

## **Book Review: How Learning Works: Seven Research-Based Principles for Smart Teaching**

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While K-12 teachers are required to take numerous classes on teaching methods, classroom management, and educational psychology, most academic librarians—after taking perhaps just one or two pedagogy/instruction classes while getting their MLS—must learn the rest on the fly or from colleagues at conferences. What we pick up in the field, though, tends to be things like active learning techniques, tech tips, pop-culture-based research topics with special resonance for our students, and effective assessments that can be executed quickly—all of which are useful and even desirable in the classroom. These may result in engaging lessons, but put us in danger of repeating the same information to students when they return to the library, weeks later, asking for help from a librarian because they’ve forgotten what was covered in class. Without an understanding of how learning works, we are doomed to **teaching** material without its being **learned**.

*How Learning Works* helps address that gap. While nominally aimed at teachers of all levels, its examples of instructional quandaries mark higher education instructors as its true target audience. The authors’ aim is for the book to be an evidence-based happy medium between jargon-laden theoretical articles about the science of learning and anecdotal self-help books (p. xv). Written by five professors all affiliated with Carnegie Mellon University but working in different disciplines, the book avoids a subject-specific approach. This methodology is useful for librarians, who tend to be the ultimate generalists. Indeed, one of the main desires assumed of the book’s readers—for a course’s learning objectives to be absorbed and applied in different contexts later—will strike a chord with librarians, who hope their lessons on evaluating sources, constructing effective search strings, and synthesizing information without inadvertent plagiarism will be utilized long after students have graduated.

Each of the seven sections begins with fictional scenarios that are likely to be familiar to anyone who teaches: students who fail to be inspired by their instructor’s enthusiasm for a subject, who don’t remember the skills learned in introductory-level classes, or who seem incapable of following straightforward assignment instructions. While these scenarios initially seem hand-wringingly student-based and insoluble, each proves to have a teacher-based origin and solution(s).

The authors tackle the professorial misconceptions behind each problem with brief literature reviews of the prevailing research on that chapter’s learning principle (such as how prior knowledge affects student learning). In keeping with the authors’ promise, the most important aspects of this research are teased out and its implications are explained in layman’s terms

for the practicing instructor; there are no statistical tables or psychological jargon to wade through. For example, we are told that “Novices ... have not achieved the same degree of fluency and automaticity in each of the component skills [as their expert instructors], and thus they struggle to combine skills that experts combine with relative ease and efficiency” (p. 105). The implications of this particular body of research—that students need to focus on learning one skill at a time in order to reduce their cognitive load—are of particular import to one-shot instructors, who often feel pressured to fit quite a few disparate learning objectives into one 50- or 75-minute class. Many of the principles discussed, such as this one, will be disconcerting to even experienced librarians if they don’t have a solid, extant grounding in pedagogy; as knowledge professionals, and especially as we move further and further from being undergraduate or graduate learners ourselves, there develops a disconnect between instructor and student. Discovering that the seemingly specific goals and requirements we lay out for a particular task cannot always be understood by students without our expertise—and will not therefore be applied in a way that aligns with their preexisting knowledge—is a sobering realization.

Finally, each chapter ends with strategies for implementing the recommendations implied by that topic’s body of research. Many of the recommendations are arguably much easier for librarians to implement than their discipline-bound peers; so much of what we teach (e.g., the importance of evaluating information for reliability) naturally translates to the world outside academia. For example: employ authentic, real-world tasks that “demonstrate the relevance of higher-level skills to students’ future professional lives” and only provide feedback targeted to the skill currently being learned (p. 84).

Additionally, the book comes with a companion website (<http://www.cmu.edu/teaching/>) and several appendices full of practical resources: samples of rubrics, learning objectives, and peer review instruments, among others.

Some of the research and recommendations—such as refining class goals and performance criteria as a semester progresses—won’t be helpful or apply to librarians who exclusively teach non-credit classes, but there are enough helpful tips to make the book a must-read for all teaching librarians. I am a relative rarity in the librarian world in that I went through a battery of education classes in college in order to obtain a secondary teaching license, meaning I’ve had much more training in learning theory than the majority of my peers. I still found the book enormously helpful, however; it’s been a decade since I earned my license and I’d forgotten much of what I learned

about pedagogical best practices, as I typically just focus on the importance of learning objectives and lesson plans. Finally and perhaps most importantly, many of the recommended strategies are painlessly, immediately employable: providing prompts in-class to jog students' memories of knowledge already learned (p. 120), furnishing an outline of what you plan to teach at the beginning of class (p.61), showing both model and unsatisfac-

tory examples of what you're looking for in a particular assignment (p. 147-8). The book will therefore be of great use to librarians of all experience levels and class types—any book with this depth of research that is also practical, while being eminently readable, deserves a spot on any instruction librarian's shelf.

*(Symbiotic Relationship...Continued from page 5)*

In addition to teaching students about new resources (e.g., none of them knew what an institutional repository was when we started), we also hoped the students would spread the word to friends about the resources and the approachability and helpfulness of librarians and staff. The groups' recommendations and mock-ups were invaluable, as they suggested new design features to garner interest, increase ease of use, and even pointed out inconsistencies that had previously gone unnoticed. Our User Experience Librarian noted three valuable insights our library gained from the experience:

1. How first year students prefer to access information (e.g., QR codes were not as popular as we expected).
2. Their emphasis on the need for visually engaging browsing interfaces (Netflix and iTunes were commonly cited exemplars).
3. The need to create "clean," clutter-free entrance experiences into digital portals (such as SMARTech [our institutional repository]) (A. Doshi, personal communication, 2014).

In addition to the tangible recommendations, the library staff really enjoyed working with the students. Several of the library clients were from departments that typically do not interact directly with our users, so this was a rare opportunity for them to elicit undergraduate students' perspectives.

### **Recommendations & Challenges**

Librarians can be creative in pitching client-based assignments to potential faculty collaborators. Perhaps a social psychology course could conduct a study of behavior in a particular library environment, or an environmental science course could recommend ways to make the library building and services more environmentally-friendly.

One major challenge for me was coordinating and overseeing so many clients. We ended up with ten library employees involved, including myself and the User Experience Librarian. In part this was due to our desire for really invested clients, and in part it was to divide up the labor. Others could surely implement a similar assignment with fewer librarians and/or staff, though the workload for each would increase based on the number of groups involved. It is also important to select clients who will work well with the students. In our case, having the professor summarize the feedback for the students acted to mediate any potential issues.

Another challenge was teaching the students all the minute details that must be taken into account when developing a library resource. On the first iteration, several groups offered beautiful mock-ups that in no way would fit into the coloring and branding of our library's site. Some suggestions showed that the students' concept of the capabilities of certain resources – the library catalog, for example – might not be realistic. Even though a month seems like a lengthy period of time, not every nuance and policy can feasibly be covered in the student-librarian interactions. Expect that not all recommendations will be able to be implemented as is, but be willing to take the ideas they convey to benefit the library in some way.

Not all groups had the same level of technical expertise. We were working with classes of mostly freshmen with a wide range of skills with computing and design software. Some were able to code flashy graphics for their mock-ups, while others stuck to listing recommendations using the basics in PowerPoint. Regardless, the focus of the assignment should be on the quality of the recommendations and the communication skills the students exhibit in presenting the recommendations to the client, rather than on the complexity of the medium through which they created their presentation.

Finally, it is important to have a close working relationship with the faculty to whom you propose such an assignment. I would not recommend this be your first time working together, as you'll want to feel comfortable contacting - and being contacted by - the professor many times throughout the course of the assignment. Unfortunately, the faculty member I worked with finished her fellowship and moved on to another university, and so far other obligations and opportunities have not allowed another collaboration at this point. However, a little creativity and determination can open up opportunities for mutually beneficial class assignments across campus.

### **References and Footnote**

For references, see here: <http://bit.ly/1K02h1C>

- 1 This class visit was not in the original timeline, but the instructor had to be away suddenly, so we led the group work session. In order to keep the students on track, the instructor had prepared a worksheet for the groups to complete. Information about their team's structure, their chosen resource, potential challenges, and initial recommendation ideas was required. Having one of our Information Technology & Development team developers with me in this class was particularly useful, as he had the back-end knowledge to help with the technical questions that arose.