A Multi-Framework Approach to Teaching Data: A Case Study in Modern Languages

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When the ACRL Framework was adopted in 2016, it officially moved teaching information literacy (IL) from applying a prescriptive set of skills or learning outcomes based on standards (ACRL, 2000), to a paradigm built on "interconnected core concepts, with flexible options for implementation" that are demonstrated through knowledge practices and dispositions (ACRL, 2016). And while the Framework presents instruction librarians with pedagogical challenges, its "big picture" philosophy supports experimentation with learning principles from various disciplines and frees librarians to adapt their teaching in ways that the previous prescriptive ACRL Standards did not allow. As a result, even before the Framework was officially adopted, instruction librarians began to discuss its applications. Some voiced concerns over its clarity, practicality, research basis, and ability to reflect the diversity of learners or disciplines (ACRLog, 2015); others began to offer pedagogies for teaching it (e.g., Bravender, McClure, & Schaub, 2015; CARLI, n.d.; CUNY Academic Commons, n.d.; Kuglitsch, 2015). Although many of these pedagogies have typically centered on information literacy as a discipline, as opposed to a network of disciplines, librarians are recognizing the need to revitalize teaching pedagogies by capitalizing on the flexibility of the Framework and employing other contextual and disciplinary models for teaching information literacy. For instance, some point to an example of how decoding and backward design are used to "revise learning outcomes for information literacy" (ACRLog, 2015), while others suggest that constructs such as *transfer* or *CoRe* could be used to contextualize threshold concepts (Kuglitsch, 2015; Shinners-Kennedy & Fincher, 2013).

At Carnegie Mellon University, the library liaison for the Department of Modern Languages and the CMU Libraries Research Data Specialist decided to work together to blend the Framework with principles from a different framework, Data Informed Learning (DIL). The latter developed as a way to address contextual concerns and has three main assumptions:

1. That new learning must build on prior knowledge or experience.
2. That learning about data must occur within a disciplinary context.
3. That learning should discover new ways of using data within their discipline. (Maybee & Zilinski, 2015)

This article illustrates a new method for teaching best data and research management practices using a two-framework approach: The Framework and DIL. Students are asked to think critically about the information creation process as they discover their own learning thresholds and chart out strategies that suit their research needs. This approach provides another example of how multiple frameworks can offer librarians better options for teaching and learning, in this case in a research data management (RDM) environment.

About the Workshop

Each fall, about a dozen graduates attend a workshop on data literacy and research management, which is a component of a required graduate professional development seminar (82-780) taught in Modern Languages at Carnegie Mellon University. The seminar focuses on second language acquisition and is an opportunity for graduate students to present their projects and receive constructive feedback. Before the workshop was revised in Fall 2015 with a two-framework approach, its lesson plan focused solely on principles drawn from the ACRL Framework, specifically addressing the second frame, Information Creation as a Process, which states that:

> *Information in any format is produced to convey a message and is shared via a selected delivery method. The iterative processes of researching, creating, revising, and disseminating information vary, and the resulting product reflects these differences* (ACRL, 2016).

With this frame in mind, the two learning goals for the lesson stated that attendees will:

- effectively identify, define, and document reproducible data (*knowledge practice*) by understanding "good" data practices and the research data life cycle involved in its creation, dissemination, and reproducibility (*disposition*).
- learn to efficiently use Mendeley as an example of a research management tool (*knowledge practice*) to understand its role in reflecting, or contributing to, scholarly practices in the discipline (*disposition*).

Workshop activities generally consisted of input/modeling and guided practices. In other words, the library instructor would solicit input from attendees on their research practices through a series of prepared tasks where students might explore how they began their research, visualize the path taken during their research process, and reflect on their data collection and management practices. After each task, based on the input gathered, the librarian would model in front of the class additional or alternative options: for example, students might learn about available library resources that could serve as a starting point, or they may discover library services or tools that could help them at various stages in their research. The discussion culminated with a guided practice where participants would be asked to think about their specific projects and consider possible starting points, additional resources, or tools that may help them accomplish their objectives. In the end, however, while attendees satisfactorily demonstrated their understanding of the "big picture", such as starting points and the need for an iterative process, they generally encountered obstacles when it came time to create new knowledge or apply it in an interdisciplinary context. For instance, while students understood the broader concept of gathering research data to support their project, they often struggled to determine how their practices func-

tioned in more specific contexts, like documenting their research steps for dissemination, reproducibility, or visualization.

Two Frameworks Come Together

In 2015, the Liaison for Modern Languages enlisted the help of the Research Data Specialist, in order to address issues from past years, like those discussed above. After some discussion, the workshop instructors set to revise the lesson plan by considering threshold concepts from a personal lens and blending learning principles from the Framework and DIL. The revised workshop goals still incorporate Information Creation as a Process but now center on two aspects derived from DIL: 1) demonstrating knowledge practices and dispositions by building on prior experience and disciplinary reflection, and 2) through reaching new perspectives on the research process as a whole. They state that:

- Students will examine their current information creation practices as they learn to effectively identify, define, and document data (*knowledge practice*) by understanding "good" data practices and the research data life cycle involved in its creation, dissemination, and reproducibility, relevant to their discipline (*disposition*).
  [adjusted for DIL principles 1 & 2]
- Students will brainstorm possible range of tools and purposes for RDM practices within their discipline by learning to efficiently use Mendeley as one example these tools (*knowledge practice*) and understanding the tools role in reflecting, or contributing to, scholarly practices in their discipline (*disposition*), and
  [adjusted for DIL principles 2 & 3]

This second set of principles allowed us to pull from students' prior experience and situate our learning goals in an RDM environment.

The Lesson Plan

In the workshop, participants completed a series of activities that targeted the revised goals:

1. Demonstrating knowledge practices and dispositions by building on prior experience and reflecting on disciplinary practices:
   a. Mega Blok ™ Construction: Two groups were assigned to view a block construction shape for 30 seconds before disassembling it (see Figures 1 and 2). Next, they were given about a minute and a half to write instructions for reconstructing their object using only five action words or phrases (no long or complete sentences). Finally, each group had two minutes to use instructions from another group to rebuild these objects.
   b. Reflections on Reproducibility: After the first activity, attendees were asked to describe problems encountered in re-building the object and possible ways these problems could be resolved.
   c. Data Sharing & Management Snafu (a video watching activity): This video activity on data sharing asked viewers to think about the first activity and how various practices of colleagues in Second Language Acquisition may help or hinder the information creation process (https://www.youtube.com/watch?v=N2zK3sAtr-4).
2. Reaching new perspectives on the research process as a whole:
   a. Mendeley Basics Activity: Participants were instructed on Mendeley, a tool for collecting and sharing research. They completed a series of tasks that enabled them to demonstrate basic knowledge of the tool.
   b. Reflections on Research Management: In this activity, attendees were asked to think about a research project they planned, or are planning, and discuss changes they may make in the immediate, future, and long-term practices.

Discussion and Conclusion

This case study demonstrates how not being constrained to one framework permitted two librarians to utilize a "big picture" philosophy while also finding a practical approach to teaching information literacy by addressing knowledge practices and dispositions as a reflection of prior experience within a research and data management context. Workshop attendees used their prior experience to uncover potential blocks (thresholds) in their research practices and were challenged to renew their views on how these practices reflect, contribute, and even complicate the process of information creation.

The blended method used in the revised workshop enabled librarians and workshop attendees to dive deeper into RDM

(Multi-Framework…Continued on page 10)

Figure 1

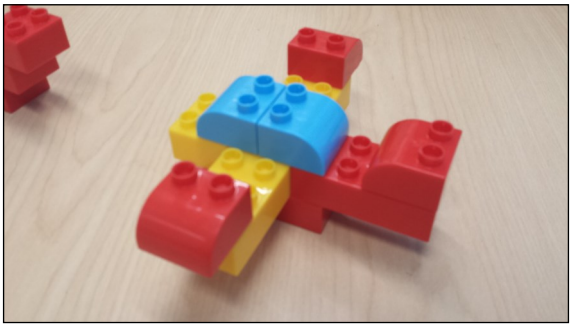
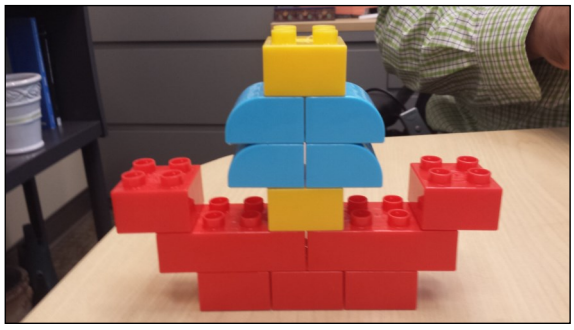


Figure 2



(Multi-Framework...Continued from page 9)

practices. For one thing, instead of relying on attendee input, librarians could observe first-hand how participants satisfied their data and research needs and what struggles were encountered. Attendee input gathered in previous iterations of this workshop were more abstract, unclear, and less reliable as first-hand observation. The revised activities shed light on the nuances of the information creation and organization process and pointed to "threshold" areas more concretely. For example, when groups attempted to follow instructions for rebuilding objects, they quickly realized the importance of language taxonomies and the need for clarity and terminology consensus when working collaboratively. While similar points were concluded from discussions in previous workshops, the method used in the revised workshop provided tangible instances of the key talking points. In this case study, the ACRL Framework provided a good basis for lesson design, but the disciplinary context-focused framework helped with clarifying the lesson goals. That said, there were still challenges, such as addressing other ACRL frames directly due to time limitations and the narrow scope of the workshop.

As we move forward and produce more examples of multi-framework use for teaching information literacy, librarians should think about potential as well as limitations of various approaches. They might examine, for instance, the compatibility between framework models and ask which work well together and in what context: do multi-frameworks work well when teaching about information creation as when we teach searching as a strategic exploration? There's certainly much work to be done when it comes to assessing learning with the ACRL Framework, so perhaps we can also consider whether or not multi-framework philosophies aid or complicate assessment.

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Where to find Browser Extensions

Chrome Web Store
https://chrome.google.com/webstore?hl=en

Firefox Add-ons
https://addons.mozilla.org/en-US/firefox/extensions/

Microsoft Store
https://www.microsoft.com/en-us/store/collections/edgeextensions/pc

Opera Add-ons
https://addons.opera.com/en/

Safari Extensions
https://safari-extensions.apple.com/?category=productivity

(Anticipatory Sets...Continued from page 5)

with students. If you are not feeling creative or are stuck, colleagues can be good spring boards for testing ideas or brainstorming possible scenarios. Consider starting with a basic anticipatory set if you want to experiment with them in your instruction. Once you are comfortable, scale up to an intermediate or advanced set. However you decide to start, this is an opportunity to have fun and explore new ways of making sure your instruction sessions are effective right from the start.

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