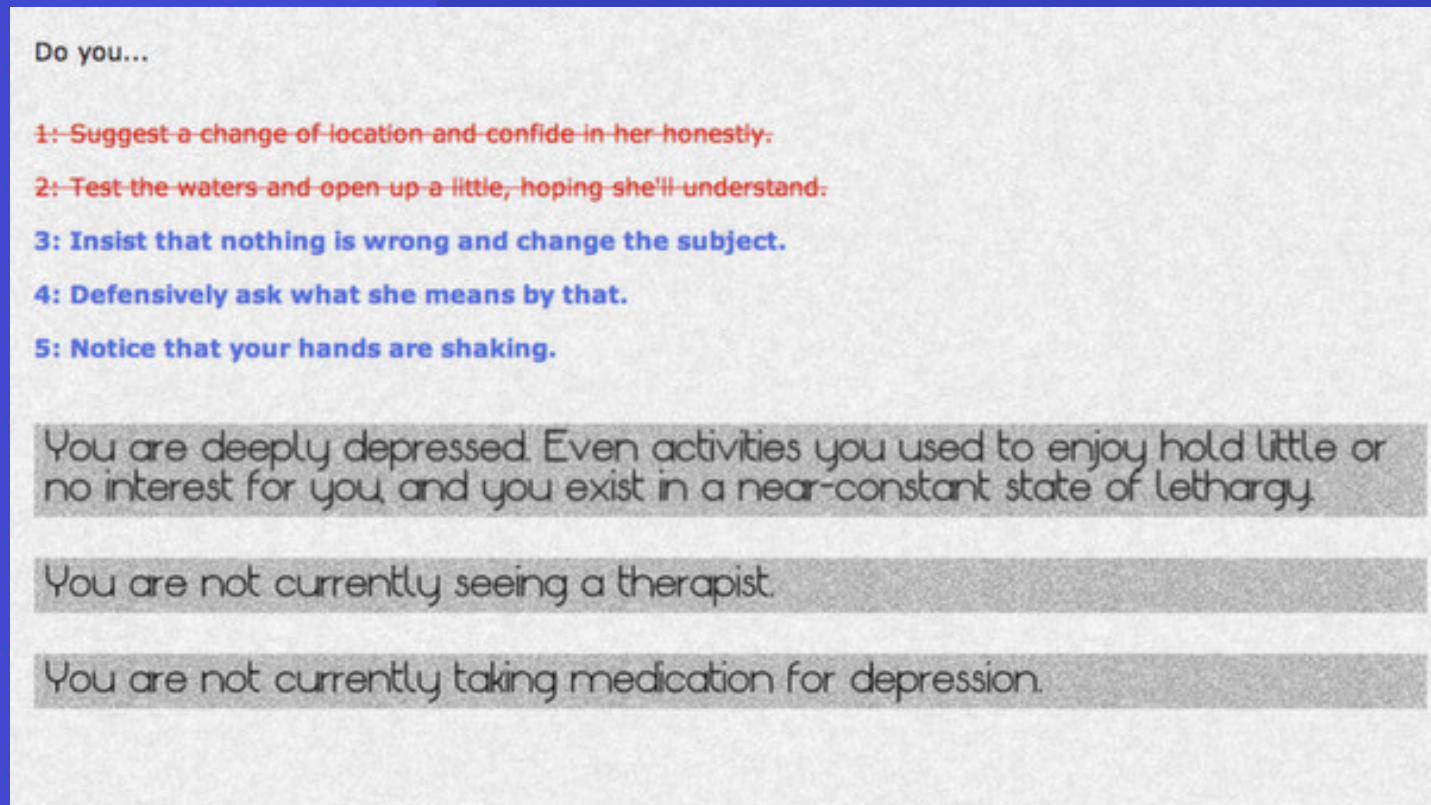
Screenshot from *Depression Quest* showing elimination of choices with struck-through red text, as seen on Steam.

The landing page for Harmony Square, as seen on the game's website.
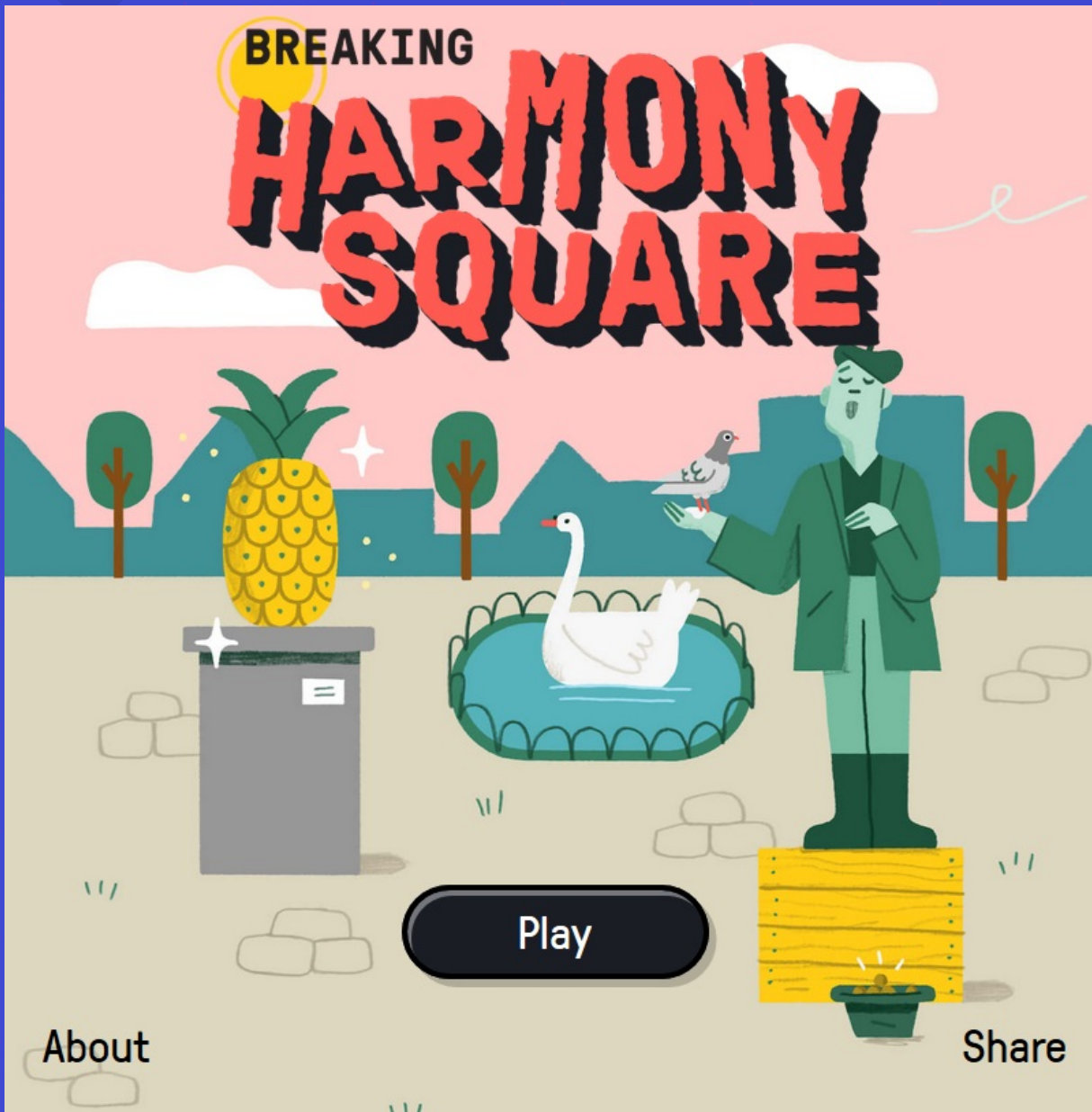
Harmony Square: a Misinformation Game

Written and developed by psychologists Jon Roozenbeek and Sander van der Linden in conjunction with the U.S. Department of Homeland Security, *Harmony Square* aims to "inoculate" players to misinformation.

Rather than providing static examples, the game puts the player in the position of creating and spreading their own misinformation.

Non-player characters react to the player's choices, showing how people might respond in real life to "fake news," trolling, and other forms of misinformation.

The game is free to play online at https://harmonysquare.game/en

Authoring Interactive Fiction

There are six basic steps to authoring IF.

1 Decide what type of game you want to create.

2 Select an authoring tool and/or coding language.

3 Brainstorm and outline.

4 Write a draft of the text that will go in your game.

5 Make your text interactive.

6 Test, proofread, and revise as necessary.

1. Picking a Game Type

Do you want a game where the player must read small bits of text and then type commands in order to proceed? If so, consider creating a parser game. Parser games often focus on solving puzzles and moving around a map.

Do you want a game where the player responds to a written narrative using a web browser like interface? Choice-based games are the way to go. Choice-based games provide readers with a more familiar reading experience, and let you put more emphasis on specific choices.

2. Selecting an Authoring Tool

There are many tools for creating IF, each with its own strengths and weaknesses. Some require heavy programming, while others are designed to reduce barriers for beginning authors. Almost all IF authoring tools are free to use.

Examples:

- Twine is a popular choice-based authoring tool that requires minimal programming knowledge.
- TADS uses programming concepts from C++ and Javascript to create parser games.
- Inform uses natural language programming to make parser games.

Because the implementation of a game will vary considerably depending on the tool you choose, it's important to select one early in the authoring process. Alternatively, if you've already got a text you want to make interactive, that can drive your selection of tool.

3. Brainstorm and Outline

Once you've selected a game type and authoring tool, you're ready to work on the content of your game.

Brainstorming and outlining look pretty different for parser games and choice-based games, as both work in different ways.

3a. Brainstorming and Outlining Parser Games

For parser games, you will need to outline not just the overall narrative but a list of 'rooms' the player will move through and a list of items and characters they interact with.

A lot of the brainstorming process for parser games involves creating puzzles that the player needs to solve using combinations of their available items and the rooms they can access.

Some parser games also experiment with a highly limited command set, forcing the player to think in novel ways to solve puzzles. In Caleb Wilson's *Lime Ergot,* the only command available is "look." (Link)

3b. Brainstorming and Outlining Choice Based Games

Writing choice-based games is similar to writing a novel or short story in many ways. In outlining, you will be working in 'scenes,' although choice-based games that rely on a player moving through specific rooms and interacting with items and characters also exist.

Most of your focus when brainstorming will be on the choices the player makes, and their effects on the story.

It's important not to introduce too many 'branches,' or areas of a game where the narrative is radically different, in a choice-based game. Instead, try to offer choices that move the player along a single path in unique ways or that only create subtle differences.

Many choice-based games use 'delayed branching,' where a player's early choices don't create large differences to the narrative until the ending scenes of the game.

4. Write a Draft!

If you're new to IF, it can be easier to write the draft of your game in a text editor before putting it into the authoring tool you've selected.

For parser games, your "draft" might just be a list of room descriptions, item descriptions, and character descriptions, and the ways players can interact with each.

For choice-based games, make sure you write not only what choices a player has but what each choice does, either to the player's future options or what scene they visit next.

5. Make Your Text Interactive

After you've gotten the writing down, it's time to put your game's content in the authoring tool you've selected.

This process involves not just copy-pasting descriptive content, but managing things like links between scenes and variables affected by a player's selections (in a choice-based game) or telling the tool which commands work with which items, where items are initially located, and other similar information (in a parser game).

Most authors of IF write drafts directly in the authoring tool, but this is not required.

6. Test, Test, Test

Proofreading and revision are an important part of any large project.

For an IF project, you also need to make sure your game runs properly and that the player's input does what you expect. You can play through it several times as a reader, or try to find others who are willing to test the game for you.

Most authoring tools include debugging options to hunt down errors and oddities.

Depending on your game's complexity, the testing process can be time consuming and require several rounds of revision.

Case Study: ScholCom202X

ScholCom 202X

A piece of choice-based interactive fiction created as an OER for the Scholarly Communication Notebook. ([Link])

Players take on the role of a new scholarly communication librarian in a cyberpunk-themed 'distant future' of the year 202X.

The game walks the player through scenarios a scholarly communication librarian may encounter today, requiring them to balance their desire to do a good job with their limited time and resources.

Step 0: Call for Proposals (October, 2020)

A colleague shared a call for OERs that "reflect and encourage diversity in scholarly communication" for the Scholarly Communication Notebook, an online resource hosted by North Carolina State University.

I decided to see if a game-based OER would be a good fit.

Step 1: Picking a Game Type (October, 2020)

I decided to create a choice-based game for the project.

In part, this was because I was already more familiar with choice-based games. I edited a web-based magazine of short IF from 2017-2019, and most of what we received was choice-based.

I also wanted to be able to provide a printable equivalent of the OER that could be used to support in-person role playing exercises in a classroom environment. This wouldn't have been possible with a parser game.

Step 2: Selecting an Authoring Tool (October, 2020)

I selected Ink, a relatively simple scripting language from Inkle Studios (Link).

Reasons for selecting Ink:

- Easy to port to HTML for play/embedding online

- Relatively familiar website-like experience for players

- Wanted to try a new tool I hadn't used before

- Other choice-based tools (Twine) have more potential accessibility issues

- Ink's scene/choice structure made it easier to create a print-only PDF alternative

Step 3: Brainstorming (October, 2020)

Since I was making a choice-based game using Ink, I knew I needed to think in scenes.

I decided to create 10 scenarios based on aspects of scholarly communication librarianship mentioned in the literature.

Creating so many scenarios gave me the opportunity to look at scholarly communication holistically and allowed me to include a diverse cast of characters – something emphasized by the Call for Proposals.

I also wanted the game to be about time management, since balancing service, scholarship, and job duties is something many faculty librarians struggle with, and new faculty may feel pressured into taking on more work than is strictly a good idea.

Step 3.5: More Brainstorming (November, 2020)

After my proposal for a game-based OER was accepted, I did more brainstorming and got to work on outlining the 10 different scenarios I wanted to create.

At this stage of the process, I used a notebook and pencil to jot down ideas about how the various aspects of scholarly communication might play out in a small public university.

A lot of this brainstorming was actually research. I collected 41 sources and wrote a 2-3 sentence annotation for each, both guiding my work and to serve as a standalone annotated bibliography to distribute with the finished OER.

I also brainstormed character ideas, making sure my game included representation of people from many different backgrounds — just like public universities in real life.

Step 3.5.5: Outlining (November, 2020)

After I had all my resources, character ideas, and scenarios written down, I created a brief actual outline for the project.

When I work on creative projects, my outlines are basically just a two to three sentence description of each scene, so actually this was more a matter of typing up what I'd written down on paper and collecting everything in a single document!

Step 4: Draft!
(November – December, 2020)

Although I typically draft IF directly in the authoring tool, for this project I wanted to be able to create a non-interactive PDF version, so I wrote out each scene in a text editor.

To start with, I just used placeholders like [choices] to mark where the choices would go, but as I got used to Ink's syntax, I started writing out the choices in that, instead.

At the end of this process, I had a text document with about 4,000 words of narrative description, dialogue, and Ink code.

Part of a Drafted Scene from ScholCom202X

1. "That makes sense," you say, trying to get back into their good graces. "And yes, OERs are definitely free. They're released under a special kind of license which gives people permission to read them."

2. That earns you a tight nod. "But are they good quality? What if I can't find one that works the way I want?"

3. You smile. "They're written by professors and other experts, just like textbooks are. And if the way one approaches a subject is at odds with what you do in your class, you can usually modify it under the terms of the license. It depends, but..." You shrug, not wanting to overwhelm them with too much information. "There are lots of options for stuff like that, basically."

4. Another nod. "Okay, sounds good. So what now?"

5. What indeed?

6. * "Let me send you some links."

7. * "Do you have some time now? I can show you where to look and what to look for."

8. * Shrug. "G**gle it?"

Step 5: Make it Interactive (December, 2020)

Once I finished the draft, I began copying all my pseudocode and plaintext draft into Ink's free editor, Inky, and turning it into working code.

In addition to coding basic interactivity, I created functions to give players a non-numerical 'score' based on how much work they took on and how often they turned down requests for help.

I also wanted to give players the ability to play short, medium, or long games, so I coded a function to randomly select between 3 and 10 scenarios based on player input.

Coding Choices in Ink

Ink uses a simple markup to manage choices.

A line of code starting with an = is a 'stitch,' which you can direct the player to with a hyphen and greater-than symbol (representing an arrow).

Choices are designated with an asterisk at the start of the line, then the text of the choice and the arrow to point to the stitch.

In the game, this appears as a link, which players can click to continue the story.

Example Code

=ProvostChoices

You take a deep breath. Time to decide.

* "Uh..." ->ProvostSlacker

* "To be honest, I haven't been here long enough to say, but I can talk about the idea in general.["] ->ProvostResponsive

* "Let's do it! I can take care of all the ground work, but I have a few questions first.["] ->ProvostOverAchiever

Coding Choices in Ink (2)

1. A Choice in Ink: Code View

Before you can examine them further, a person standing at the bottom of the library's main staircase lifts a hand in greeting and walks over to you. You recognize them as Mx Porter, the library director.

*They shake your hand firmly. ->AfterShake

=AfterShake

"It's good to have you here with us. Let me give you the tour."

A Choice in Ink: Output

Before you can examine them further, a person standing at the bottom of the library's main staircase lifts a hand in greeting and walks over to you. You recognize them as Mx Porter, the library director.

They shake your hand firmly.

Part 6: Test, Test, Test! (December, 2020)

Inky has built-in error reporting for code errors, so once I had finished inputting the game into Inky I had a (sort of) working version!

Next, I played through a few times to make sure everything was doing what I expected.

Most of my testing time was spent fixing the functions to score the player and to randomize the scenarios. I also tightened up the writing a bit and adjusted some formatting that looked weird.

ScholCom202X: Finished Version!

- One playable Ink file containing 13,637 words including character dialogue, player choices, and annotated links to scholarly resources.

- One 24-page PDF with all the scenarios and resources.

- Ten separate PDFs, one for each scenario.

- One 11-page PDF with just the annotated bibliography.

What's Next for ScholCom202X?

The playable HTML and associated PDF files will be placed in OER Commons as part of the Scholarly Communication Notebook.

Interactive Fiction Resources (General)

"Frequently Asked Questions about Interactive Fiction" from the Interactive Fiction Technology Foundation.

Intfiction.org – A community forum and great place to ask questions!

"Writing IF", by Emily Short – An essential introduction, with links to many tools and an explanation of basic concepts.

Interactive Fiction Resources (Tools)

Another Interactive Fiction Engine List – A comprehensive community-curated list of many game authoring tools, including obsolete and obscure ones.

ChoiceScript – A tool to create choice-based IF. Used primarily by Choice of Games, a company that produces novel-length choice-based games.

Inform – Programming language and affiliated tool. Creates parser games.

Ink – Inkle's programming language, includes Inky as an authoring tool. Creates choice-based games.

InkleWriter – An all-in-one visual solution provided by Inkle to make creating and hosting games in Inkle easier for beginners. Creates choice-based games.

Twine – Popular tool for creating choice-based games. Can be used in the browser or downloaded to desktop.

TADS – Tool to create parser games using natural language programming.

Interactive Fiction Resources (Games)

Depression Quest – Choice-based IF that simulates the experience of clinical depression. By Zoe Quinn, Patrick Lindsey, and Isaac Schankler (2013).

Harmony Square – Choice-based IF that teachers players to recognize misinformation online by creating their own.

IFDB – A community-created database of playable interactive fiction.

IFComp – An annual competition. Playing through the top games is a great way to see what the best IF authors today are up to.

Lime Ergot – A parser game where the only command available to the player is "look at [object]." By Caleb Wilson.

Interactive Fiction Resources (Scholarly, part 1)

Acharya, H., Reddy, R., Hussein, A., Bagga, J. and Pettit, T. (2019), The effectiveness of applied learning: an empirical evaluation using role playing in the classroom, *Journal of Research in Innovative Teaching & Learning*, 12(3), 295-310. https://doi.org/10.1108/JRIT-06-2018-0013

Bowman, S.L. and Lieberoth, A. (2018). Psychology and role-playing games. In S. Deterding and J.P. Zagal (Eds.), *Role-Playing Game Studies*, 245-264. Routledge.

Deterding, S., Dixon, D., Khaled, R. and Nacke, L. 2011. From game design elements to gamefulness: defining 'gamification'. *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments* (MindTrek '11). Association for Computing Machinery, 9–15. https://doi.org/10.1145/2181037.2181040

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Interactive Fiction Resources (Scholarly, part 2)

Kim, E. (2018). Effect of simulation-based emergency cardiac arrest education on nursing students' self-efficacy and critical thinking skills: Roleplay versus lecture. *Nurse Education Today,* 61, https://doi.org/10.1016/j.nedt.2017.12.003

Lankoski, P. and Jarvela, S. (2012). An embodied cognition approach for understanding role-playing. *International Journal of Role-Playing*, (2).

Montfort, N. (2003). *Twisty Little Passages: An Approach to Interactive Fiction*. MIT Press.

Overland, C.T. (2017). Using roleplaying simulations and alternate reality gaming to develop professional behaviors in pre-service music teachers: A qualitative case study. *Contributions to Music Education*, 42, 107-127.

Questions?

Time for questions!

You can also email me at bakersc@wou.edu