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The Open Axis video game

Using gamification for learning and Open Access Week

International Open Access (OA) Week inspires us to pause and reflect on the growth and development of OA programming around the world, as well as consider its evolution at our own institution. The occasion highlights and cultivates global support for free and immediate access to the results of scholarly research,¹ while spotlighting regional and disciplinary nuances to OA outreach. OA Week events across the globe are varied and have ranged from presentations to movie screenings to Wikipedia edit-a-thons. UCLA Library has facilitated its own OA Week events for many years, and recently began experimenting with gamification and play-based learning by way of original analog board games and interactive learning stations.² These games covered the basic tenets of OA, scholarly communication, and keystone library services. Gamification can be a useful tool to explain concepts and acknowledge that there are many different paths to success, much like scholarship. In 2020, the pandemic prompted us to expand and apply the same OA learning concepts with game-based learning into a remote learning environment with Open Axis: The Open Access Video Game. The goal was to create a learning object that met asynchronous learning outcomes for a multitude of disciplines and various academic levels.

Creating the game

Open Axis incorporates role-playing game (RPG), platformer, and choose-your-own-adventure style elements in a mix of text-based and multimedia formats to deliver a remote-friendly, play-based learning tool that high-

lights the importance of OA to a wide academic audience. It is a robust example of collaborative remote outreach, innovative scholarly communication instruction, gamification in academic libraries, and OA promotion. Diverse character profiles and gender-neutral names are built into the game's core narratives that feature undergraduates, graduates, and faculty, exploring issues unique to their respective positions. The iterative design process took into account users with varying levels of video game experience by allowing baseline play to be accomplished by someone with little-to-no experience, with more challenging mini-games embedded for experienced gamers. The timeline from conceptualization to game launch took a five-person team, drawn from across multiple campus libraries, approximately five months. Complex learning outcomes are based on the Framework for Information Literacy for Higher Education.³

Open Axis was created using an open source program called Twine,⁴ which enables creators to tell interactive, nonlinear stories with only basic CSS and HTML knowledge (see figure 1). We also used LucidChart,⁵ a virtual workspace for

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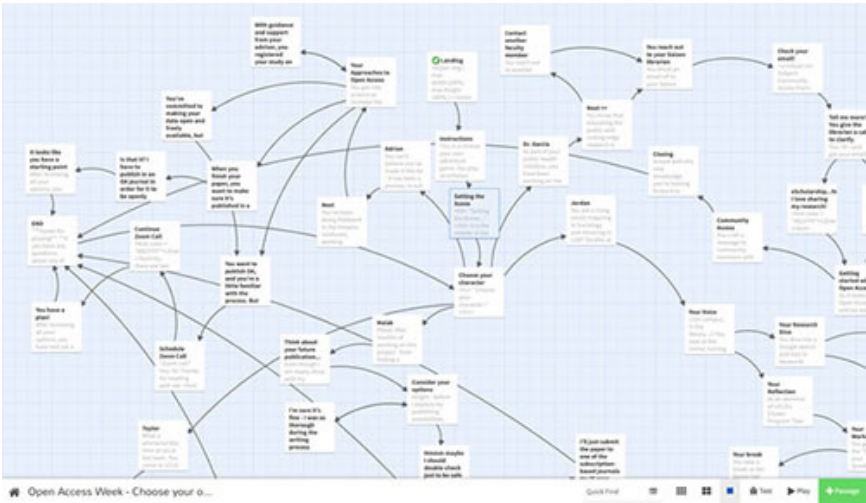


Figure 1. Backend of Twine storyboard.

teams, to craft “rough drafts” of our story arc. This allowed us to collaborate on various storylines before creating the final game product in Twine.

Within the interactive Twine game are short, embedded 8-bit platformer style video

coding or programming experience. The Flowlab website contains extensive help sections, from video tutorials to online forums. There are also many built-in basic behaviors and visual assets that can serve as an easy starting point for new creators. Although there is a free version of



Figure 2. Screenshot of Flowlab minigame.

mini-games, which serve as brief interludes from the more substantive Twine adventures, but also impart simple information literacy and OA concepts (see figure 2). The mini-games were created using a browser-based game toolkit made with Flowlab Game Creator.⁶ Flowlab uses a visual logic builder, which requires no

Flowlab, we chose to upgrade to an educational plan to enable unlimited game creation and asset upload.

The final version of Open Axis was uploaded to our UCLA Library GitHub account, and then the code was embedded directly into our library website.⁷

The player experience

Open Axis players are asked to choose from a series of five diverse scholar-characters designed to engage the game's themes through a variety of disciplinary lenses at different stages of the character's academic career. Using text prompts, the choose-your-own, adventure-style narratives present the player with a research or scholarly publishing dilemma. Gameplay incorporates a variety of library resources and services. For example, one narrative follows a character through a 24/7 Ask A Librarian virtual chat, while another directs a graduate student to the library's institutional repository. The mini-games enforce broader themes, such as "collecting sources" and "finding research help," and provide an additional, fun means of engagement. Player choices determine the path and, ultimately, the ending of the character's story.

Upon completing the game, players learn how their decisions impact the availability of published material in the current scholarly landscape.

To ensure accessibility, the learning object is compatible with screen readers, unbound by technology, and modular enough to be embedded in learning management systems. Text, colors, and links are W3C compliant. Furthermore, the original transcript for Open Axis can be made available for universal access.

Incorporating game-based instruction

Video games and gamification—which is the "use of game elements in a non-gaming context" present opportunities for engaged, active learning within academic library instruction.⁸ As noted by Dickey, "[t]he benefit of engaged learning is that this design promotes student collaboration and fosters students taking an active role in their learning."⁹ Games are well-suited to support engagement due to their design, which necessitates that players make decisions by applying information, skills, and critical thinking to proceed. This is especially true

for RPGs, which require players to assume the role of a fictional character and make decisions on behalf of that character to propel the narrative forward. Open Axis uses RPG elements—in tandem with side-scrolling, casual mini-games—to encourage players to consider how they might respond to publishing, research, and information challenges from the perspectives of characters at various stages in their academic careers. The emotive potential of games—as evidenced by the growing use of gamification in academic libraries¹⁰ and positive reception of Open Axis—present opportunities for library instructors to involve students in their own learning as active, engaged participants.

The opportunities associated with incorporating games into library instruction extend beyond the ability to create immersive learning experiences. When used in consort with other instructional approaches, they can promote or supplement learning outcomes.

For instance, analog games—like board games—can be used within in-person instruction sessions to enhance instructional content, while digital games may be assigned as pre- or post-work to a traditional library session. In either case, games can be used to check and verify knowledge, provide scenario-based opportunities for students to apply their knowledge, and provide a means for social and collaborative learning.

Web-based games in particular present added benefits due to their repurposability, they can be easily linked within learning management systems or static web pages, and they can be expanded or adapted for future iterations to include new features and content. The Open Axis game is easily reproducible and customizable at other institutions, requiring only a basic technical background. The game is modular, so different sections may be extracted for outreach, instruction, and orientation events. Librarians may assign specific characters to learners as pre-work before an instruction session. Contents of the game can be updated as UCLA Library services evolve.

Outreach and engagement

The Open Axis browser-based format allowed us to generate a higher level of engagement than

our previous OA week activities. The link to our game was easily shared via social media, our website, on LibGuides, and through instruction sessions. This gave us the opportunity to engage with audiences worldwide, extending the game's impact beyond the UCLA community. The game appealed to a wide range of users. At the end of the game, we administered a six-question feedback survey. Multiple-choice and qualitative responses indicated that the game was successful in helping players learn about OA topics and core library services. This feedback, coupled with our increasing experience, will inform what we add to the next iteration of Open Axis.

Considerations and conclusions

Open Axis can be modified to become a relevant tool at any institution. The game offers opportunities for incorporating game-based learning into library instruction: it is reproducible, customizable, engaging, and marketable. Gamification is particularly well suited for exploring scholarly communication topics because the consequences for player behaviors are often delayed or even hidden, much like real-world publishing decisions.

Just as scholarly communication services have evolved over the years to respond to changes in areas of support, we must now also examine areas of opportunity for supporting the remote or hybrid learning environment.

As of July 2021, Open Axis continues to enjoy social media attention and is both shared and played by members of the online community far beyond the confines of the UCLA campus. The time invested in developing Open Axis is worthwhile, as the game's practicality extends beyond a singular week of events. Creating the game on an open-source platform encourages sharing and repurposing among the broader scholarly community.

As International Open Access Week continues to expand, so will the diversity of its events and learning materials. We look forward to sharing future iterations of Open Axis, and seeing games and gamification utilized in future OA Weeks and beyond.

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Notes

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7. See <https://www.library.ucla.edu/open-axis-open-access-video-game>.

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10. There are several examples that signal the use of games in academic library instruction. See Stephanie Crowe and Eva Sclipa, *Games and Gamification in Academic Libraries* (Chicago, IL: ACRL, 2020); Hannah Gunderman, "5 Ways to Use Animal Crossing: New Horizons to Teach Data Management!" YouTube, <https://www.youtube.com/watch?v=wjroy-I-stY>. **ZZ**