FEATURE: REPORTS FROM THE FIELD

Reuse and Remix: Creating and Adapting Open Educational Tutorials for Information Literacy

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abstract: This article explores how one large university library created, with minimal resources, a suite of openly licensed tutorials on information literacy. The article also describes how another academic library adapted the tutorials for its own goals to fill a need during the crisis created by the COVID-19 pandemic. The authors hope that this model shows potential for others to follow and call on the library community to develop more openly licensed resources using intuitive and affordable technology. They encourage libraries creating content, as well as those updating material, to share, adapt, and customize open educational resources to meet their local instruction goals and student needs for information literacy.

Introduction

The restrictions mandated by the COVID-19 pandemic forced a sudden spike in online and remote instruction sessions for all libraries. Campuses that embraced online learning, as well as those that resisted it, had to revise and create online instruction and tutorials to support students in a time of need and uncertainty. Even without a pandemic, online learning is important for many students because it provides the accessibility and flexibility they need while juggling the demands of college and modern life. Teaching librarians seek effective ways to deliver engaging and meaningful instruction that reaches students in multiple modalities. With limited staff and shrinking budgets, it is in everyone's interest to learn how to create instructional tutorials as efficiently as possible.

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Background

The University of Arizona in Tucson is a large research university with an enrollment of 45,000 students. Over time, the University of Arizona Libraries amassed a sprawling collection of over 200 tutorials to supplement library instruction and offer students point-of-need help. The lessons covered basic and advanced information literacy skills, discipline-specific knowledge, and individual database skills. Each tutorial took around 20 minutes for students to complete, was text-based, and included many activities. The materials were designed, however, based on the Information Literacy Competency Standards for Higher Education, which the Association of College and Research Libraries (ACRL) rescinded in 2016. Although heavily used by students, the tutorials were difficult to maintain and did not align with the new ACRL Framework for Information Literacy for Higher Education (the Framework). In spring 2019, University of Arizona librarians began the task of creating a suite of new tutorials to replace the older ones. They were determined to streamline the large quantity of tutorials and renovate them to reflect new pedagogy and updated technology.

Design

The revised tutorials were planned to be engaging and short, and to include a range of activities, such as comprehension checks, application, and assignments. They were also intended to be useful to new students. The Arizona librarians focused on creating content that addressed the general information literacy skills needed by freshman- and sophomore-level students to be successful in their coursework. Competency theory, the belief that students with a low level of skills will likely overestimate their ability, gave the librarians the framework to understand that people often regard their power to find and analyze information as better than it is.[1] Teaching busy and overscheduled students had taught the librarians that the intended audience would understandably resent or resist tutorials they perceived as remedial. The new tutorials were designed to be engaging and applicable to students' lives, so that learners would be motivated to complete them. They were created to be culturally relevant and to represent different ethnicities, physical abilities, and genders. To practice search strategies, the librarians used the research question "How have sea level changes caused by global warming affected the housing market?" This topic has broad interest, involves real-world issues, and does not require familiarity with topics that are specific to the United States.[2]

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The librarians also used the redesign and update as an opportunity to align the tutorials with current pedagogy in online education. The design process began with an emphasis on student engagement and active learning, rather than focusing on what content to include or how to organize it. To capture learners' attention and motivate them to complete the tutorials, the librarians used two approaches to guide the design process, microlearning and andragogy.

Microlearning delivers content in small chunks that are easier to understand and process. It helps learners digest new information, retain it, and stay engaged.[3] It also offers students the ability to direct their own learning and aligns with the way they consume entertainment and information today via social media platforms such as TikTok and YouTube, in which much of the content comes in short slices with varied pacing. One of the most important practices in microlearning is to keep segments brief enough to require no more than 10 minutes of dedicated attention.

Recognizing that college students are adults and independent learners, and that an increasing number of them are nontraditional, the librarians coupled microlearning with andragogy, or adult learning theory. This pairing encouraged the designers to present learners with content that "is personally relevant to past experiences and present concerns."[4] Applying another principle of andragogy, the tutorials limited the information offered to what was most useful for students. Content that was not immediately needed was removed. These design principles aligned closely with the suggestions made a decade ago in the seminal work by Lori Mestre about tutorial design in libraries.[5]

The project was completed over the course of a year. It began with a group of librarians brainstorming and finalizing four learning goals that would be broadly applicable to first-year undergraduates for highly enrolled courses:

1 Identify and understand different types of sources.
2. Understand search strategies for different platforms.
3. Understand how to evaluate information and why such an assessment is important.
4. Understand why information needs to be credited.

To fulfill these goals, the librarians identified five tutorials that they needed to create, aligned them with the Framework, and wrote measurable learning outcomes for each one. The tutorial topics, their respective frames, and the desired outcomes were:

1. Topic: What Types of Sources Do I Need?
Frame: Information Creation as a Process
Learning outcomes: After completing the tutorial, students will be able to
- define the types of materials they might find,
- identify characteristics of a primary source,
- identify characteristics of a secondary source,
- identify characteristics of a popular source,
- identify characteristics of a scholarly source, and
- explain when to use each of the identified types of sources.

2. Topic: How Do I Create a Search Strategy?
Frame: Searching as Strategic Exploration
Learning outcomes: After completing the tutorial, students will be able to
- explain why choosing good keywords helps in their search,
- explain how different search tools function and how to adapt searching techniques based on the tool,
- explain differences between natural language and the Boolean system,
- explain how the connector "AND" affects a search,
- identify the best keywords for a topic,
- generate keywords based on a topic, and
- construct a search that is appropriate for a topic and a tool.

3. Topic: Should I Rethink My Search?
Frame: Searching as Strategic Exploration
Learning outcomes: After completing the tutorial, students will be able to

- explain when a new search strategy may be needed,
- realize that mistakes are often made when searching for information,
- analyze a list of results as it relates to a research topic,
- describe how a list of results can be used to revise a search strategy, and
- modify a search strategy.

4. Topic: How Do I Evaluate Online Information?
Frame: Authority Is Constructed and Contextual
Learning outcomes: After completing the tutorial, students will be able to

- explain why online information needs to be evaluated for trustworthiness,
- describe the strategy of lateral reading—that is, reading what other sites say about your source—a technique that fact-checkers employ to verify trustworthiness,
- describe the criteria of process, expertise, and aim—that is, what processes does the source use to ensure accuracy, what expertise does it have about the topic, and what is the source's purpose?
- apply the skill of lateral reading related to societal and political issues, and
- evaluate different online articles for trustworthiness using the three criteria of process, expertise, and aim.

5. Topic: How Do I Give Credit to the Ideas of Others?
Frame: Information Has Value
Learning outcomes: After completing the tutorial, students will be able to

- explain why it is important to give credit to others,
- value the time and effort it takes to create new information,
- describe when giving credit is needed,
- describe when giving credit is not required, and
- identify resources that help with creating citations.

Each tutorial topic was aligned with and in keeping with the Framework. For example, the goal for "How Do I Give Credit to the Ideas of Others?" was to focus on why and how to acknowledge the work of others, instead of discussing specific citation styles or the punishments for plagiarism. Similarly, "How Do I Evaluate Online Information?" focused on lateral reading and investigating what others say about an author or an organization, instead of relying on checklists for evaluating the trustworthiness of a source.[6]

Inspired by the popular TED-Ed series of educational videos, the librarians designed the tutorials to consist of a short video, a comprehension check, a hands-on guided exercise, and an optional assignment. This approach enabled them to meet the goal of each segment taking 10 minutes or less to complete. Each could also be used as a stand-alone mini-tutorial, allowing students to engage with as many or as few segments as required for their learning needs.

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Design and Development

The Arizona librarians loosely followed a successive approximation model (SAM) to develop the tutorials. SAM is a cyclical, iterative design process that is flexible and less involved than the well-known ADDIE (analysis, design, development, implementation, and evaluation) model. SAM is a simplified version of ADDIE designed to elicit feedback and build working models earlier in the process. SAM also allows for constant collaboration between the designer and the developer.[7]

It was not reasonable to expect one librarian to design and develop all tutorials, so assembling a small team to help was crucial to the project's success. The library hired an e-learning developer and a student worker to support the instructional design librarian with the project, and all tutorials were created and developed with input from all three team members. The librarian wrote student learning outcomes, quiz questions, video scripts, application exercises, and optional assignments. The e-learning developer and student then developed initial prototypes of the segments of the tutorials.

After testing e-learning tools, the team purchased three: Vyond, Articulate 360, and Sidecar Learning. Each of these tools supports student engagement, active learning, and Web accessibility.[8] The team used Vyond to create short, animated videos to teach general concepts. Articulate 360 was employed to organize and sequence the tutorials and to create comprehension quizzes and other interactive elements. Sidecar Learning was used to develop hands-on, authentic activities where students could apply what they learned and interact with a live database or website.

Assignments were created using fillable pdfs and Google Forms. To make tutorials usable by people of different

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abilities, the team utilized Web accessibility techniques, such as closed captioning, video transcripts, and image alt text, written copy that helps screen-reading tools describe images to visually impaired readers. Additionally, all tutorials have a Creative Commons Attribution 4.0 International License, which allows for sharing and adapting with appropriate credit.

Students and instructors could gain access to the tutorials in several ways, including directly from the library website, by using LibGuides and FAQs, and through instructor syllabi. The team also created a page in the Desire2Learn learning management system (D2L) where instructors could upload SCORM (shareable content object reference model) files, a set of technical standards for e-learning software, into individual courses. While integration in D2L increased student access, it also resulted in multiple instructors requiring students to complete the same tutorial more than once. To spare students this redundant work, the team created a D2L self-registration page where students could receive a certificate of completion to show in class. Additionally, librarians assigned the tutorials as preparation for flipped one-shot instruction sessions, in which students studied new content at home and used class time for activities and discussions.

Impact

The tutorial overhaul at the University of Arizona Libraries was successful. During the 2020–2021 academic year, students viewed the tutorials over 29,000 times and spent an average of 5.48 minutes completing each one. The library added a ratings and comment feature using JotForm that asked students: "How Effective Was the Tutorial?" Students shared that they found the tutorials helpful, fun, and informative. While a small number of respondents commented that they were repetitive, most gave them high marks on a five-point scale, as illustrated in Figure 1.

The success of these tutorials for the University of Arizona inspired the University of Oregon in Eugene to try them. Thanks to the transparent design elements, the easy-to-use and affordable software, and the open license, the Arizona tutorials provided a useful template. Adopting and adapting the videos for their own campus allowed the Oregon librarians to overcome difficulties and advance tutorial production during the height of the COVID-19 pandemic, which had prompted them to create more online learning content.

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The librarians of both campuses want to convince others that reusing and modifying can help libraries provide effective tutorials in less time and with less duplication of effort.
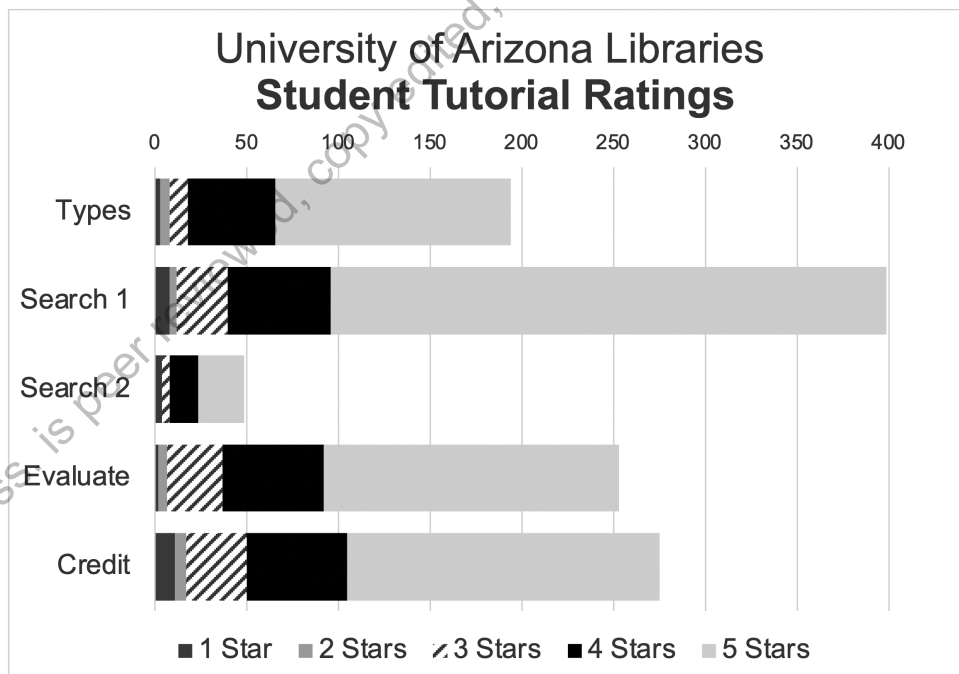

Figure 1. Students' overall rating of five tutorials on information literacy at the University of Arizona, in response to the question "How effective was this tutorial?"

Case Study: Pandemic Tutorial Design

The University of Oregon is a large research university with an enrollment of 23,000 students. Prior to the pandemic, it primarily focused on the brick-and-mortar student learning experience. The library also prioritized physical resources, spaces, and instruction to support in-person education. The situation changed dramatically with the demands of the pandemic and remote learning, coupled with the support of an interim administrative team and the evolving skills of the available librarians. The administrative team convened a tutorials task force to create content quickly that would answer basic questions students asked during remote learning. The task force included librarians from research and instruction, digital scholarship services, branch libraries, a Web services librarian, and library administration. It got to work creating information about how to navigate new COVID 19-driven procedures (for example, how to collect a book through a pick-up window). It also had a list of possible tutorial topics that library faculty and staff had identified previously, many of which addressed more conceptual issues, such as recognizing the use of and need for scholarly sources.

Given the rapid timeline for documenting the development and implementation of new online services, initially just three months, the team decided to create how-to videos for the most pressing questions and make the text-heavy instructions more engaging. More challenging instructional materials, with more complex conceptual instruction, would be developed later. In choosing to focus on how-to topics, the team was influenced by the work of Dominique Turnbow and Amanda Roth. Turnbow and Roth describe two categories of online instruction: (1) "performance supports," step-by-step directions that tell people how to undertake a task and serve as memory aids, and (2) more complex and conceptual instruction.[9] Performance supports may stand alone or may be part of a bigger conceptual lesson.

To learn more about tutorial creation, the Oregon team interviewed two experts, Hannah Rempel from Oregon State University in Corvallis and Maribeth Slebodnik from the University of Arizona, coauthors of *Creating Online Tutorials: A Practical Guide for Librarians*.[10] Rempel and Slebodnik encouraged the team to focus initially on easily achievable goals (service-focused information) to support students in the immediate term. In addition, they urged the Oregon group to use the technology it already had and with which it felt comfortable. These suggestions guided the team's early efforts and eased the librarians' concerns when they faced learning many new skills, including technology, scripting, and recording. Following these recommendations, they quickly created a suite of seven how-to videos using Panopto (for recording audio and video) and PowerPoint (for visuals).

Slebodnik also recommended that the tutorial team review the conceptual tutorial development the University of Arizona Libraries had produced, using it as a potential model. When the Oregon team realized that the Arizona tutorials were openly licensed and created with affordable software, they wondered if the tutorials could expand to support instruction during what soon became a fully online school year. The tutorial team at the University of Arizona generously shared their processes, lessons learned, technology recommendations, and original tutorial files.

Under normal conditions, the Oregon librarians might have been more cautious about initiating a new and ambitious project without a lengthy research and discovery process. With the pandemic, however, they were willing to try new things to support students in an immediate time of need. Building on Arizona's work enabled them to create tutorials addressing some of the most critical conceptual topics that librarians and staff had previously requested without the steep learning curve required to start such a project from scratch. In fact, the team produced five conceptual tutorials in a single month.

Adaptation Process

After purchasing a one-year license for Articulate 360, the platform upon which the University of Arizona built their tutorials, and after obtaining the original tutorial files, two members of the Oregon task force led projects to update the tutorials. They added branding and modified content to personalize the tutorials for the Oregon student community. They also added friendly and welcoming language, transparent learning objectives, consistent iconography to label and signal learning activities, and assessment elements to align with their learning objectives. Additionally, they incorporated parts of the Universal Design for Learning to accommodate individual learning differences. The Universal Design calls for revising content and imagery to be inclusive and accessible to people with a wide range of abilities and provided options for how students could navigate through and interact with the material.[11]

The Oregon librarians found that, overall, the Articulate 360 platform was easy to learn. Two librarians imported, modified, and published five tutorials in one month, spending a total of approximately five hours per week editing, creating new content, and gathering feedback from colleagues and students. As they developed expertise with the platform and made edits to the tutorials, they also shared what they learned with the University of Arizona. For example, when they added a confidence assessment and feedback feature,[12] Arizona updated its tutorials with something similar. Figure 2 shows a side-by-side view of the original and adapted tutorials to illustrate some of the visual and instructional design differences between the two.

Lessons Learned

Having tutorials personalized for the University of Oregon made a dramatic and positive addition to the instructional offerings when the entire university switched to remote learning during the COVID-19 pandemic, creating a sudden need for online resources. The online tutorials provided support for both conceptual topics and "how-to" skills that require learners to complete a number of steps. Overall, the tutorials supported in-person and virtual classes and promoted student success during a stressful time.

At the University of Oregon Libraries, the tutorials project profited from the strong backing of the library administration, which helped lead and support the task force. The administration provided an initial charge, clear goals, and a modest budget made possible by the lack of professional travel during quarantine. Equally important, the libraries' leaders celebrated the work that the task force accomplished both orally and on written performance evaluations. Members of the task force, diverse in experience

Figure 2. A side-by-side comparison of the original University of Arizona video tutorial, *left*, and the adapted tutorial developed by the University of Oregon, *right*. Each uses institution-specific branding and imagery. Oregon also added a short overview, transparent learning objectives, and consistent iconography to guide learners to different learning activities.

and representative of many parts of the library system, leveraged their existing skill sets and seized the opportunity to learn the new techniques needed to make tutorials. With the guidance and help of colleagues who understood the technical challenges, the team completed the work with impressive success.

Conclusion

As librarians, we encourage others to consider adapting more open educational resources (with permissions and attribution) by adding to work that is already done, such as up-

dating, refining, and improving tutorials that have been thoughtfully designed. If more of us work from high-quality templates and exemplars such as those produced by the University of Arizona, we can generate quicker prototypes and improve upon resources that have already been created, instead of insisting that everyone produce completely original material. We share our experience of developing tutorials and how they were adapted in the hope that others will choose to save time and support more students by building on work that has already been accomplished. We maintain that this is an effective way to advance everyone's instruction and student success goals.

Our recommendations to other tutorial creators and library administrators are:

- Make your content openly licensed by default (unless it is impossible due to library policy or university intellectual property constraints).
- Use opportunities for cross-institutional collaboration and look for tools that support it.
- Make small investments in such tools as Articulate 360 and Sidecar, which are accessible, effective, and well-designed to support diverse learners.

Good design coupled with an open license can help your work have a bigger impact. We encourage library professionals to value the time it takes to create content and to present it in effective and engaging ways. There is no replacement for the skills that a good designer, programmer, and librarian can bring to a project. We will continue to advocate for additional resources of all kinds, especially personnel. Librarian time is also significant and seldom considered. The model of building on other work helps offset the time needed for custom solutions.

Consider making small investments in software to help develop learning objects for your libraries. The cost of Articulate 360 and Sidecar together is around $1,000 annually. The other tools we used, such as LibWizard for feedback, are parts of products many libraries have already licensed for other purposes. Ultimately, we would love to see versions of commonly requested tutorial content stored in a repository of open educational resources such as OER Commons, GitHub, or OSF (Open Science Framework) for anyone to download and modify. Imagine how strong our community could be if we started with an effective template and then shared edits and improvements for student learning.

These two implementations of online tutorials demonstrate that even libraries strapped for time and money can create customized learning materials by leveraging open educational resources. The open licensing of the University of Arizona's tutorials was important in the University of Oregon's success and helped create high-quality resources on an ambitious timeline. The most valuable part of the process was the cross-institutional collaboration. Arizona generously shared their tutorial content and experience, and thus helped Oregon launch a suite of tutorials in a matter of months. Working from thoughtfully crafted and openly licensed resources saves time, allows for more innovation, and supports student success. We hope more of you will join us.

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