

# Inoculation Against Disinformation: Expansion and Digitization of an Information Literacy Instruction Role Playing Game

## Project Justification

### *Introduction*

The University at Albany Libraries, in collaboration with librarians at Kansas State University and the UAlbany College of Emergency Preparedness, Homeland Security, and Cybersecurity (CEHC), propose to digitize and expand an existing information literacy instruction game entitled *Werewolf on Campus: Recognizing Misinformation in the Wild*, along with creating an accompanying Educator Guide to facilitate implementation of the game at academic, school, and public libraries. Using gamified inoculation theory, the game will help students and young adults across the US build resilience to mis and disinformation of all kinds by teaching them to recognize indicators of unreliability and avoid being deceived. We are requesting \$246,762. This project will meet Goal 2 and Objective 2.1 of the National Leadership Grant program.

### ***NLG-L Program Goal 2: Build the capacity of libraries and archives to improve community well-being and strengthen civic engagement.***

This project will equip librarians with a practical and engaging tool for teaching students and young adults how to build resilience against misinformation. This work is vital for empowering young people to participate in their communities as informed digital citizens who think critically about the information they encounter, share, and create not only in educational contexts, but in their personal lives when making important decisions about their health, career, voting choices, etc. and engaging in online spaces.

### ***NLG-L Objective 2.1: Develop or enhance replicable programming, models, and tools that engage communities and individuals of diverse cultural and socioeconomic backgrounds.***

This project will produce an openly available digital game that can be customized for various audiences. From the start, the co-investigators will engage our own communities at UAlbany and Kansas State to pool our expertise and incorporate multiple perspectives in the development and testing of the game.

Working with faculty and students in UAlbany's Informatics and Game Design & Development programs, which are nested in CEHC, the grant team will create a user-friendly game, along with an accompanying Educator Guide, with built-in features that allow facilitators to easily adapt the game for their audience. This will allow the game to be implemented in various settings, including with our diverse populations of students from both UAlbany and Kansas State, and expanding to other colleges, high schools and communities midway through Year 2. We believe incorporating young people's input and feedback throughout the development process will be essential to creating an authentic product that accurately represents their experiences online.

With help from UAlbany's User Experiences Librarian, we will create focus groups for initial testing of the game, ensuring that the group is representative of students from different backgrounds. Additionally, we plan to hire interns from UAlbany's Informatics program, providing students with opportunities to contribute to and learn from a meaningful project with real-world impact. We envision this game as a valuable tool that can be implemented in academic, school and public libraries across the country. It will provide a fun and engaging way for librarians to teach young people the skills necessary to be vigilant in their discernment of false and legitimate information and ultimately prepare them to be informed citizens who make meaningful contributions as knowledge creators and global citizens.

### *Building on Existing Research and Practice*

The in-person version of this game has been developed, implemented, and refined by one of the investigators on this project after testing it in several CEHC classes with positive results (Adams, 2023). The initial findings align with current research that indicates that engaging in gamified inoculation helps students perform better at identifying markers of mis and disinformation (Micallef et al., 2021; Basol et al., 2021). Inoculation theory uses a proactive approach to prepare students to be resilient digital citizens who are resistant to misinformation in an increasingly polarized and deceptive information landscape, while gamification creates a neutralized and engaging learning environment for teaching critical information literacy concepts.

In creating the original *Werewolf* game, one of the co-investigators on this project conducted extensive research on gamified inoculation, an approach that has been effective in helping students and adults recognize misinformation across a surprising range of subjects. Inoculation theory looks at “how to build psychological ‘immunity’ against online misinformation” (Roozenbeek et al., 2020). It has shown promise in building resilience to inaccurate claims about politics, health, vaccines, climate change, and general scientific information (Compton et al., 2021, p. 2). In inoculation theory, being proactive is key since established beliefs are hard to reverse. In a post-truth environment in which appeals to emotions often outweigh logical reasoning, students need to be prepared in the face of misinformation, both misleading and malicious, that is designed to persuade them of false information.

Much of the research used as a foundation for the original activity was based on web-based educational games. In particular, the games Fakey and Go Viral showed benefits when using a gamified approach to inoculation theory (Micallef et al., 2021; Basol et al., 2021). Fakey looks specifically at social media sites and Go Viral focuses on Covid and medical misinformation. Another game, Fake News, was successful in having users create their own disinformation in a social media context (Roozenbeek & van der Linden, 2019). *Werewolf on Campus* differs from those by focusing on wide indicators of misinformation and disinformation in a range of formats in a way applicable to any potential topic. It expands beyond the specific contexts of social media and health, thus making it versatile and adaptable. The digital version of *Werewolf on Campus* would expand this work in a way centered on using libraries to teach information literacy and address disinformation among students and library patrons in the United States.

Other IMLS initiatives with gamified education or serious play elements focus on different populations or approaches. Some target children as the primary audience (LG-252363-OLS-22, LG-252291-OLS-22), some explore topics unrelated to misinformation, such as civil engagement (LG-250108-OLS-21), and others use a different style of gameplay meant to engage critical thinking, but not as closely mimic real-life mis and disinformation for inoculation purposes (LG-250050-OLS-21). The werewolf game would be distinct by focusing on young adults and college students as the target audiences, teaching immediately applicable real-world skills via inoculation theory, and potentially building off other initiatives students may have encountered previously. Mis and disinformation are widespread and insidious enough that being exposed to multiple efforts toward education or inoculation will only create savvier information consumers. The inoculation element means the game will be useful and applicable regardless of what kind of disinformation players might encounter later. Lessons from the game are not limited to particular source types or topics.

Additionally, the initial game was created by a researcher with a background in national security and preparedness. Since students studying in those subject areas made up the first audience, the game’s fictional elements closely parallel many significant and real-world information threats including malicious falsehoods regarding US politics, international affairs, cybersecurity, public health, climate change, and immigration. This was by design since the game provided an opportunity to segue into discussions of practical research, policy, and application in those fields. Both UAlbany and Kansas State have undergraduate and graduate programs in these subjects. Faculty and student involvement from both

schools will help ensure the expanding game remains relevant and applicable to disinformation challenges in security and preparedness, while not being limited to those areas.

### *Challenges Addressed*

The proliferation of mis and disinformation online is a growing problem brought into stark relief in recent years by the prominence of “fake news” during the 2016 election, the COVID-19 infodemic, and increasingly realistic deepfakes produced by artificial intelligence. Despite the efforts of librarians and instructors across the country, deceptive or unreliable sources proliferate and fool people into believing false or misleading claims. Misinformation on social media is designed to deceive by repeatedly exposing users to particular claims, which makes people both more likely to believe the claims and also more likely to remember the details (Dechêne et al., 2010). The “illusory truth” caused by repeated exposure to misinformation, in combination with other factors, can make people far more likely to buy into false claims (van der Linden, 2022).

Exacerbating this problem, those most confident in their abilities to discern misinformation are often the most susceptible to being deceived and further spreading misinformation (Lyons et al., 2021). The consequences of this can be dire when misinformation directly affects how people vote, respond to public health concerns, spend their money, understand the law, engage with education, or treat other members of their communities.

Students learn to find reputable or reliable sources for their school assignments, but they often struggle to apply information literacy skills beyond the classroom (Berry & Rosenbaum, 2022; Hicks et al., 2022). Traditional information literacy instruction in higher education typically focuses on the use of academic resources, especially peer reviewed scholarship (Nicholson & Seale, 2022). There is a gap between what students learn about online information in college and their perceived “real life,” which disinformation producers readily exploit (Cadena & Martin, 2022; Zak, 2023).

The *Werewolf on Campus* game aims to address that gap by explicitly moving away from conventional academic sources and topics to teach universal indicators of mis and disinformation that students will use in daily life regardless of their course of study or career path. The game’s focus on inoculation and non-academic sources will allow it to more easily adapt to libraries and environments outside of academia as well. In recent regional conference presentations regarding the success of the original *Werewolf* game, multiple public librarians expressed strong interest in using a digitized version of the game with their own patrons.

By developing an openly accessible web-based version of the original *Werewolf* game, the investigators plan to accomplish the following goals:

1. Broaden the reach of essential information literacy instruction by facilitating use of the game in academic, high school, and public libraries;
2. Enable adaptations for various use-cases with built-in customization features (e.g., specify sources and game content according to location, modify language for different age groups, translate to different languages, etc.);
3. Enhance activities and assessments to more closely simulate typical online interactions and prepare users for real-world scenarios.

### *Rationale for a Gamified Approach to Information Literacy Instruction*

Several studies have demonstrated that information literacy education can be more effective than lecture-style instruction when combined with gamified elements that promote active learning and increase engagement, as two of the investigators have observed firsthand (Adams, 2023; O’Brien & Pitera, 2019). The gamification literature from the

last twenty years indicates that using well-designed games to teach is both more effective and more engaging than traditional models (Manzano-León et al., 2021). Gamification has proven particularly effective in addressing the rampant challenge of “fake news” and the tremendous volume of misinformation that students encounter every time they go online (Lewandowsky & van der Linden, 2021).

Despite the demonstrated benefits of gamification, however, a major barrier for many educators is the extensive amount of time and effort that goes into preparation (Moore-Russo et al., 2018, p. 4). By providing an openly accessible and customizable game and accompanying Educator Guide, the proposed project would create a ready-to-use product that can easily be implemented by any interested librarian without having to worry about prohibitive costs or time constraints.

The initial physical version of the *Werewolf on Campus* game has proved an effective way for librarians and professors to collaborate in classroom education and increase student engagement, learning, and retention. Expanding and digitizing the existing game will increase its reach and efficacy, allowing more librarians to use the game with students and patrons. It would also increase the game’s flexibility and potential audiences by allowing automatic updates where relevant and making it easier to create customizable versions that refer to sources local to the hosting library. For example, the original game included an article allegedly published by the real-life local newspaper that students on campus might access. The digitized version would offer both a generic “local news” source but also allow other libraries to enter the name of their own local newspaper if they wish to add that kind of detail. Expansion and digitization would also allow for a much larger, more statistically significant study.

More modules or tiers will be added as well, significantly increasing the replay value of the game. Students can practice refining their skills and boosting their inoculation to misinformation by playing different versions. This will allow learning by repetition and mitigate some of the limitations inherent to one-shot games. Repeated exposure to indicators of mis and disinformation increased learning in other variations on gamified inoculation, and the additional modules would replicate that success with *Werewolf on Campus* (Roozenbeek & van der Linden, 2019).

Furthermore, translating the paper-based game to an interactive digital platform would better simulate the online environment and allow for additional elements such as audio-visual sources and clickable links. The video element is particularly important since the paper game cannot easily mimic common information and disinformation sources such as YouTube and TikTok. In the current incarnation of the paper game, students have responded very differently to various social media mimics including X / Twitter and Reddit. This suggests that including video sources would increase the efficacy of the game.

The game's fictional elements are also designed to avoid many common emotional pitfalls in traditional information and media literacy instruction. Rather than discussing uncomfortable or controversial topics relating to politics, current events, or alarming issues in the news, players can learn to recognize the universal indicators of mis and disinformation in a low-stakes, engaging environment. This allows students to learn from failure or notice gaps in their own understanding without harming their grades or facing pressure to publicize their views on politically charged topics. Moving the game to a digital platform allows for greater immersion and even more accurate indicators of unreliable sources to improve learning outcomes for all players.

#### *Target Groups and Beneficiaries*

The *Werewolf on Campus* game will promote inclusive engagement across diverse audiences. The current iteration of the game has been successfully implemented with undergraduate students in UAlbany’s Informatics, Homeland Security, and Emergency Preparedness programs. This project would create a web-based version of the game that can be easily

adapted for various disciplines and groups. While the information literacy concepts covered by the game are universally relevant and the game would ultimately be open to anyone, we believe it will be most effective in a facilitated setting with the guidance of a librarian, allowing for a “debrief” at the conclusion of the game after students or patrons have been given the opportunity to work through the game’s challenges on their own. This facilitated method has been shown to be an effective approach to gamified instruction (Sinha & Kapur, 2021) and would be aided by the Educator Guide.

Our initial target audience would be college students from the participating universities, particularly first-year students in UAlbany’s Writing and Critical Inquiry program and Kansas State’s “K-State First” courses. In subsequent phases, we would expand implementation to local high schools and public libraries in both New York and Kansas. The expansion of the *Werewolf on Campus* game would provide benefits to students and young adults by preparing them to navigate an increasingly complex information environment in both their academic and personal lives, as well as to librarians tasked with teaching complex concepts related to mis and disinformation. It will also be useful to librarians who wish to utilize gamification for instruction and programming but do not have the time or resources to develop their own activities.

Additionally, the project will benefit Informatics students participating in the internship program by providing them with real-world experience developing and testing a digital game. Finally, the project will have broader societal benefits by fostering essential information literacy competencies in future generations who can help curb the spread of misinformation.

### *Proof of Expertise*

The co-investigators of this project have expertise in gamification, information literacy, metaliteracy, informatics, cybersecurity, public policy, and government information. They have experience developing in-person and online instructional games, a digital badging system, and a published course module on misinformation.

**Angela Hackstadt** and **Abigail Adams** are Subject Librarians at the University at Albany who work with disciplines that rely on both academic and non-academic information sources. Angela is the Coordinator for Collection Development and Subject Librarian for Political Science, Public Administration, Public Policy, & Law while Abigail is the Subject Librarian for Emergency Preparedness, Homeland Security, Cybersecurity, Informatics, and Criminal Justice. Both also teach general and disciplinary information literacy one-shots to undergraduates and graduates and are adjunct professors in the MS in Information Science program at UAlbany. Together, they have published and presented on COVID-19 disinformation, trust in institutions, and government information. Angela has done additional research on epistemic trust, grey literature, and the research-policy gap while Abigail’s independent research has focused on inoculation and gamification and emergency preparedness in academic libraries. This grant expands on research done for Abigail’s 2023 article, “Werewolf on Campus: A Case Study in Inoculation Theory and Gamified One-Shot Library Instruction.”

**Kelsey O’Brien** is an Information Literacy Librarian at the University at Albany and liaison to the Writing and Critical Inquiry program for first-year college students. She has experience designing and implementing both in-person and virtual games for the classroom that help students develop a growth mindset and critical thinking skills that are vital in their transition from high school to college-level research. She has also developed and implemented an open digital badging system used by students across the University and beyond and has published and presented extensively on gamification and digital badges. Additionally, she published an information literacy module for Sage Knowledge that guides students through self-assessments related to mis and disinformation. She has served as a project manager and co-investigator on several grants focused on innovative instruction and technology.

**Daniel Ireton** is an associate professor and academic services librarian at Kansas State University Libraries, providing research assistance and classroom teaching on information literacy. His expertise includes multiple presentations and published articles on game design and gamification in the classroom, information literacy including avoiding disinformation, and accessible design. He has also developed campus-wide game experiences in both physical and virtual space.

**Janetta Waterhouse** is an associate dean at Kansas State University Libraries, providing leadership and management of collections, technical services, and library systems services. Her undergraduate degree is in computer science, and she worked in IT for several years before becoming a librarian. She is a certified project management professional (PMP) and has managed many IT projects over the years. She also has experience developing technical specifications for application developers in a variety of settings.

**Faculty in the College of Emergency Preparedness, Homeland Security, and Cybersecurity (CEHC)** at the University at Albany were involved in the initial game development and research process and have expressed their support for the project's expansion and digitization. The future interns will be drawn from the Informatics and Game Design programs nested within CEHC, giving them practical experience directly related to their degree fields.

## Project Work Plan

**During the first year (August 2024-July 2025)**, we will collaborate with students and instructors in the Informatics program in CEHC at the University at Albany, including professor of Game Design and Development Dr. Michael Leczinsky, and librarians with Kansas State University to design and program a web-based version of the print format game. The online version will expand the paper game, adding audio-visual elements and allowing deeper investigations of the fictional sources to better simulate the types of real-world information, misinformation, and disinformation students may encounter. Very early in the process, we will hire a part-time, freelance project manager to handle coordination of the timelines and tasks. We will also hire a digital game designer with professional experience to take the lead on the programming elements and mentor the student interns. In conjunction with this programmer, we will develop a specific plan to ensure student interns will learn from and enjoy the experience while actively contributing to the final product.

Once we are ready to hire student interns, we will ensure we recruit a diverse group of students by advertising in multiple places including both the libraries and academic program internship pipelines, offering valuable experiences that students can use to fulfill their programs' experiential learning requirements, and involving participants with a range of relevant interests and skill levels. The students will assist with both programming and design.

In preparation for the programming element, we will create a repository and distribution terms for the open-source software to be developed. Jan with Kansas State will leverage her skills and background as a program manager in computer science and will create detailed technical specifications for the programmers describing precisely how the game should be translated from physical to digital media and what the desired outcomes are. We will then begin the process of digitizing the existing base game with the programs Twine and Unity, with the possibility of pivoting to other resources as the project develops. This process will involve digitizing the existing sources in the paper-based game and developing and adding new sources including video-based ones. We will script and film the new video sources for inclusion in the game, add additional written sources with working in-game links, including updated social media pages, a journalist bio, and "about" pages for the current news and blog sources as would be found for real online sources.

We will develop an Educator Guide alongside the digital game that assists in facilitating and running the game for classroom and library use. Customization options will be built into the Educator Guide to allow librarians to adjust



source names and include or exclude particular elements as relevant to their patron population. This will also include a feedback mechanism while the game is still in its beta form. During that development process, we will do additional research on best practices in assessment and measuring the educational effectiveness of the game. We will also write and program new pre- and post-tests to measure learning among students and patrons playing the game.

Also early in the process, we will determine development milestones for the project as a group, including quality assurance checks at regular intervals. Working with the project manager and lead programmer, we will schedule regular check-ins to determine whether the programs and project instructions are working as intended or whether changes are necessary. We will also establish a detailed philosophy and vision for the game to guide the process and to determine if and why we would switch platforms or make significant changes in the development phase. As part of that overall process, we will schedule regular check-ins with student interns to determine whether they are benefiting from the experiences, what questions they have, and whether they are on-track with the expansion and digitization.

During that first year, we will finalize the details of the digital game design, including making decisions on web and mobile applications and determining a long-term solution for hosting, maintaining, and allowing wide access to the game. In order to test the game play elements and engagement levels, we will recruit a diverse group of students from a wide variety of majors at both UAlbany and K-State to give feedback and test components of the game during development. This will be done in part via advertising in the library and recruiting by having teaching faculty advertise the opportunity in their classes. Other methods may be added to ensure we have a representative population of student testers. Within the libraries, we will do preliminary internal tests to find bugs and refine the digital game before deploying it for wider student use. During this period, we will also do accessibility testing to ensure inclusivity of people with a range of abilities and access challenges.

The co-investigators will meet regularly with each other, the programmers, and other stakeholders who have agreed to be part of the testing process to ensure the project remains on track and to address any questions and challenges as they arise. The five co-investigators will present our plans and processes at relevant conferences to gather feedback and solicit input from larger audiences of peers. These will include the national conferences for the American Library Association (ALA) and Association of College and Research Libraries (ACRL) and regional conferences for the Eastern New York Association of College and Research Libraries (ENYACRL), State University of New York Library Association (SUNYLA), Kansas Library Association (KLA), and Mountain-Plains Library Association (MPLA).

**During the second year (August 2025-July 2026)**, we will launch a beta version of the game and distribute it to a limited number of users via university classes for prototype testing, user experience testing, accessibility testing, and troubleshooting. We will collect data on web game use and effectiveness during this phase. This process will start with beta testing the digital game, including customization options and the Educator Module, in UAlbany and K-State undergraduate classes. We will also test the game with other colleges and universities if any expressed interest or a desire to be involved after the Year 1 conferences.

We will gather and analyze data on game effectiveness, in terms of successful inoculation against misinformation, levels of student engagement and active learning, and technical functionality. We will also gather and analyze feedback on other elements of game design and accessibility, particularly elements that might not translate to other library types or audiences outside of university students. This data will come from the pre- and post-tests, the feedback portion of the Educator Module in beta, and input from students involved in the testing.

The co-investigators will continue regular meetings with the lead programmer, interns, and co-investigators to ensure that the project remains on target. This will allow us to refine and adjust the gameplay, disinformation elements, customization options, assessment tools, and other required fixes as needed. We will also consider any changes and

developments in generative artificial intelligence that should be addressed or accounted for in the game. After making these changes, we will continue testing and gathering data with the revised game. Additionally, we will test the game with the same classes or groups on multiple occasions to evaluate the educational replay value and test the repetition-of-concepts components.

During the same time period, we will begin to utilize current connections with other academic, high school, and public librarians (e.g., the Capital District Library Council High School to College Transition Group) to prepare for expanding game into those populations. With these connections and any interest generated from the conferences, we will establish focus groups of librarians and facilitators from a range of library types to gather feedback on the educator side of the game. Before the focus groups can start, we will develop a consent form with IRB approval for participants. As the testing and focus groups continue, we will analyze data gathered from both participants and librarians on a regular schedule. In Year 2, we will also finalize the long-term plan for web hosting, ensuring the game remains readily accessible and customizable under a Creative Commons license.

We will present our preliminary findings at relevant conferences mentioned in Year 1, again expanding the game to wider audiences. We will offer invitations for testing and collaboration in these conference presentations to gather more testing participants. In addition, we will present preliminary findings in other venues such as newsletter or trade publication articles, peer-reviewed articles if relevant, and social media channels. To ensure broad and diverse coverage, we will develop a plan to seek out additional librarians that might not attend conferences, including using listservs from professional associations, contacting library and information schools across the US, and social media spaces catering to library professionals. We must also consider whether changes in ALA membership at the state level necessitate new approaches for expanding the national reach.

**During the third year (August 2026-July 2027),** we will launch the final version of the game for wide distribution in academic libraries at the university and community college levels, deploy the game among public library patrons, and utilize it with high school students. This final phase will include web game maintenance, troubleshooting, and updates. We will regularly analyze data gathered from participants and librarians throughout the project, and in Year 3, we will then analyze the aggregated data collected throughout the project. We will seek to determine the game's overall effectiveness compared to other instructional methods and how best to use it in increasing information literacy skills and inoculating players against real-world mis and disinformation. Once that is complete, we will disseminate our findings via peer-reviewed articles, conference presentations, and any other relevant avenues. Finally, we will develop a plan to continue advertising the game and ensure its discoverability for new libraries interested in utilizing it in the future.

## Diversity Plan

UAlbany is known as a diverse campus that welcomes students from all different cultural and socioeconomic backgrounds, with over 40 percent of our undergraduate students representing minority groups. As evidenced by the University's sixth consecutive Higher Education Excellence in Diversity (HEED) award and the Libraries' reception of the inaugural Library Excellence in Diversity Award, both from Insight into Diversity Magazine, we strive to create diverse and accessible services, spaces, and resources for all of our students and community members (Bump, 2024). Funding from this grant will allow the investigators to hire three interns from the CEHC Informatics graduate program. Approximately 70% of students in this program are from underrepresented groups. The investigators will recruit a diverse group of students to give feedback and test components of the game during development.

The game will assist people of all backgrounds, experiences, and abilities in developing effective information and media literacy skills. Different disinformation purveyors target different groups, so having a diverse range of people inside



academia and out learn about broad propaganda techniques and universal indicators of mis and disinformation will ideally improve information literacy and media savvy across a wide range of demographics. A better social grasp of disinformation and credibility also provides a buffer against harmful but baseless claims meant to incite hate toward minority and/or disadvantaged groups.

The investigators will apply a Creative Commons attribution-noncommercial-share alike (CC-BY-NC-SA) license to the creative assets within the game, making the game and supplemental materials openly available to libraries and classrooms. The game is meant to be adaptable to local needs, audiences, and abilities. A CC-BY-NC-SA license will allow for remixing and reusing of text, graphics, video, and audio by academic, public, and school librarians, ensuring the broadest reach while allowing for locally relevant deployment.

The software will also be made available to the public as open source in the GitHub repository. This will allow collaboration with other developers who want to add or enhance functionality on a branch copy. The developers working on this grant will determine, in partnership with the investigators, which changes will be accepted to the master source code for the project.

## Project Results

The proposed project for an adaptable, digitized version of the *Werewolf on Campus* game will use a gamified inoculation approach to address the challenge of rapid misinformation propagation by broadening the reach of essential information literacy instruction, enabling customized implementations for various audiences, and simulating real-world scenarios to prepare users to detect mis and disinformation in various online environments.

The original version of *Werewolf of Campus* improved student learning outcomes compared to a traditional lecture-based model of information literacy instruction. The online version will increase its effectiveness further. Moving from a paper-based game to a fully digital or hybrid one will increase the game's capacity in a number of ways. More students and players will have access to it, and the game will not be dependent on physical proximity in a classroom at UAlbany. The sources will also be far easier to update, customize, and/or publish, making the game more accessible to libraries, instructors, and players at any time or any location.

Hosting *Werewolf of Campus* online through a readily accessible platform will make it much easier for other libraries to use and adopt the game as a teaching tool. The built-in Educator Guide means librarians will not require any outside training for implementing the game and will be able to use it with minimal preparation time. It will be free to access, easily customized, and easily combined with other lessons or tools for misinformation inoculation. This ease-of-use will significantly broaden the game's reach, allowing students and patrons all over the country to develop their digital information literacy skills in a fun, engaging way. Given the proliferation of mis and disinformation online, particularly regarding significant national issues such as public health and election security, a more informed and media-savvy population of young people is a net benefit to society.

The Educator Guide will provide host libraries with the background information, instructions, and tools necessary to facilitate game sessions effectively. This will be a significant benefit for anyone who wants to incorporate gamification and active learning into their information literacy or mis and disinformation instruction. It allows libraries to play the game as-is or make some simple, voluntary adjustments, which saves them time, effort, money, and resources in developing their own strategies.

Adding audio-visual elements will allow the game to capture elements of online disinformation that are currently missing, such as those mimicking YouTube or TikTok videos. It will also allow players to explore sources in more depth by

more accurately mirroring actual online information and disinformation. This will deepen the skills and lessons gained from playing the game.

A built-in recap will ensure the players see the real-world parallels and clearly understand all the built-in indicators of unreliability. This will increase the efficacy of the gamified information literacy instruction and improve the learning outcomes for players. Basing the game model in inoculation theory means that players will increase their resistance to real-world misinformation regardless of topic. This impact will only increase for players who repeat the game or play multiple modules. The recap and elements included in the Educator Guide will ensure that players make connections with real-world information challenges in a direct way. With a target audience of young adults, the nuances in the game can be more complex than many of those seen in gamified activities designed for younger children, pushing players to think critically and move beyond the basic checklists often employed when teaching digital literacy.

Presenting at conferences and publishing the results of research gathered through the game testing will allow us to gain a wider audience and further expand the game's reach. The partnership between universities in New York and Kansas will provide access to a wide range of interested parties via regional and national conferences, professional associations, interested faculty across both schools, and public and high school libraries in both states. Publishing the details in peer-reviewed articles will provide more legitimacy for the research, which will further increase the game's audience and reach.

The multi-state collaboration and diverse group of testers will also help ensure the game is widely applicable and does not only work in specific regions or limited student populations. After the grant's three-year timeline is complete, the game will remain available and usable online. We hope it will become a practical and exciting tool for libraries across the country to empower their communities to detect, resist, and curb the spread of misinformation.

### Budget Summary

Salaries come to \$110,784, fringe benefits are calculated at \$36,073. For travelling to domestic conferences for five co-investigators, \$27,178 total. Other costs are calculated at \$11,500, and indirect costs at \$61,227. Thus, we are requesting **\$246,762** from IMLS to cover the costs outlined above. There are no cost-share calculations.







## Digital Projects Plan

### *Type*

The outcome of this project will be a web-hosted digital game and educator module. It will allow librarians across the US to access, customize, and facilitate digital or hybrid sessions of gamified information literacy instruction where students and/or patrons will learn to recognize real-world indicators of online mis and disinformation in a way that inoculates them against future false or misleading claims on a wide variety of topics.

### *Availability*

The game will be free of cost to libraries and participants. Each session can be hosted and facilitated by a physical library to reduce or negate challenges with the digital divide. Sessions can be done entirely digitally as well, granting remote access to those unable to travel to a physical location.

### *Access*

The game's source code will be available in the GitHub repository, and instructional materials will be available with a Creative Commons license for libraries to use and expand on. The game itself will be customizable, partially printable for those interested in hybrid sessions involving both physical and digital media, and fully playable online for digital-only sessions. During the design phase, the programmers will ensure that the online game is accessible to screen readers and developed using principles of accessible design.

Data collected in the participant pre- and post-tests will be as anonymized as possible. The game will only collect information about a given session's time and location, along with student answers for assessment purposes. No personally identifiable information will be collected. The data will be stored and analyzed on university-owned computers. Information published publicly in articles, conference presentations, etc. will be aggregated and not connected to any individual.

Data collected through the educator module's feedback mechanism and the librarian and facilitator focus groups will also be stored on university-owned computers. This data may include some personally identifiable information depending on what the educator chooses to disclose, but the process will be opt-in. The automated digital data collection will not be any more invasive or identifying than the collection mechanism for student answers, only gathering details about a session's time and location. Focus group participants will be given consent forms containing more detailed descriptions of how their responses will be collected, analyzed, and published.

The fictional framing of the online game will create an engaging, low stakes teaching environment that promotes active learning while avoiding many of the challenges commonly arising with discussions of mis and disinformation. The game and its recap will inoculate participants against real-world false claims while simultaneously avoiding politically charged, controversial, or upsetting topics. The educator



module will allow librarians to offer fun and highly relevant instruction or programming with minimal time and effort on their part.

### *Sustainability*

The game will be hosted on its own website long term, and possibly presented in app form as well, depending on decisions made in conjunction with the lead programmer and relevant stakeholders during development. Hosting costs will be managed by the University at Albany to ensure that the game remains available, accessible, and updatable beyond the duration of the three-year grant.

The investigators will present this research in various formats including publications, presentations, and professional networks through the grant cycle and beyond. This will publicize the game and increase both its audience and efficacy. The co-investigators believe that librarians and instructors at other institutions will find the game useful and effective enough to merit its continued, long-term use. The built-in customization options and multiple modules allowing for repeated play sessions will add to its longevity as a teaching tool. The challenge of providing education or inoculation regarding mis and disinformation seems likely to grow in coming years, making this project even more relevant.