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Zotero: A Tool for Constructionist Learning in Critical Information Literacy

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CHAPTER 27

Zotero

A Tool for Constructionist Learning in Critical Information Literacy

Joshua F. Beatty

Introduction

In 2012, Feinberg Library at SUNY Plattsburgh began running workshops for faculty and staff on Zotero bibliographic management software. The workshops were well attended and led to many faculty adopting Zotero for their own work. But, they asked, why did we not teach such a useful tool to students?

In response to this suggestion, I began teaching Zotero as part of our course-related instruction sessions. I chose Zotero over similar programs like EndNote, Mendeley, or RefWorks for two reasons. First, I am a long-time user and had taken a two-day workshop on teaching the software from a Zotero developer. Second, Zotero is a better fit with critical pedagogy. It is open-source software maintained by the Center for History and New Media at George Mason University and supported by a community of volunteers, rather than a proprietary program owned by an edtech or publishing behemoth like Elsevier (Mendeley) or Thomson-Reuters (EndNote).

With critical pedagogy in mind, I developed a lesson plan that taught the mechanics within the context of constructing one's own library within Zotero. As Mita Williams argues, "The most important library to our users isn't the one that they are sitting in, but the one on their laptop."¹ These are one-shot sessions, taught in a computer classroom. Each student has their own computer. I encourage students to bring their own laptops, but some prefer to use the lab computers. So far I have taught mostly third- and fourth-year undergraduates,

often in their major's Advanced Writing Requirement course. The smallest session so far has been four students; the largest, thirty. I continue to work with students in the weeks after the session as necessary to troubleshoot problems.

Two theories inform the pedagogy of these sessions. The first is Paulo Freire's idea of the death and rebirth of the educator.² Freire believed that the educator had to die as the exclusive teacher of the students in order to be reborn as an educator for freedom. (Similarly, students must die as passive consumers of knowledge in order to be reborn as self-educators and self-learners.) For the purposes of this session, I interpret Freire's words to mean that I must teach as if I were using Zotero for the first time. To be true to this path, I install the software from scratch every time I teach a session. This allows me to talk through the problems that arise from the very beginning of the installation process through any unexpected issues connecting to databases. And sometimes students watch me struggle and offer up a solution that I had not considered.

The second theory is that of constructionism. According to its originator, Seymour Papert, and coauthor Idit Harel:

Constructionism...shares constructivism's connotation of learning as "building knowledge structures" irrespective of the circumstances of the learning. It then adds the idea that this happens especially felicitously in a context where the learner is consciously engaged in constructing a public entity, whether it's a sand castle on the beach or a theory of the universe.³

I consider the judicious and thoughtful creation of a library in Zotero as a form of building. There is a tradition in the humanities of considering scholarship a craft (in relation to an art or a science). When used properly, Zotero is a tool that assists the process of crafting knowledge from the digital raw materials of sources and catalogued metadata.⁴ The courses to which I teach Zotero are largely committed to the view of student research projects as public entities. Advanced Writing Requirement courses require peer review, seminar discussion, and presentation of one's work. Through adding Zotero to this process in a group setting, we can help students begin thinking of their work as a public entity from its inception.

Learning Outcomes

- Build a library of sources related to an upcoming project from library resources
- Organize the contents and structure of their library in a dialogue with the research project they are creating

- Recognize that even the beginning stages of the research potentially constitute a public work

Materials

- Each student must have access to a computer with an operating system that can run Zotero
- Word processing program and web browser compatible with Zotero
- Zotero (either Zotero standalone or the Firefox extension), including plugins for word processor and browser. If time is limited, the instructor may wish to provide flash drives with either the download packages for Zotero and its plugins, or a portable Firefox installation with Zotero preinstalled.
- Handouts with basic instructions, contact information, and link to online guide

Preparation

- Provide a handout or website with instructions to use throughout the session. This allows students to continue working if they fall behind, as well as allowing absent students or those without laptops to install and use Zotero at home.
- Talk to faculty about expectations. Understand what they want students to produce: A short paper? An extensive paper? A group project of some kind? Also ask what citation style they want the students to use. If it is not one of Zotero's default styles, you can show the students the Zotero Style Repository and how to install the appropriate style.

Session Instructions

Demonstrate each step on a computer at the front of the classroom. Move around the classroom and work with students as needed. Students quickly begin exploring Zotero on their own and with their classmates. Return to the front of the classroom for each new step; this breaks the class up into manageable chunks. The four steps of the workshop are installation, settings, collection, and citation. The first two are preparatory, with the latter two as the payoff.

1. *Installation:* Install all software and plugins and create accounts on Zotero's cloud server, which allows users to back up their work, access their libraries from the Web, and create and join group libraries.

2. *Optimize Zotero's preferences:* The particulars will vary according to a given class's needs, but two essentials are to log into Zotero's cloud service and to set the correct citation style. I recommend turning off the auto-tagging feature and, in line with constructionist pedagogy, encouraging students to instead devise their own system of classification.
3. *Collection:* Search an appropriate database for terms related to their project topic. It is important to perform a broad search that returns at least a page's worth of items both with and without full-text PDFs. The students then add materials to their library, first a single item, and then multiple items at once. At this point the class is ready to learn how to add the tools necessary to build one's own research library—subcollections, tags, and notes. This period also serves to allow students who have been slowed by technical issues the chance to catch up.
4. *Citation:* Open a new document in the word processor, arrange the windows to view the Zotero library and the document at the same time, and drag an item from the library onto the document. The result produces exclamations and indrawn breath from the class as the students see a bibliography entry, properly formatted in the style set in step 2, appear on the screen. Allow the students to explore this feature for a few minutes and then introduce the more complex process of creating in-text citations and bibliographies that are connected to Zotero. Finally, show how to correct errors in these citations and bibliography by changing the metadata in Zotero.

I find, after several semesters of teaching Zotero, that there are often students in the class who have used the software before. These students are usually eager to help out, and I encourage them to work with any students who are falling behind during the session.

The key to the session is to get everyone to the end of step 3 before beginning step 4. The experience of quickly building a bibliography from one's Zotero library gains in impact when the entire class does so at once. This moment has an almost visceral effect on the class—a release of tension as the sometimes tedious work of the first forty-five to fifty minutes pays off, along with a realization of the effect this tool can have on their work.

Assessment

Two simple ways to assess Zotero sessions are surveys of the students at the end of the session and surveys of the faculty at the end of the semester. For the former I have used the same short assessment form that we use for other library instruction sessions, intended to measure students' estimate of how much they have learned during the session and the librarian's skill at present-

ing the material. The responses from students are invariably positive. Unlike many library instruction sessions, in which the benefits are not immediately apparent, students can immediately see how Zotero can help them in their work. The most frequent sentiment is “Why isn’t this taught in the [one-credit, required] library skills class?”

The faculty survey is Zotero-specific. I ask questions about the success of the session, Zotero’s influence on student work, and suggested improvements for future sessions. Faculty have found the sessions make a significant impact on student research, and the same faculty ask for Zotero instruction in their classes every semester.

We receive further feedback on Zotero sessions through continued contact with the students over the semester and beyond, often through reference desk interactions. If students come to us stuck at a particular point as they’re building their library and creating citations, we know that this is something that we should better address when we teach in the classroom.

Reflections

Papert and Harel argued that one of the key differences between constructivism and constructionism is that the latter emphasizes the potential for learning in creating a “public entity.”⁵ This is an aspect of constructionism that I have not sufficiently integrated into my own sessions. The scheduling of the session so that all students create their first citation at the same time allows them to share the experience and makes it more public than it might otherwise be. But in the future I would like to do more. Zotero has a group feature that allows users to build a shared library and make it available on the Web. I am currently working with faculty on developing assignments that take advantage of the group feature.

Students often ask why they were not taught Zotero in their library skills or English 101 courses. Though there would be advantages, teaching Zotero to advanced, writing-intensive courses also has its benefits. There can be emphasis on the disciplinary conventions related to the particular subject: the vagaries of a particular citation style, or the peculiarities of how different databases interact with Zotero.

As mentioned earlier, I am an experienced Zotero user and have had formal training in teaching it. This expertise makes it much easier for me to troubleshoot students’ problems on the fly within the context of an intense classroom session. I could not do the same with Mendeley or EndNote. If your expertise differs, you *should* teach a different program!⁶

Yet, within the context of critical pedagogy and especially constructionism, there are other reasons to choose Zotero. Students can directly contrib-

ute to the Zotero community by building new citation styles and translators. Further, as an open-source program Zotero is certain to remain free to use, an important consideration at a comprehensive state college like mine where students are often working just to pay tuition.

Final Question

How can we reconceive library materials—software, databases, interfaces—as not just discrete items for individual use but as tools that can help students build knowledge publicly?

Notes

1. Mita Williams, “Advice from a Badass: How to Make Users Awesome,” *New Jack Librarian* (blog), April 26, 2015, <http://librarian.newjackalmanac.ca/2015/04/advice-from-badass-how-to-make-users.html>.
2. Paulo Freire, *The Politics of Education*, trans. Donaldo Macedo (South Hadley, MA: Bergin and Garvey, 1985), 105.
3. Seymour Papert and Idit Harel, “Situating Constructionism,” chapter 1 in *Constructionism* (Norwood, NJ: Ablex, 1991), available online at <http://www.papert.org/articles/SituatingConstructionism.html>.
4. A. Roger Ekirch, “Sometimes an Art, Never a Science, Always a Craft: A Conversation with Bernard Bailyn,” *William and Mary Quarterly* 51, no. 4 (October 1994): 636–37, doi:10.2307/2946922; Marjoleine Kars, “History in a Grain of Sand: Teaching the Historian’s Craft,” *Journal of American History* 83, no. 4 (March 1997): 1340, doi:10.2307/2952905.
5. Papert and Haren, “Situating Constructionism.”
6. An excellent guide to teaching Mendeley is Alison Hicks and Caroline Sinkinson, “Examining Mendeley: Designing Learning Opportunities for Digital Scholarship,” *portal: Libraries and the Academy* 15, no. 3 (July 2015): 531–49, doi:10.1353/pla.2015.0035.

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