

7 things you should know about...

Zotero

Scenario

As a freshman, Walter attended a tutorial given by the staff at his university's library about an online reference tool called Zotero that allows users to easily collect and organize sources from online research. Whenever he was visiting a website that made bibliographic information available through the browser, Walter could click a button that would gather the citation details for the resource he was viewing. He could also take a snapshot of a web page and capture the full text of that resource. During his first two years at college, his Zotero library grew to comprise several hundred sources, including dozens of snapshots. He regularly highlighted important sections of snapshots and added notes about their significance to a particular project or to his academic interests generally. For many of the sources in his Zotero library, Walter added attachments, keywords, and other data that increased the value of his sources. When it came time to write papers, Walter used Zotero to insert formatted citations to sources in his library and quickly create a properly formatted reference list.

When he was a junior, Walter narrowed his studies to Eastern European politics and the associated social influences on the geopolitical evolution of the region. His research therefore covered a broad combination of historical artifacts as well as current reports, often from blogs and newspaper websites. Each time Walter began a new project, he turned initially to his Zotero library, which contained valuable information he had collected and recorded over nearly three years. He grouped sources in different combinations for different projects, and by reviewing his sources from varying perspectives, he was able to see interdisciplinary connections that might otherwise have gone unnoticed. By the time he was working on his senior project, Walter had created a rich digital repository of annotated, highlighted sources, many with attachments and keywords. Having easy access to many sources, and the ability to manipulate and search those resources, gave Walter a deeper understanding of the material at hand and helped him formulate a provocative and novel research question for his senior project.

What is it?

Zotero is a research tool for managing online references. Developed by the Center for History and New Media at George Mason University, Zotero is a Firefox extension that provides users with automated access to bibliographic information for resources viewed online. Using “translators” for several hundred websites, online databases, and commercial sites such as Amazon.com, Zotero “senses” the bibliographic information contained in a web page and—when the user clicks the Zotero icon—gathers that information and places it in the user’s library of sources. In this way, online researchers can quickly and easily gather the information they will need later to review and cite references and create bibliographies. Zotero includes features to manage sources, and users can also manually enter sources. The result is a centralized location for gathering and storing references, significantly streamlining the research process.

Who’s doing it?

The translators that allow Zotero to access web-based bibliographic information have been written for institutional libraries, the Library of Congress, databases such as LexisNexis, archiving services such as JSTOR, newspapers, and hundreds of other organizations around the world. So far, more than 100 colleges, universities, and other organizations recommend Zotero to their constituents, and nearly 30 of these provide tutorials or workshops on how to use the tool. Zotero is equally useful for undergraduates, graduate students, faculty, and other researchers—anyone who uses the Internet for research and needs a simple way to organize references.

How does it work?

Zotero is a free download that can be installed on any computer running Firefox, Netscape 9.0, or the Flock browser. When a user visits a website that works with the extension, an icon appears in the browser’s address bar. Clicking that icon prompts Zotero to gather the bibliographic information for the source being viewed and add it to the user’s Zotero library. If a web page includes multiple sources, the application lets the user save some or all of the sources at one time. Through a pane that opens at the bottom of the browser window, users can manage the sources they have gathered, adding notes, keywords, or attachments to any source.

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Sources in a user's library can be grouped into collections, which are represented as folders, resulting in a flexible, personal system for organizing references. Individual sources can be included in multiple collections. A search feature lets users locate sources in their Zotero libraries based on keywords found in any of the data fields. Users can also take a snapshot of an online resource, which stores a local copy of that source, and add highlights or annotations to these snapshots. Alternatively, users can manually enter a source that either is not online or is on a website that does not interact with Zotero. A timeline tool organizes sources by date and lets users highlight specific keywords in the sources displayed across a timeline.

All of the sources in a Zotero library are available, even when the user is not online, and users who run the portable version of Firefox from a storage device can access Zotero and their sources from any computer they use. Users choose a citation format, such as Chicago, MLA, APA, or others. To add a source from Zotero, a user simply drags that source into an application such as Microsoft Word or Google Docs, and a properly formatted citation is inserted. Zotero also generates a bibliography of all the sources included in a paper.

Why is it significant?

As the quantity of online data and analysis has skyrocketed, and as access to those resources nears ubiquity, the tools to manage those sources have failed to keep pace. Research today takes place at an ever-increasing pace, and having to record sources and organize references manually can be a considerable bottleneck. By automating the tasks of gathering, managing, and citing online references, Zotero and other online reference tools facilitate a more efficient research process. Formatting of citations is consistent, and typos and other mistakes common in a manual reference system are largely eliminated.

Centralizing all of a scholar's academic sources in a single location, and providing simple tools to annotate and manage those sources, also adds a new layer to the research process. The ability to cross-reference sources, assign tags and other information to them, and quickly search a library of sources has the potential to uncover unseen connections and patterns. Moreover, the timeline feature allows researchers to see the progression of scholarship on a topic over time.

What are the downsides?

Although Zotero works on Windows, Mac, and Linux platforms and is compatible with Firefox, Netscape, and Flock browsers, the application does not run on Internet Explorer, and, according to the developers of Zotero, will never work with IE because of the proprietary nature of that browser. This presents a problem in campus or departmental labs that only support the IE browser. Zotero source

libraries are available when a user is offline, but they are nonetheless tied to an installation of the software, either on a specific computer or a portable storage device. Users who are away from their primary computer, or who forget their storage device, can't access their sources. Moreover, Zotero does not currently offer an easy method to share sources with other users. For accurate citations, Zotero depends on consistent, predictable formatting of bibliographic information on websites, and the application cannot import source information from plain-text documents.

Where is it going?

Zotero developers are said to be working on a version that would run as an online application, which would store sources centrally rather than on local machines. This way, users could log in to Zotero from any computer—as long as it uses a Zotero-compatible browser—and have access to their source libraries. With this arrangement, users could set permissions for their libraries and share sources, allowing individuals working on a group project to collaboratively develop a bibliography. The ongoing proliferation of data places an increasing burden on users to organize and manage large amounts of information. As more and more websites adopt consistent standards for formatting bibliographic information, Zotero and tools like it will provide another way to apply individual "lenses" to vast arrays of resources, helping users make sense of the flood of information. Digital media are changing the options and expectations for the forms of scholarly publication, with some arguing that an academic work could be a multimedia artifact or other nontraditional medium. As resources themselves take on new forms, Zotero serves the needs of researchers who want to cite those evolving sources.

What are the implications for teaching and learning?

In the cut-and-paste world of digital resources and online research, a focus on conscientious attribution has softened. By emphasizing accurate citations and automating the process, Zotero helps students learn and adopt proper practices. Zotero runs in the browser—where research increasingly takes place—and works in a way that students find familiar and comfortable. In these ways, the application is well positioned to encourage and facilitate scholarship. In addition, because it provides new tools to organize and interact with resources, Zotero can help faculty and students use those resources in creative and effective ways to support their research.