ASEE AMERICAN SOCIETY FOR ENGINEERING EDUCATION

Paper ID #40670

Exploring Gender Representation Issues In Computing by Writing Interactive Fiction

Dr. John K. Estell, Ohio Northern University

An active member of ASEE for over 25 years, Dr. John K. Estell was elected in 2016 as a Fellow of ASEE in recognition of the breadth, richness, and quality of his contributions to the betterment of engineering education. Estell currently serves on the ASEE Board of Directors as the Vice President of Professional Interest Councils and as the Chair of Professional Interest Council III. He has held multiple ASEE leadership positions within the First-Year Programs (FPD) and Computers in Education (CoED) divisions, and with the Ad Hoc Committee on Interdivisional Cooperation, Interdivisional Town Hall Planning Committee, ASEE Active, and the Committee on Diversity, Equity, and Inclusion. Estell has received multiple ASEE Annual Conference Best Paper awards from the Computers in Education, First-Year Programs, and Design in Engineering Education Divisions. He has also been recognized by ASEE as the recipient of the 2005 Merl K. Miller Award and by the Kern Entrepreneurial Engineering Network (KEEN) with the 2018 ASEE Best Card Award. Estell received the First-Year Programs Division's Distinguished Service Award in 2019 and the Computers in Education Division's Service Award in 2022.

Estell currently serves as an ABET Commissioner and as a member of ABET's Accreditation Council Training Committee. He was previously a Member-At-Large on the Computing Accreditation Commission Executive Committee and a Program Evaluator for both computer engineering and computer science. Estell is well-known for his significant contributions on streamlining student outcomes assessment processes and has been an invited presenter at the ABET Symposium on multiple occasions. He was named an ABET Fellow in 2021. Estell is also a founding member and current Vice President of The Pledge of the Computing Professional, an organization dedicated to the promotion of ethics in the computing professions.

Estell is Professor of Computer Engineering and Computer Science at Ohio Northern University, where he currently teaches first-year programming and user interface design courses, and serves on the college's Capstone Design Committee. Much of his research involves design education pedagogy, including formative assessment of client-student interactions, modeling sources of engineering design constraints, and applying the entrepreneurial mindset to first-year programming projects through student engagement in educational software development. Estell earned his BS in Computer Science and Engineering degree from The University of Toledo and both his MS and PhD degrees in computer science from the University of Illinois at Urbana-Champaign.

Dr. Stephany Coffman-Wolph, Ohio Northern University

Dr. Stephany Coffman-Wolph is an Assistant Professor at Ohio Northern University in the Department of Electrical, Computer Engineering, and Computer Science (ECCS). Previously, she worked at The University of Texas at Austin and West Virginia University Institute of Technology (WVU Tech). She is actively involved in community outreach with a goal of increasing the number of women in STEM and creating effective methods for introducing young children to CS concepts and topics. Dr. Coffman-Wolph's research interests include: Artificial Intelligence, Fuzzy Logic, Software Engineering, STEM Education, and Diversity and Inclusion within STEM.

OHIO NORTHERN UNIVERSITY

EXPLORING GENDER REPRESENTATION ISSUES IN COMPUTING BY WRITING INTERACTIVE FICTION

John K. Estell

Stephany Coffman-Wolph

METRIC: COMPUTER SCIENCE DEGREES

- Women account for a low share of the degrees earned in computer science:

Year	CS Bachelor's Degrees Earned by Women
1984	37% [1]
1995	29% [2]
2011	18% [2]
2020	21% [2]

[1] https://wayback.archive-it.org/5902/20181003225525/https://www.nsf.gov/statistics/nsf13327/
[2] https://ncses.nsf.gov/pubs/nsf23315/report/science-and-engineering-degrees-earned

A commonly used representation metric is the number of bachelor's level computer science degree earned annually by women.

According to a New York Times article, 1984 was when women began to be forced out of computer science.

There is no one single factor that has been identified as the cause for this decline; however, there are several factors that have contributed to this decline.

Data Sources:

- https://www.npr.org/sections/money/2014/10/21/357629765/when-women-stopped-coding
- https://ncses.nsf.gov/pubs/nsf23315/report/science-and-engineering-degrees-earned
- https://www.nytimes.com/2019/02/13/magazine/women-coding-computer-programming.html#:~:text=Men%20were%20more%20likely%20to,and%20information%20sciences%20were%20women.

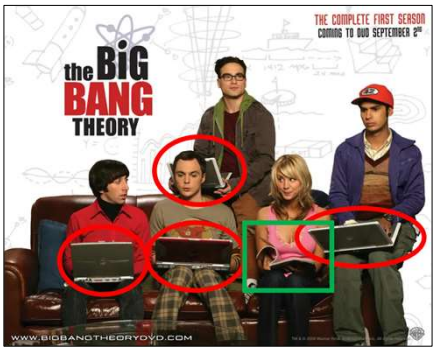
UNDERREPRESENTATION FACTORS

Gender stereotyping

1946 - ENIAC programmers

2023 - ONU JV eSports team

Male-oriented imagery



https://reelrundown.com/tv/5-Best-Big-Bang-Theory-Episodes

When digital computers became a practical reality in the 1940s, women were the pioneers in writing software for the machines. At the time, men regarded writing code as a secondary, less interesting task. The real “glory” lay in hardware design.

The advent of personal computers in the late ’70s and early ’80s changed how and when many kids learned to program, remaking the pool of students who pursued CS degrees. Geeky boys who formed computer clubs, at least in part to escape the torments of jock culture, often wound up, whether intentionally or not, reproducing the same exclusionary behavior, but with women now being excluded.

Additionally, the development of male stereotypes for STEM fields, particularly when aired via mass media venues such as film or TV, contributes as a social factor discouraging women from computer science. Such stereotypes, such as "computers are for boys," have a particularly negative effect in adolescence, when girls and boys develop their social identities.

Data sources:

- https://www.scientificamerican.com/article/there-are-too-few-women-in-computer-science-and-engineering/

- Cheryan, S., Plaut, V.C., Handron, C. et al. The Stereotypical Computer Scientist: Gendered Media Representations as a Barrier to Inclusion for Women. Sex Roles 69, 58–71 (2013). https://doi.org/10.1007/s11199-013-0296-x
- http://www.columbia.edu/cu/computinghistory/eniac.html

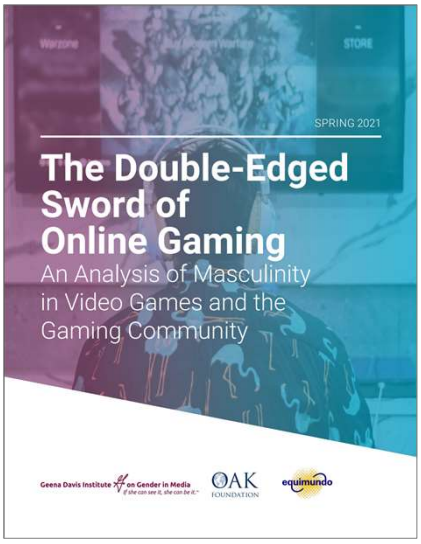
Image credits:

- ENIAC programmers Gloria Ruth Gordon [Bolotsky] and Esther Gerston: https://www.thenmusa.org/wp-content/uploads/2019/08/eniac-1.jpg
- ONU eSports JV League team: https://www.facebook.com/OhioNorthernUniversityEsports/posts/pfbid02CZsDMAgFviH1fECo3roG2cGcXAy9Gj5Mhpb25nmmhGQx1N8kLVCrTENTDsRzJVrql

UNDERREPRESENTATION FACTORS

Masculine defaults in gaming

- Seven-in-ten male characters (70.5%) are shown engaging in stereotypically masculine activities (i.e., taking a risk by jumping into an unknown void; engaging in violence by knifing an opponent).
- Two-thirds of male characters (65.7%) are shown acting tough.
- Nearly one-in-four (23.7%) male characters express anger.



https://www.equimundo.org/wp-content/uploads/2021/11/GDI-and-Promundo-masculinities-and-gaming-study-2021-FINAL-1.pdf

Online gaming is rife with the use of stereotypically masculine activities for male characters, often to the point of toxic masculinity.

Data sources:

- https://seejane.org/gender-in-media-news-release/the-double-edged-sword-of-online-gaming/
- https://www.equimundo.org/wp-content/uploads/2021/11/GDI-and-Promundo-masculinities-and-gaming-study-2021-FINAL-1.pdf

WHY SHOULD WE CARE ABOUT GAMING?

2020 global valuations:

Music industry:	$ 19.1 billion
Movie industry:	$ 41.7 billion
	$ 60.8 billion
Computer gaming industry:	**$159.3 billion**

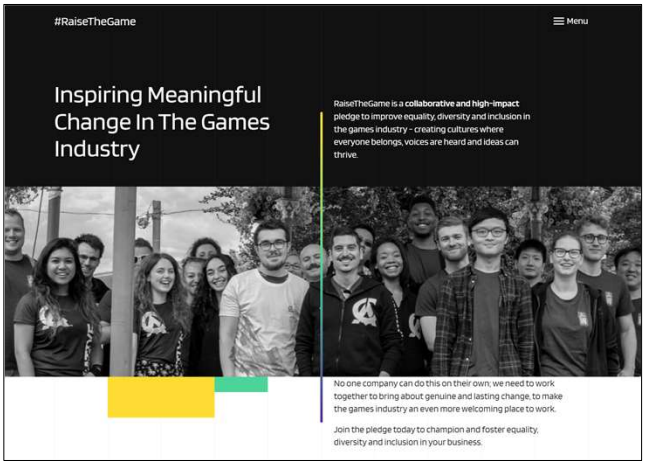
https://gamerhub.co.uk/gaming-industry-dominates-as-the-highest-grossing-entertainment-industry/

Computer gaming is a growing part of the entertainment industry that is roughly three times larger than the music and movie entertainment industries combined.

Data Sources:

- https://gamerhub.co.uk/gaming-industry-dominates-as-the-highest-grossing-entertainment-industry/
- https://www.fool.com/investing/2021/10/03/this-opportunity-for-investors-is-bigger-than-movi/

FOCUSING ON COMPUTER GAMES



https://raisethegame.com/

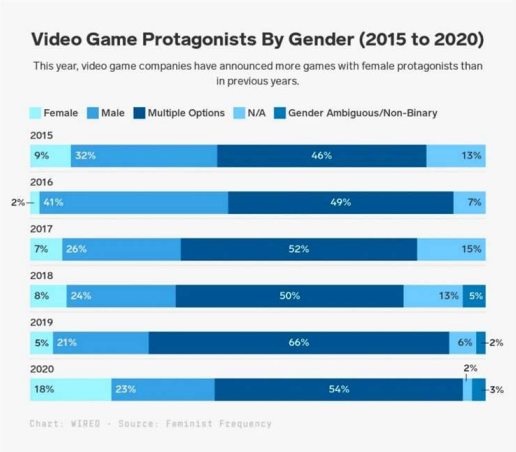
"Kids need to see entertainment where females are valued as much as males."

- Geena Davis

Note that the Geena Davis Institute on Gender in Media is starting to address representation in computer games, as are others as shown here.
Unfortunately, the reality is that there's an ongoing struggle to implement change in both the media industries and their products.

GENDER AND COMPUTER GAMES

- Women make up about half of video game players
- Significantly underrepresented as protagonists in video games
- Portrayal of women in games often reflects:
  - traditional gender roles
  - sexual objectification
  - stereotypical female tropes



Anita Sarkeesian, Gender Breakdown of Games in 2020, Octobre 2020, *Feminist Frequency,* disponible sur : https://feministfrequency.com/2020/10/15/gender-breakdown-of-games-in-2020/

While women play video games on par with men, they are not represented as protagonists at similar levels.
Instead, when women are portrayed in games, they are placed into secondary and/or objectified roles, and often presented in a stereotypical fashion.

Data Sources:

- https://igg-geo.org/?p=2884&lang=en
- https://inkspire.org/post/gender-struggles-female-representation-in-video-games/-M7d51VKbu2OSfnfQ9am

TYPICAL FEMALE TROPES

Ms. Male Character

https://sonypicturesanimation.fandom.com/wiki/Smurfette

Lingerie is not Armor

Artwork by Patrick Estell

A common tropes in television is the "Ms. Male Character" (AKA "Smurfette principle") of including only one woman in an otherwise entirely male ensemble, thereby establishing a male-dominated narrative.

A common trope in gaming is "Lingerie is not Armor," where male characters have full body armor whereas female characters have armor that's as revealing as lingerie. How many games show the woman in full body armor and the man almost topless?

Other female tropes include:

- Damsel in Distress
- Women as Reward
- All the Slender Ladies
- The Lady Sidekick
- Background Decoration

Data Sources:

- https://sites.psu.edu/academy/2017/04/09/female-tropes-in-video-games/
- https://www.rollingstone.com/politics/politics-news/anita-sarkeesian-on-gamergate-we-have-a-problem-and-were-going-to-fix-this-241766/?curator=SportsREDEF
- https://feministfrequency.com/

THE OREGON TRAIL VIDEO GAME…

Survive a 2,000-mile trek simulating 1840's Westward Expansion

- Created 1971
- 1985 - Apple II classic version
- 1990 PC version

No representation issues?

https://classicreload.com/oregon-trail.html

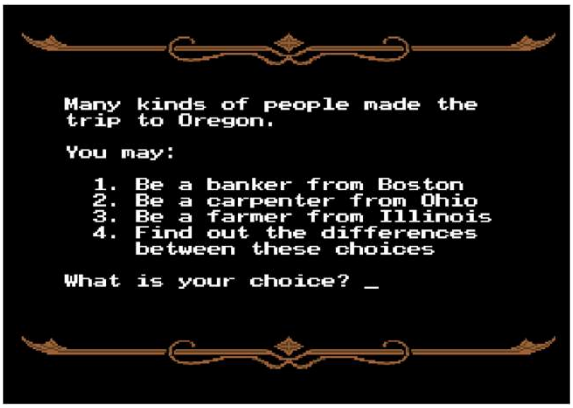
The Oregon Trail computer game was designed to present active learning experiences involving those migrating along the Trail. It allows a player to outfit a wagon and then lead a small party on a 2000-mile trek while being cautious with supplies, keeping a good travel pace, and learning how to cross a river. The game was originally text-based, but with the rise of PCs in the 1980s the program was upgraded with graphics and sound, and has been revised for various platforms ever since.

The game has achieved near cult-like status , but: has also generated complaints concerning the lack of representation of those outside of the provided white male protagonist avatar. The most common complaint involves the stereotypical portrayal of Native Americans, but other complaints involve the erasure of the female experience via:

- inability of gender selection by the user
- problem scenarios falling within the male domain

- This and following the slides contain screenshots from the 1990 PC version, which can be found at many places online.

… AND ITS REPRESENTATION ISSUES



Male Occupations

Male Activities

https://classicreload.com/oregon-trail.html

Occupations: Of the three occupations, only the farmer comes close; however, women of that era were limited to growing vegetable patches and tending herb gardens while the men performed the large-scale work (plowing, sowing, etc.)

Activities: Most boys playing the Oregon Trail game gravitated to this hunting mini-game, whereas girls usually found this to not be appealing. Note that it has a minimal impact on one's game play. In reality, most men of the era were poor hunters, having hunted back east as a social activity instead of for procurement; thus, more often than not they were unsuccessful in bringing home game. In fact, it was the women who procured food from the Indians via bartering for calico or cash.

Data Sources:

- https://www.philipbouchard.com/oregon-trail/hunting.html
- Schlissel, Lillian. *Women's Diaries of the Westward Journey.* New York, Schocken Books, 1982.

… AND ITS REPRESENTATION ISSUES

Female Trope
"A frantic wife"

Male Avatar
"you or the Missus"

Embedded with conversations: Having "conversations" could only occur at forts, landmarks, and similar congregating points. In this version, at any one location you could rotate through three possible conversations. However, many players never bothered to select that game option.

While the presence of a male avatar is not systemic, in this conversation the use of "you or the Missus" expressly assumes a male avatar playing the game.

… AND ITS REPRESENTATION ISSUES

Female Trope
Background decoration

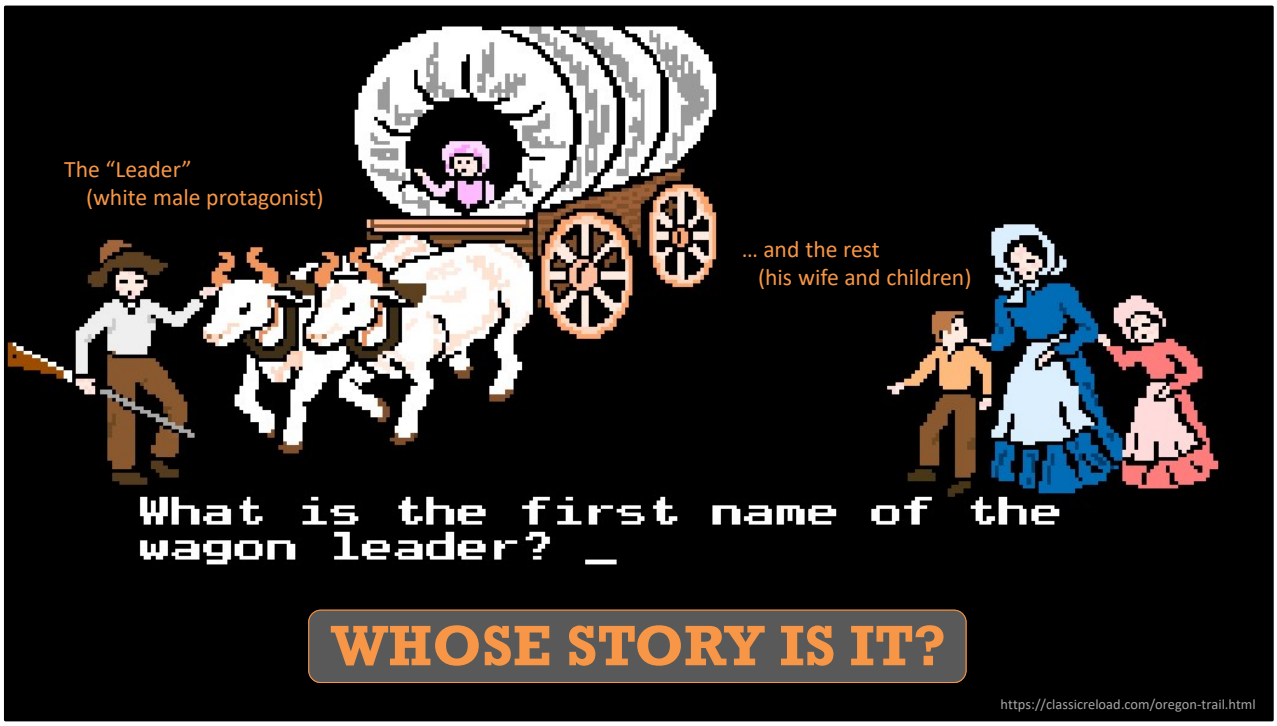
https://classicreload.com/oregon-trail.html

Background decoration trope: Women appear in the imagery (should you choose to look, as this was an option in this version), but as decoration.

Note: One in five women on the Trail was either pregnant or gave birth at some point on the journey, but nowhere in the game narrative does one have to deal with childbirth or subsequent care.

Data Sources:

- Schlissel, Lillian. Women's diaries of the westward journey. Schocken, 2004.



In one of the opening scenes of the Oregon Trail Game, the designers make it visually clear, even with just 8 bit pixelated art, that the wagon leader (and avatar) in a white male.

Also note that:

- The wagon leader is armed (a projection of power).
- The wagon leader has a hold on the oxen, reinforcing the “leading” attribute.
- All the other characters (wife, boy, 2 girls) are passively looking on.

https://thebroadcastknowledge.com/2019/02/01/video-where-are-the-women-the-importance-of-visibility-in-achieving-inclusivity/

In order to bring about change, it is important to provide diverse, intersectional representations of characters in media that reflects the population of the world — which is half female.

Data Sources:

- Cheryan, S., Plaut, V.C., Handron, C. et al. The Stereotypical Computer Scientist: Gendered Media Representations as a Barrier to Inclusion for Women. Sex Roles 69, 58–71 (2013). https://doi.org/10.1007/s11199-013-0296-x

OREGON TRAIL: IN A WOMAN'S VOICE

- Writing computer games about the emigrant experience along the Oregon Trail from the point-of-view of a white female protagonist
- Applying historical accuracy
- Avoiding stereotypes

The purpose of this project is to introduce diversity issues to aspiring software developers via designing historically-based gamification apps; specifically, exploring the nature of American Western Expansion through the lens of the women who partook in the journey along the Oregon and similar Trails.

Photo by Stephany Coffman-Wolph, taken at the Archway Museum.

IN A WOMAN'S VOICE - TWO INITIATIVES

2022: Programming 2

(repeated in 2023)

- First year, second semester term project
- Teams write Java app based on original Oregon Trail game
- Combination of text and GUI
- Female protagonist provided

2023: Interactive Fiction

- Jointly offered by CS and English programs
- Using INFORM7 language to write text adventure games
- Semester-long project
- Must develop and incorporate female protagonist
- Individual stories

These are our two initiatives.

- We jointly taught Programming 2 in Spring 2022, each having one section. Prior years involved working with clients to develop educational software, but with the growth of the CS program a client-based approach toward the term project became unsustainable. The term project was repeated in 2023 with Dr. Coffman-Wolph and a visiting professor serving as the instructors.
- Dr. Estell jointly taught Interactive Fiction in Spring 2023 with Dr. Robeson from English, with separate English and CS classes being offered in the same place at the same time.

PROGRAMMING 2 TERM PROJECT

PART A:
MINIMUM VIABLE PRODUCT

Implement multi-day travel:
- Basic consumables
- Health (humans and animals)
- Some random events

Implement portion of Trail:
- Start: Independence, Missouri
- Finish: Ash Hollow, Nebraska

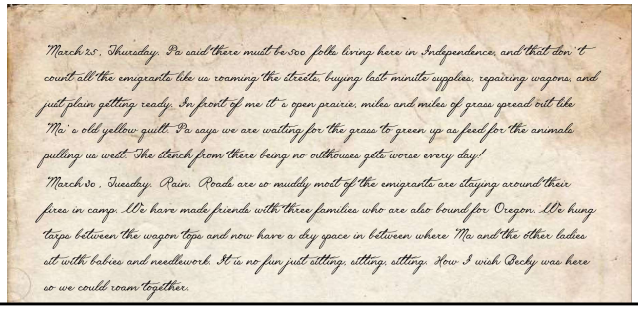
PART B:
FULL IMPLEMENTATION

Add:
- Loading the wagon
- Travel from Independence to Oregon
- Weather and river data
- More random events
- Major landmarks
- Losing scenarios

This is an overview of the term project, where student teams were first asked to create a minimum viable product of their program so that something would be up and running for review and comment, after which they would implement the remaining game features, with periodic design reviews for checking in on progress, team dynamics, etc.

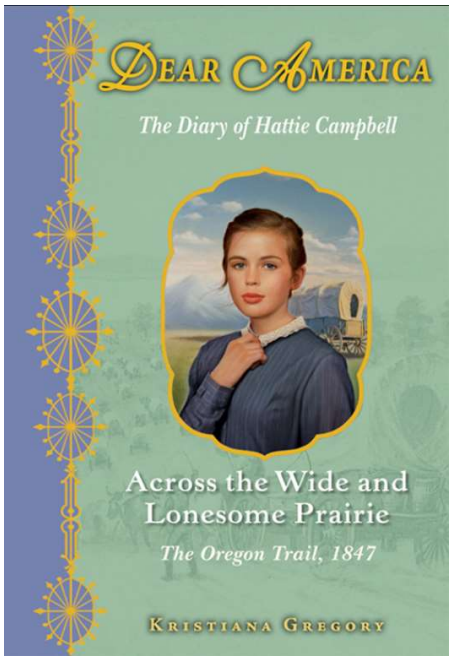
OUR FEMALE PROTAGONIST

- Name: Hattie Campbell
- Born: January 15, 1834
- From: Booneville, Missouri
- Age: 13



March 25, Thursday. Pa said there must be 500 folks living here in Independence, and that don't count all the emigrants like us roaming the streets, buying last-minute supplies, repairing wagons, and just plain getting ready. In front of me it's open prairie, miles and miles of grass spread out like Ma's old yellow quilt. Pa says we are waiting for the grass to green up as feed for the animals pulling us west. The stench from there being no outhouses gets worse every day!

March 30, Tuesday. Rain. Roads are so muddy most of the emigrants are staying around their fires in camp. We have made friends with three families who are also bound for Oregon. We hung tarps between the wagon tops and now have a dry space in between where Ma and the other ladies sit with babies and needlework. It is no fun just sitting, sitting, sitting. How I wish Becky was here so we could roam together.



We provided students with a persona of Hattie along with some of the early diary entries from the book. While students were not required to buy this book, some teams did use it as a resource (Kindle version: $4.99).

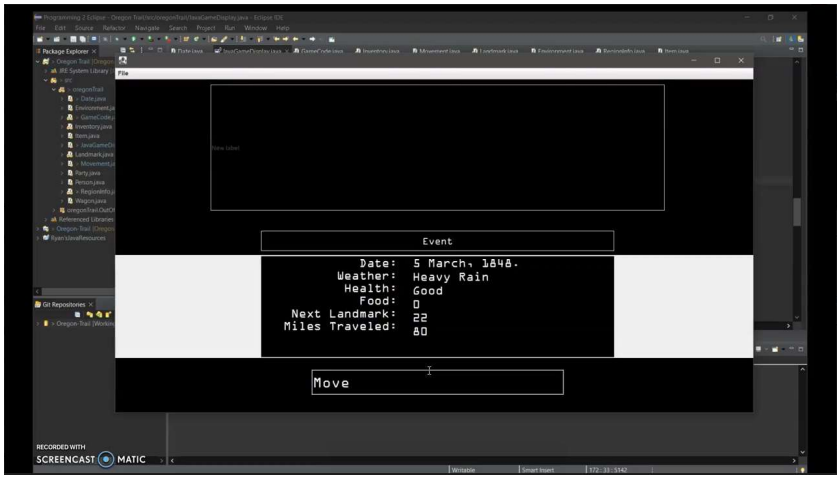
Data Sources:

- https://www.amazon.com/Dear-America-Across-Lonesome-Prairie/dp/0545350662

MINIMUM VIABLE PRODUCT + DESIGN REVIEW

Have something up and running…

Keep team focused on task….



- **MVP of Oregon Trail** contains a selection of the Oregon Trail (Independence Missouri to Ash Hollow Nebraska). Basically, we are looking for simulated traveling on a multi-day trip with consumables, health (both animals and humans), and some random events.
- **Design Review (2 weeks after MVP)** teams need to have an initial version of their game up; some features can be underdeveloped at this point to focus on key items. But key items are to be eventually implemented!

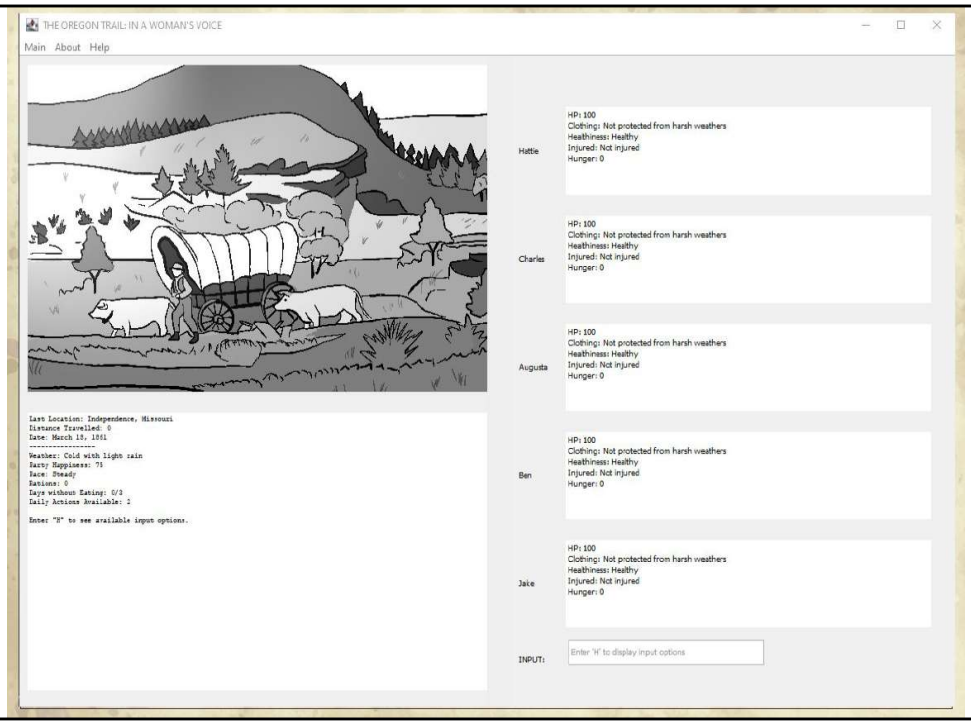
2022 SOFTWARE APPLICATION FAIR

- Critical Design Review
- Make elevator pitch
  - Needs, Approach, Benefits, Competition
- Conduct game demo
- Teams receive same day feedback
  - Use input to make final adjustments

At the end of the semester a “Software Application Fair” (AKA “App Fair”) is held. This critical design review allows student teams to demonstrate a nearly-complete version of their game to fair attendees for gathering feedback, some of which can be used for making final revisions to their apps.

Photo by John K. Estell, taken at Ohio Northern University

EXAMPLE APPLICATION



Given that these students are in their first year of programming, we are not expecting glitzy displays – just text, controls, imagery, and decent game play.

2022 PROGRAMMING 2 RESULTS

- All teams featured Hattie as the protagonist
- High visual creativity displayed
- Some teams included diary entries in their game
- Student Struggles:
  - Engaging in storytelling
  - Avoiding grammatical errors
- Faculty Struggles:
  - Health issue resulting in no DEI-oriented assessment tool

Student struggles:

- The students struggled with two elements: (1) engaging in storytelling and (2) writing text that is free of grammatical errors.
- While all teams had a plausible storyline, those that struggled tended to have weak narrative and/or repetitive story elements, such as using the same text for each river crossing, with only the river's name changed.
- The instructors believe the grammatical errors are partly due to students' overreliance on catching spelling and grammatical errors through use of autocorrect editing features that are non-existent in software development systems.

Faculty struggles:

- One of the authors needed to take medical time off during a critical portion of course development; one of the items dropped was the development of a DEI-related assessment tool.
- Note that there are no results reported for 2023; this is due to course reassignments that took the tenured author away from this course; given the changing political environment, the tenure-track author decided to not make any changes for the 2023 offering, including not using the assessment tool developed in 2023 in the other course.

2023: INTERACTIVE FICTION

- Creative historical writing
- Joint English – CS offering
- Part A: write short adventure game based on nearby 1843 homestead
- Part B: develop longer story based on female experiences along the Oregon Trail

The benefit of Interactive Fiction is the ability to create multiple endings – some "successful," others not so….

As mentioned earlier, this course was taught jointly by the English and Computer Science programs at Ohio Northern.

- English prof focused on the writing components while CS prof focused on the programming
- Both profs covered various aspects of history, DEI, etc.
- English section had 7 students; CS section had 15 students (22 total).

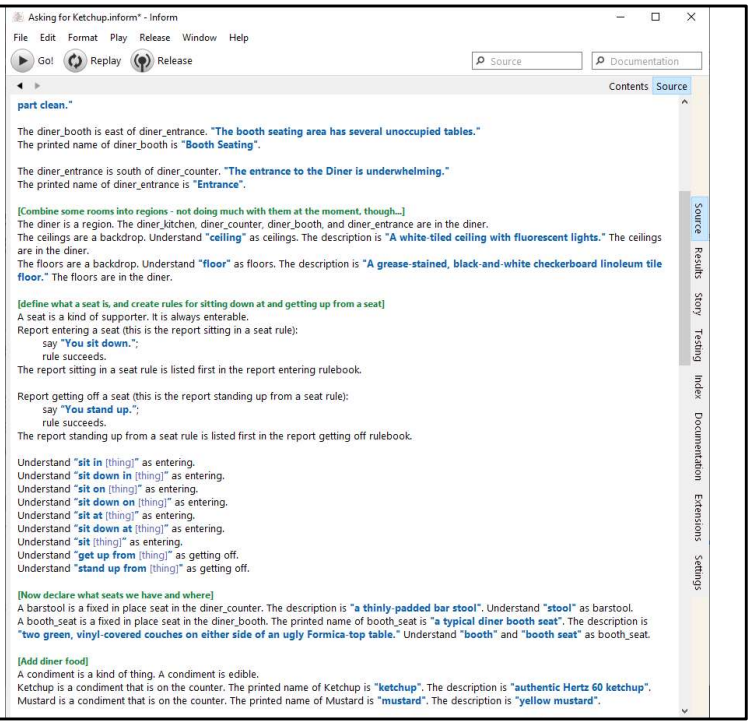
As part of the course, students were treated to a docent-led trip back to the 1840s by touring a nearby homestead from that era.

Photos by John K. Estell, taken at the Swiss Community Historical Society's Schumacher Homestead, Bluffton, Ohio.

INFORM 7

Language designed for creating interactive fiction using a natural language syntax

Friendly coding environment for non-programmers!



Inform is widely used as a medium for literary writing, as a prototyping tool in the games industry, and in education, both at school and university level (where Inform is often assigned material for courses on digital narrative). It has been ranked several times in the top 100 most influential programming languages according to the TIOBE index. Created in April 2006, it was open-sourced in April 2022.

Inform7 resources:

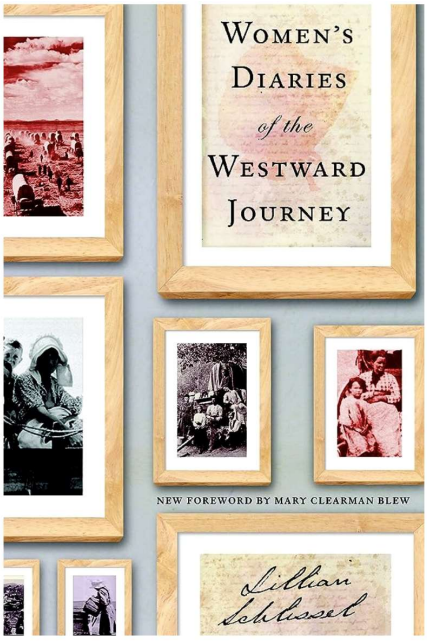
- Releases: https://github.com/ganelson/inform/releases
- Documentation: https://ganelson.github.io/inform-website/doc/
- Tutorial: “The Inform 7 Handbook” - https://www.musicwords.net/if/i7hb.htm

Example code is from a demonstration program written by John Estell for visiting a classic Chicago diner.

INTERACTIVE FICTION BOOK

"The Schlissel book was invaluable in that, without it, it would have been far harder to get a full picture of what a woman's experience on the trail would have been like, especially that of a mother. This book provided some key insight that I needed to at least somewhat accurately reflect the women of the time."

- Student quote



A very valuable resource was the book "Women's Diaries of the Westward Journey" by Lillian Schlissel. In addition to providing the diaries of six women, the book provides historical context, including what was, and was often was not, placed into a diary of that era. For example, Victorian mores prevented even the mention of pregnancy in a personal diary – the first inkling written in a diary would be the mention of a birth. Students in the course were also provided with on-line resources, including period diaries.

The quote is from a student's reflective essay.

Data Sources:

- Schlissel, Lillian. *Women's Diaries of the Westward Journey.* New York, Schocken Books, 1982.

2023 APP FAIR

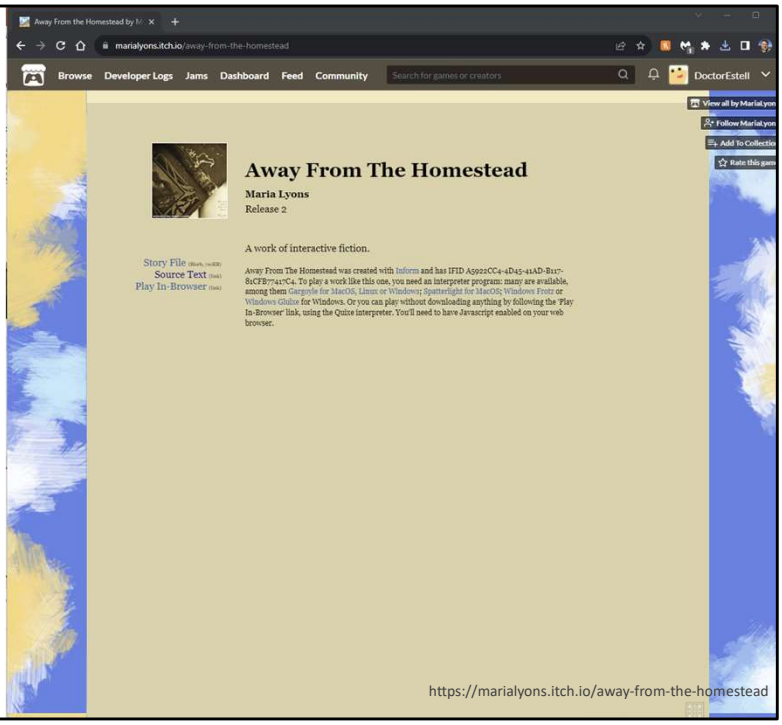
The 2023 App Fair featured students from both the Programming 2 and Interactive Fiction courses, and was held during the last week of the semester at one of the two weekly hours where no classes are scheduled to allow for maximum visibility.

Photos by John K. Estell, taken at Ohio Northern University.

INTERACTIVE FICTION RESULTS

Students:

- Developed female protagonists
- Wrote simple text-based games featuring narrative
- Learned how to critique others' work
- Published their games online



Each student wrote their own story, constrained only by the use of a female protagonist, the time period of the 1840s-1850s, and having the Oregon Trail being represented in some way.

All students used the "itch.io" gaming web site for self-publication of their Inform games and is free to use. This slide shows the "home page" for one of the stories developed. Students had the option of publishing either publicly or privately on the site.

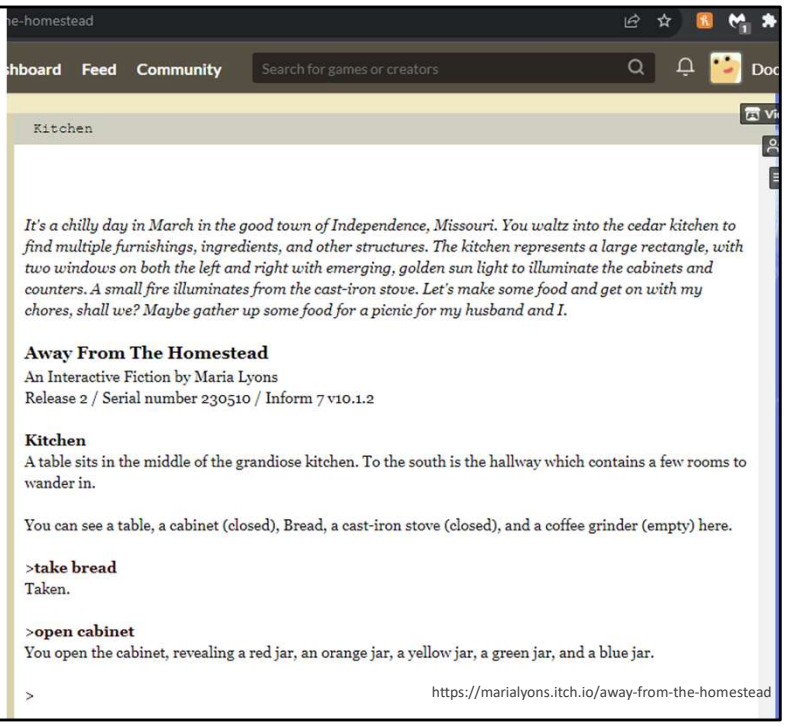
It was nice to see engineering students engaged with creative writing!

Note that these are not meant to be polished games, as students are still learning their craft and also have issues with respect to scope creep preventing them from fully finishing their envisioned work.

INTERACTIVE FICTION RESULTS

Faculty:

- Successful cross-college collaboration
- Found platform suitable for non-programmers
- Coding – Writing balance worked



Faculty:

- There were those who doubted that this collaboration would be successful – it was fun to prove the naysayers wrong.
- Biggest concern was making coding accessible to non-programmers; Inform7 was successfully used by all students in the course.
- Biggest difficulty was trying to get a sufficient balance between coding and writing so that students could get something accomplished. It worked, which is sufficient for a Special Topics course being taught for the first time, but would like to improve on the process for next time.

This slide also shows the start of Maria's game – the female avatar has yet to learn about the trip that's in store for her.

ASSESSMENT TOOLS

- DEI Survey
  - Developed by ONU'S Chief Belonging, Inclusion, and Diversity Officer
  - Included pre- and post-activity quantitative questions
- Reflective Essay (replaced final exam)

COURSE OUTCOMES

1. Identify formal devices of plot, character, narration, and point of view in interactive fiction games.
2. Reflect critically on the role of DEI perspectives in gaming fiction.
3. Understand the implications of interactive game format on the relationship between reader, writer, and publisher.
4. Understand the diversity of historical experience encountered on the Oregon Trail.
5. Create an interactive game using natural language software.

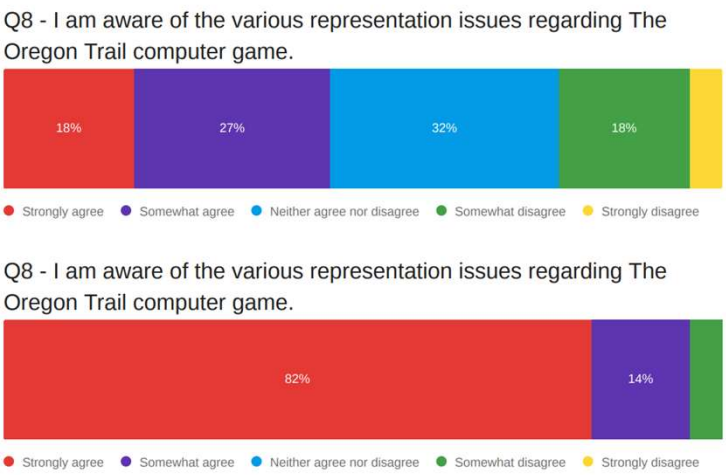
Note that this was an elective special topics course:

- Students will more likely have a favorable bias regarding the course outcomes than found in the general student population
- Instructors might need to tweak/add/remove questions for future use

DEI pre-activity survey had 8 quantitative and 2 qualitative questions
DEI post-activity survey had 20 quantitative and 4 qualitative questions
Reflective essay had 8 questions

Following pages provide a sampling of our results.

EXAMPLE REPRESENTATION RESULTS (*n* = 22)

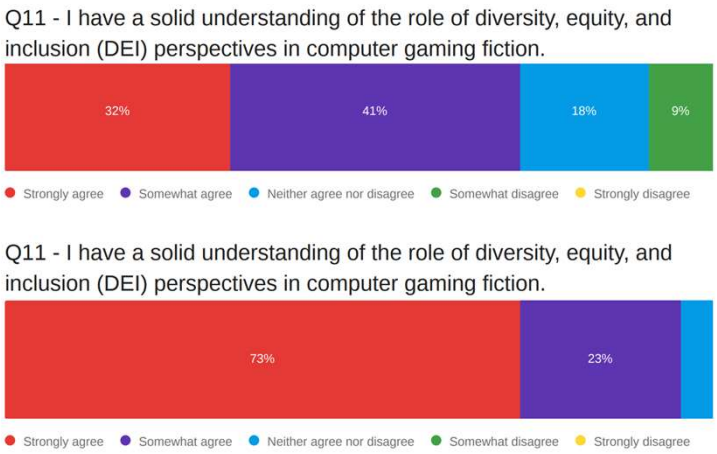


Pre-activity

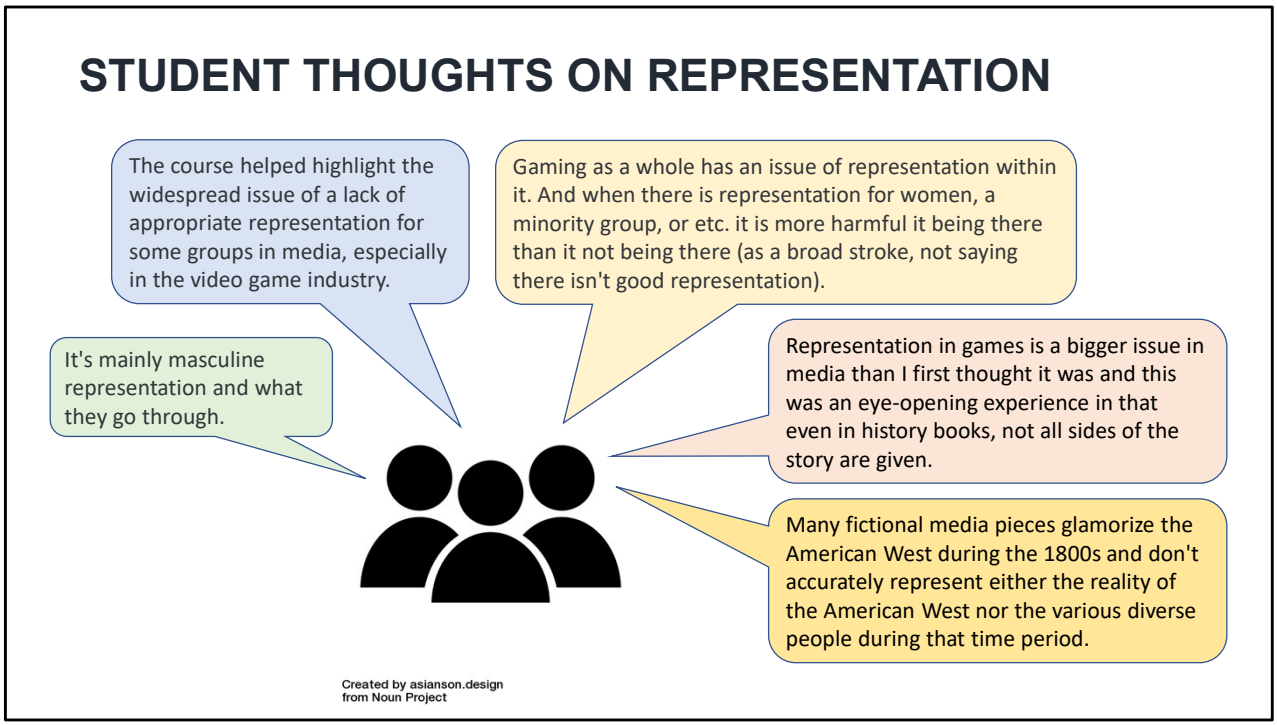
Post-activity

We want to provide some example responses from the paired questions from the pre- (top) and post- (bottom) activity surveys. Given that we pointed out several examples, it's not surprising that awareness of representation issues within the Oregon Trail game was raised.

EXAMPLE REPRESENTATION RESULTS (n = 22)



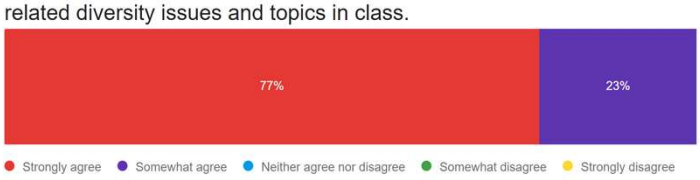
Given that this was an elective course, it felt like "preaching to the choir" regarding students' general awareness, but note that the course did positively "move the needle“ as seen here regarding DEI perspectives. This invites a new research question: can such a shift be replicated in our Programming 2 course?



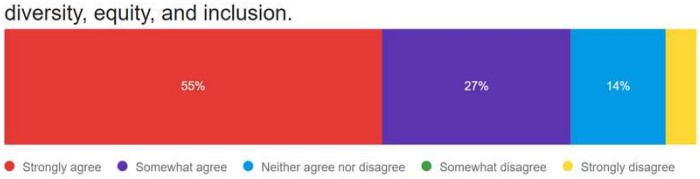
These are a few of the post-activity comments made by students in the course regarding representation in computer gaming.

EXAMPLE COURSE INSTRUCTOR RESULTS (*n* = 22)

Q25 - The instructors were open and comfortable with addressing related diversity issues and topics in class.



Q26 - The instructors structured learning experiences for valuing diversity, equity, and inclusion.



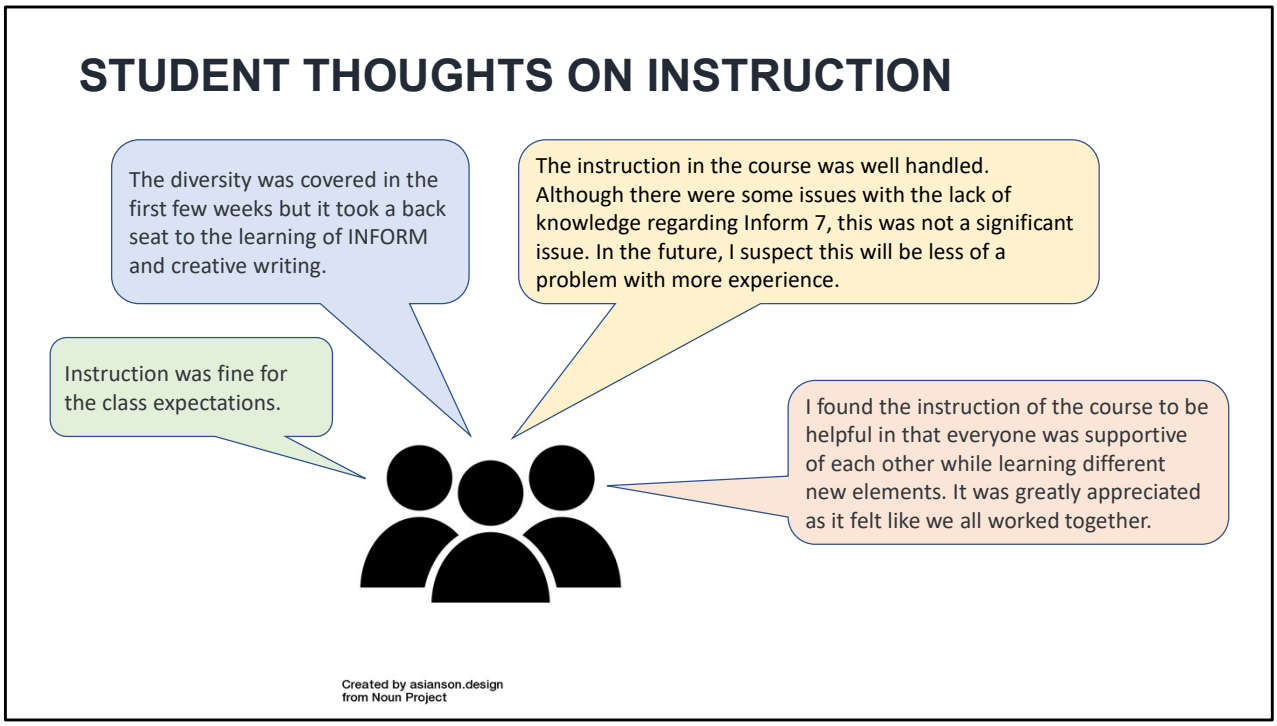
The survey created by our Chief Belonging, Inclusion, and Diversity Officer also included instructor-related questions. Overall, we were pleased with the results shown here, although one student strongly disagreed in Q26 but left no comment as to why.

EXAMPLE COURSE INSTRUCTOR RESULTS (*n* = 22)

Q28 - The instructors valued the diversity of life experiences among students.

Q29 - The instructors created an equitable and respectful environment in the classroom for all students.

The same student also strongly disagreed with these two questions. Overall, the instructors did create an atmosphere where most students could see our values regarding diversity of life experiences on display and that we also created an equitable and respectful environment.



These are a few of the post-activity comments made by students in the course regarding the instruction of the course.

NEXT STEPS (1)

Programming 2:

- Add lecture on representation issues for context
- Add themed preliminary assignments
- Tweak Spring 2024 term project
  - Provide different diaries to each team
  - Replace hunting game with appropriate activity
- Apply developed DEI survey

Interactive Fiction:

- Plan on offering again in Spring 2025
  - Have commitment to continue CS-English collaboration

The next offering of Programming 2 is in Spring 2024:

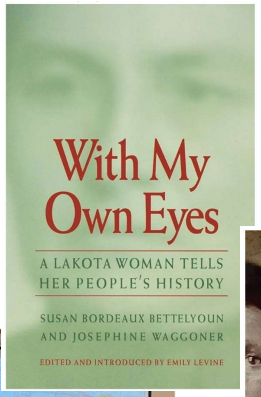
- Tenured author (Dr. Estell) reassigned to teaching this course (but tenure-track author has been removed from course)
- Will distribute multiple diaries written by women to promote having greater variety between games
- Will provide some coverage of DEI issues in media to provide appropriate context
- Will require use of data files to allow for narrative and dialogue to be more readily written (i.e., not embedded in the program code)

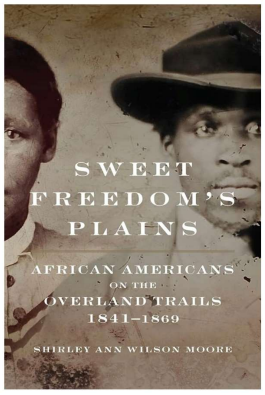
The next possible offering of Interactive Fiction would be in Spring 2025:

- Current workload policy allows Dr. Estell to offer one elective course every two years
- English program has already given verbal support to continuing this collaboration
- If offered (i.e., dependent on department approval), will focus on using the lessons learned from the inaugural offering of the course to effect improvements

NEXT STEPS (2)

Find additional resources





Becoming a member of the Oregon-California Trails Association and attending their 2023 Annual Convention provided opportunities for networking, exposure to additional resources (such as the recommendation of the “With My Own Eyes” book), and getting a “sense of place” by visiting various historical sites.

Finding period resources written by white women is not that difficult – for example, “Covered Wagon Women" is an 11-volume collection of diaries and letters written by women traversing the Oregon and similar Trails.

Finding similar resources for female African Americans is more difficult, and even more difficult with respect to female Native Americans due to their oral tradition of passing down stories.

Photo by John K. Estell – taken at Scotts Bluff National Monument.