Chapter 1

Design Trends and Approaches

We Need Better Tutorials

Once a concern of only librarians and a few educators, information literacy is beginning to be seen by others in and outside of education as essential skills needed to succeed in college and beyond. The International Federation of Library Associations and Institutions' 2021 *Trend Report* lists information literacy as one of its top twenty trends and notes that "building information literacy may come to be seen as the only sustainable way of combating misinformation online."[1] Released yearly, EDUCAUSE's *Horizon Report* profiles trends in higher education and technology, and for many years information literacy was barely mentioned and only in relation to digital literacy. But the report listed information literacy skills as a key trend in 2018.[2] Similarly, experts believe the Fourth Industrial Revolution will call for critical-thinking skills as one of the top ten skills needed to succeed in the workplace.[3] Information literacy skills are critical-thinking skills, as these skills allow students to critically evaluate information they encounter and to understand how they will use it to solve problems.

One way librarians teach these skills is through online tutorials. Visit just about any library website, and you'll find a list of information literacy tutorials students can take at their own pace. However, the quality, look, and feel of these tutorials vary greatly. Some are simply text-based library guides, others are videos, and others are more interactive. Unfortunately, many tend to be content-focused, overly long, and lacking in engagement. This trend is a problem not just for librarians but for many instructional designers. Each year my university creates online tutorials for a number of mandated trainings on topics such as workplace harassment, cybersecurity, and the Family Educational Rights and Privacy Act. Each tutorial is built using the same software and follows the same design pattern of content (usually in the form of text), question, content, question, and so on, until you reach the final quiz, which must be passed in order to receive a certificate of completion. The tutorials are tedious, forgettable, and dreaded by everyone across campus. Unfortunately, most tutorials I have come across follow this basic pattern, and going through them feels more like punishment than training.

Changing How We Design Instruction

Before starting any tutorial, an instructional designer needs an instructional design model to follow. An instructional design model is like a blueprint for a house. Yes, you can build a house without a blueprint, but chances are it will be unstable and soon fall apart. Designing a tutorial is both an art and a science. It is a science because instructional design models are grounded in pedagogical theories and cognitive science, but it is also an art because it calls for creativity. Adopting an instructional design model helps to ensure that your instruction or tutorial is effective, has clear objectives, and has relevant assessments; the model helps you to ask the right questions. In short, it helps you to create a product that is useful and usable. Which model you choose will depend on your own needs and resources, and no model is better than another. For years, the standard and most often used model of instructional design was the ADDIE model, which follows a linear approach of analysis, design, development, implementation, and evaluation. Traditionally, strict ADDIE followers advocate completing one phase before moving on to the next phase. The ADDIE model has some obvious benefits, including an in-depth analysis phase where the learning needs are clearly defined and detailed steps that should be completed before moving on to the next. However, it also has its drawbacks. Tutorial development is rarely a linear process. Rather, it is messy and cyclical. ADDIE is time- and resource-intensive; often, when creating

shorter tutorials, you don't need such a detailed process. Instead, today instructional designers and librarians need a more agile and streamlined approach. There are dozens of instructional design models. I have included two here that may be less well-known by librarians and that work well with the creation of shorter tutorials.

SAM

SAM (Successive Approximation Model) was created by Dr. Michael Allen of Allen Interactions as a reaction to the inflexibility of ADDIE.[4] It is a rapid and iterative approach to e-learning design that emphasizes quick prototype development and feedback. The main phases of SAM are preparation, design, and development. The preparation phase starts with gathering information, including identifying key stakeholders, materials, learners, and any constraints. The next step is to create a rough prototype, perhaps a wireframe or even a paper wireframe. Once a prototype is created, feedback is gathered from stakeholders and the prototype is further worked on. From the prototype stage, we move on to the development stage, where the tutorial is fully implemented and can be evaluated further. Some of the obvious benefits of SAM are its flexibility (you can go back to any step at any point) and its quick prototype development. However, one drawback is a lack of an immediate and consistent understanding of the learner and their needs, wants, and experiences. Additionally, it can be time-consuming and resource-intensive.

Design Thinking

In somewhat of a contrast to SAM, design thinking, a type of user-centered design, puts the user first and involves them throughout the process. It is not a traditional instructional design model, but it can be successfully used to create learning experiences, including tutorials. Unlike many instructional design models, design thinking stresses the importance of the learner and their experiences and feelings and not just the skills that need addressing. Design thinking is a nonlinear, iterative process with five phases:

1. *Empathize:* The first step is to get to know your learners in any way that you can. This can be done via focus groups, individual interviews, observations, surveys, and even reading about them. The idea here is to gain a thorough and empathetic understanding of where they struggle and what their biggest challenges are when using the library and conducting research.
2. *Define:* The next step is to define the problem that you believe needs tackling. Design thinking encourages you to bring in your own point of view as to what the real problem is. Here you need to succinctly define the problems students have with research. You can share your ideas in this step and get feedback from your students.
3. *Ideate:* The ideate phase is where you brainstorm solutions to the problems. Design thinking encourages you to come up with as many solutions as you can think of and to let your imagination take flight. This is not a time to limit your ideas because of a lack of resources, time, or budgets. At this stage you should share your ideas with students, get feedback, and adjust your ideas or even start over.
4. *Prototype:* In the prototyping stage, you create a rough skeleton of your idea and again get feedback. For an online tutorial, this may look like just a skeleton version of your tutorial with placeholders for images and other elements and with minimal content. This works really well with tutorials because you can get good feedback as to how something feels for the user and what they learned from the tutorial.
5. *Test:* The final step before full implementation is to test the tutorial with students and again get feedback from them. After testing you may need to make further adjustments before implementation, but if you have received feedback since the second step these adjustments should be minimal.

Design thinking does have its drawbacks. Mainly, it is time-consuming, and many of us will not have regular or repeated access to our students. However, you can and should adjust any model or process to fit your particular needs.

Changing What We Teach

For years, librarians approached information literacy instruction as teaching a set of discrete skills students needed to learn and practice in order to master them and become information-literate. There was also an emphasis on teaching how to use specific databases and on visiting classes for one-shot library sessions. The Association of College and Research Libraries' (ACRL) *Information Literacy Competency Standards for Higher Education*, which were widely used by librarians, stress the building of lower-order and higher-order thinking skills.[5] In contrast, ACRL's newer *Framework for Information Literacy for Higher Education* stresses the understanding of concepts and critical-thinking skills.[6] It also places greater emphasis on a more critical approach to information literacy that asks learners to consider authority, power, and privilege. Additionally, as learners and the tools they use (databases, Google) become more sophisticated and accurate, teaching skills such as evaluating sources

with checklists like the CRAAP test (explained below) and formatting citations has become irrelevant. Following are some examples of how the content we teach in tutorials is changing.

Evaluating Sources

Evaluating sources of information is a common lesson librarians regularly teach online and in person. One popular method is the CRAAP (Currency, Relevance, Authority, Accuracy, and Purpose) test.[7] Learners answer questions about the information source and then decide how reliable the source is. Although the CRAAP test does have its merits, it just doesn't work anymore. As Jennifer Fielding writes, with online sources, including those that disseminate misinformation, "becom[ing] increasingly sophisticated and prolific, . . . restricting analysis to a single website's content without understanding how that site relates to a wider scope now has the potential to facilitate the acceptance of misinformation as fact."[8] In contrast, lateral reading takes into account several websites and focuses on what others are saying about a particular source or author. Lateral reading is a "strategy for investigating who's behind an unfamiliar online source by leaving the web page and opening a new browser tab to see what trusted websites say about the unknown source."[9] Researchers at Stanford found that fact-checkers often use lateral reading strategies to successfully verify sources.[10] Similarly, students can use these strategies to better determine how reliable a source is.

Citations

One of the first tutorials I created showed students how to correctly cite different types of sources in APA and MLA styles. The students were shown a citation in the correct format and then an incorrect one that they needed to correct by moving around the different citation elements. At that time many databases and other searching tools did not have a Cite button, and sites like EasyBib were not popular with students. Today, students will rarely need to construct citations by hand, but still instructors and librarians insist on teaching them this skill. Instead, as the *Framework* suggests, we should create tutorials where students learn why citing is important, why organizations follow different styles, and why all information should be properly attributed.

Sources

Many instructors require students to use only peer-reviewed material in their papers, and peer-reviewed articles remain the gold standard. However, allowing only peer-reviewed papers "means devaluing other means of knowledge communication . . . [and] we need to recognize that there are other kinds of items other than research or journal articles that are valid."[11] Most library tutorials include a discussion of the types of sources students may encounter, but these rarely go beyond the differences between traditional popular and scholarly sources. Our tutorials should teach students why and how certain voices are left out of the research and where to find those voices.

Searching

Many tutorials that focus on teaching how to search emphasize the idea of creating the perfect search string with the right keywords and Boolean operators. Although this is a useful skill for learners to acquire, students are used to Google and getting what they need with little effort. The latest searching tutorial I created stressed that there is no perfect search and that students can learn from each unsuccessful search.

Open Educational Resources

Open educational resources mean librarians have a plethora of information literacy tutorials, assignments, and readings readily available. For example, Community of Online Research Assignments, known as CORA, provides users with a searchable database of information literacy assignments aligned to the ACRL *Framework*. Assignments can be adopted as is or adapted for a particular need. CORA also includes several assignments that aim to teach social justice and critical information literacy.

CORA
https://www.projectcora.org/

Changing How We Teach

Mobile

Although a trend for years, mobile learning is becoming students' go-to method for accessing all types of information, including tutorials. As a result, our tutorials need to be not just mobile-friendly but mobile-first. Mobile-first means your tutorial is designed with the expectation that students will access it on a mobile device. Every design choice and on-screen element is developed for mobile devices. If something does not work well on a mobile device, it should not be included.

Train the Trainer

With dwindling resources, budget cuts, a move away from one-shot sessions, and fewer subject specialists, it has become difficult to reach all students who need

instruction. As an alternative, we can develop tutorials and online classes that show faculty how they can integrate information literacy skills throughout their courses. Our library recently developed a self-paced course for faculty via the university's course management system. Conceived by librarian Nicole Pagowsky, the course ran over five days and covered topics including library anxiety in students, teaching information literacy skills, and inclusive information literacy. The course was well attended and exceeded our enrollment expectations.

Micro-credentialing

Some libraries, such as Penn State and SUNY Albany, have developed extensive badging systems for students to demonstrate their mastery of information literacy skills, but this approach is still not mainstream. Micro-credentialing offers students a personalized and flexible way to learn that is more performance-based and not based on seat time.[12] One reason why badges have not become more mainstream is the time and resources it takes to develop them and for students to earn them. Penn State offers ten information literacy badges that are organized into three tracks. Each badge takes between forty-five minutes and an hour to complete.[13] Many learning management systems, such as D2L Brightspace, offer more simplified badges that are easy to create. At the University of Arizona Libraries, we have created a series of badges students receive automatically once they complete a short tutorial. Since several instructors may require students to complete the same set of tutorials, students can show their instructors their badges so they don't have to repeat the content.

Flipped Classroom

Tutorials can go only so far, and they work best when they are integrated into the curriculum, required, and discussed again in the class. Flipped learning saves time and is more personalized. Instead of teaching students in class how to use a database, develop a tutorial on how to use it. Then, in the classroom students can practice using the database and ask questions specific to their needs. If you have a series of tutorials, you can have students choose a tutorial to complete on their own. Then, in the classroom, place them in groups based on which tutorial they completed and ask them to share three things they learned. This way students learn the skills covered in the tutorials without having to complete each one.

Adaptive Learning

Adaptive learning uses computer algorithms to tailor the instruction to an individual learner. The content that one student gets is different from what another gets. Many online tests, such as the Test of English as a Foreign Language, are adaptive and adjust subsequent questions depending on the user's performance. Our students come to us with varied levels of information literacy, and a single tutorial will not meet all their needs. Tools like Storyline and Captivate use branching technology to guide students down different paths. Students can start off answering a set of diagnostic questions and then be placed in an appropriate level in the tutorial. With advances in AI technology, adaptive learning will become more sophisticated and more individualized and will be able to adjust the learning depending on how long it takes to answer a question, movements made on the screen, and even a student's mood.

Storyline 360
https://articulate.com/360/storyline/

Adobe Captivate
https://www.adobe.com/products/captivate.html

Gamification

Gamification is the application of game design elements to non-game applications or situations and can be highly motivating. Language learning apps such as Duolingo include many gaming elements to help users engage with them on a daily basis. Gaming elements like points, levels, characters, a story arc, and challenges are easy to build into any tutorial.

Notes

1. International Federation of Library Associations and Institutions, *IFLA Trend Report 2021 Update* (The Hague, Netherlands: IFLA, 2021), 25, https://repository.ifla.org/handle/123456789/1830.
2. William Badke, "The Horizon Report and Information Literacy," *Online Searcher* 43, no. 3 (2019): 55–57.
3. Alex Gray, "The Ten Skills You Need to Thrive in the Fourth Industrial Revolution," World Economic Forum, January 19, 2016, https://www.weforum.org/agenda/2016/01/the-10-skills-you-need-to-thrive-in-the-fourth-industrial-revolution/.
4. "Successive Approximations Model," Allen Interactions, accessed October 15, 2021, https://www.allenInteractions.com/allen-interactions-rapid-instructional-design-and-development-with-sam.
5. Association of College and Research Libraries, "ACRL Standards: Information Literacy Competency Standards for Higher Education," *College and Research Libraries News* 61, no. 3 (March 2000), https://crln.acrl.org/index.php/crlnews/article/view/19242/22395.
6. Association for College and Research Libraries, *Framework for Information Literacy for Higher Education*

(Chicago: Association of College and Research Libraries, 2016), https://www.ala.org/acrl/standards/ilframework.
7. Sarah Blakeslee, "The CRAAP Test," *LOEX Quarterly* 31, no. 3 (Fall 2004): article 4, https://commons.emich.edu/loexquarterly/vol31/iss3/4.
8. Jennifer Fielding, "Rethinking CRAAP: Getting Students Thinking like Fact-Checkers in Evaluating Web Sources," *College and Research Libraries News* 80, no. 11 (2019), https://crln.acrl.org/index.php/crlnews/article/view/24195/32005.
9. "Intro to Lateral Reading," Civic Online Reasoning, Stanford History Education Groups, accessed July 20, 2021, https://cor.stanford.edu/curriculum/lessons/intro-to-lateral-reading/.
10. Sam Wineburg and Sarah McGrew, "Lateral Reading and the Nature of Expertise: Reading Less and Learning More When Evaluating Digital Information," *Teachers College Record* 121, no. 11 (2019): 1–40, https://purl.stanford.edu/yk133ht8603.
11. Sarah Trembath, George Koors, and Rachel Borchardt, "Decolonizing Research Methodologies," Antiracist Praxis, American University, accessed June 3, 2021, https://subjectguides.library.american.edu/c.php?g=1025915&p=7749833.
12. "Micro-credentials," National Education Association, accessed June 6, 2021, https://www.nea.org/professional-excellence/professional-learning/micro-credentials.