

TechMatters: Charting the Research Path: Online Concept Mapping Tools

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Concept maps are visual representations of knowledge and the relationships between ideas. They were developed in the 1970s by Dr. Joseph Novak, Professor of Education and Biological sciences at Cornell University, as a means to record how children understood a topic before and after instruction (Novak, 2010). In library instruction, concept maps have been adopted as a method to help students develop focused research questions, as well as a means to help students explore their understanding of a topic in order to develop better search strategies.

Concept maps typically consist of keywords or concepts surrounded by circles or boxes, and with connectors and arrows used to demonstrate the relationships between ideas. Although they can be produced using the most basic of technologies, pen on paper, many learners (particularly those who have never lived in a world without word processing tools) prefer to work on a computer. Fortunately, a variety of freely-available online concept mapping tools exist that you can use to introduce concept mapping techniques to your students.

Bubbl.us

<https://bubbl.us/>

Bubbl.us is simple and straightforward to use. It is completely free and doesn't require a user account to get started. Without an account, you still can create maps, as well as print or export them as images that you can save locally. However, with an optional account you can save and store you maps within bubbl.us allowing you to retrieve and edit them later.

Each new "brainstorming session" starts with a single blank "bubble" in the middle of the screen. Click on the bubble to enter a keyword or idea. From the parent bubble, press Tab to create a new bubble on a parallel level or Control+Enter to create a child on a subordinate level. Each new bubble is automatically connected by a line to it its parent bubble. By default the system creates a hierarchical map; however you can drag and drop the bubbles to rearrange them into the configuration of your choosing (see Figure 1). In addition to the ability to move bubbles, a toolbar that appears when you hover over each one allows you to change its color or size, add directional connectors to other bubbles, or delete it entirely.

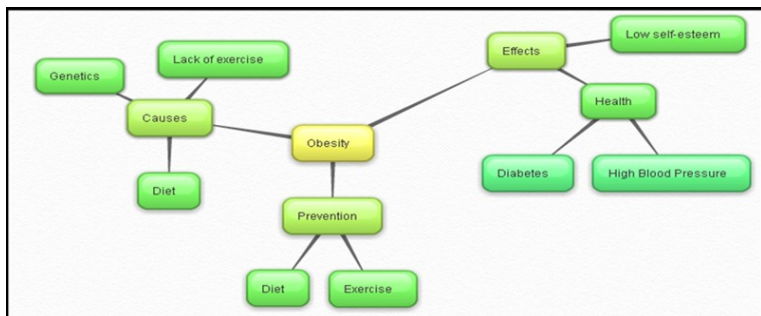


Figure 1: Concept map created using bubbl.us

Although Bubbl.us is not the most complex tool, it certainly has all the options needed to quickly and easily develop a concept map. As a result, it is a great tool for introducing students to concept mapping without requiring you to spend more than literally a minute or two explaining the technology.

Text2Mindmap

<http://www.text2mindmap.com/>

Unlike most other concept mapping tools, Text2Mindmap doesn't require users to work directly with a graphical interface. Instead, you enter your concepts in a text-based, tabbed outline form. Once your outline is complete, simply click the "Convert to Mind Map" button and the program creates the graphical concept map for you (see Figure 2). As a result, Text2Mindmap is a great tool for people who are more linear thinkers, or who are less visually inclined.

Once created, you have the option to make a few formatting choices including changing font size, adjusting colors, and modifying the color and width of the connecting lines. You may also "freeze" the map, which counter-intuitively allows you to then reposition the individual concept boxes (if you try to move an individual box without "freezing", the entire graphic moves).

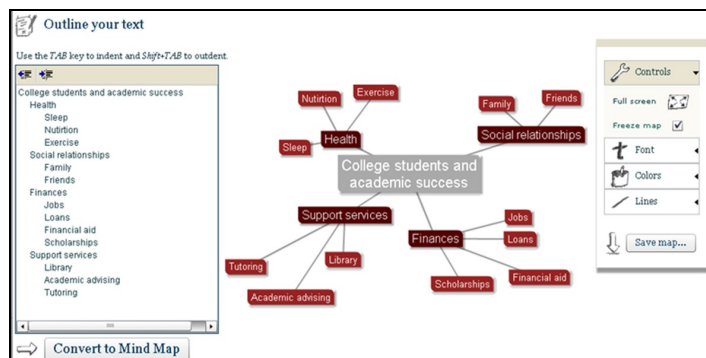


Figure 2: Concept map created using Text2Mindmap

SpiderScribe

<http://www.spiderscribe.net/>

SpiderScribe is distinct from most other concept mapping tools in that it allows users to include a variety of content elements including text, images, document files, calendar events, and geographic locations (see Figure 3). These atypical options are easy to integrate – for example, if you would like a map of a local business and also promotional flyer to be included, simply type in the address and up pops a map (drawn from Google Maps) and then select the appropriate pdf of the flyer from your hard drive. To add a new element, or "stencil", to the workspace simply drag and drop from the menu on the left-hand side of the application. When you select a particular stencil, the "Properties" menu located in the

upper left-hand corner will be activated to allow you to change options appropriate for that element including background color and border thickness.

SpiderScribe’s “personal plan” is free for use by educational and non-profit organizations, as well as for any non-commercial use. With this plan, a single user may create unlimited public maps and up to three private maps. Private maps can be shared with others, and multiple users can edit them at the same time making this a great choice for collaborative concept mapping.

MindMeister

<http://www.mindmeister.com/>

Another good tool for collaborative concept mapping is MindMeister which allows real-time co-editing of maps between an unlimited number of peers and colleagues. As with SpiderScribe, MindMeister has both free and pay versions. The “basic version” is free and allows each individual user to create up to three maps.

New maps can be created starting from a variety of templates, including one that is blank. The “blank” template starts by placing a central “node” in the middle of the screen. From that parent node, you create sub-nodes (or child nodes)

that are automatically connected to the parent. You can also demonstrate relationships between nodes through the addition of connecting lines. To edit the characteristics of a node (size, style, color, etc), simply select it and then change the options using the “Properties” menu located on the right hand side of the screen. A nice feature of MindMeister is its ability to make each individual node data-rich: you have ability to add a note (like in MS Excel, it allows you to attach a lot of text information to a small area that is easily accessible with a quick click), a link (e.g., so if a user clicks on a node, they can see the URL or just go directly a different website) and a file attachment (e.g., if you would like to attach an explanatory article, similar to attaching a file to an email).

An additional nice feature of MindMeister is the ability to assign “tasks”, which makes the tool potentially useful to anyone running a sizeable project, particularly one with multiple jobs and people involved (be it a student-led class group project or a team of librarians). By creating a map of all the various tasks and dates necessary to complete a project, you can readily visualize with your team who does what, when do they do it, and how those various tasks relate to each other. This is particularly useful for those who like a more visual approach, as opposed to a long list, that might be kept in a table.

(Concept Mapping...Continued on page 3)

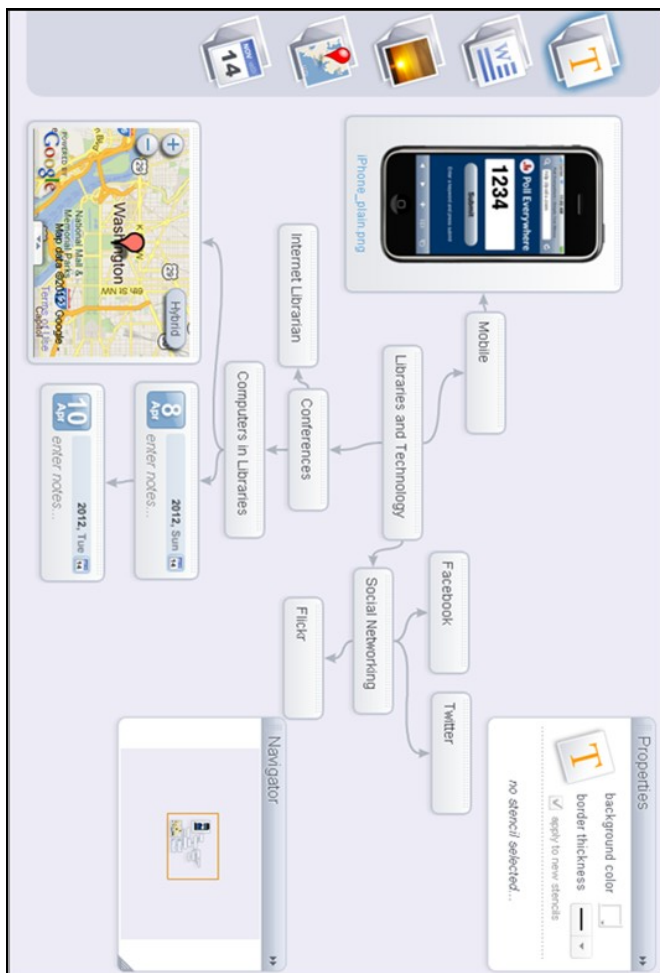


Figure 3: Concept map created using SpiderScribe

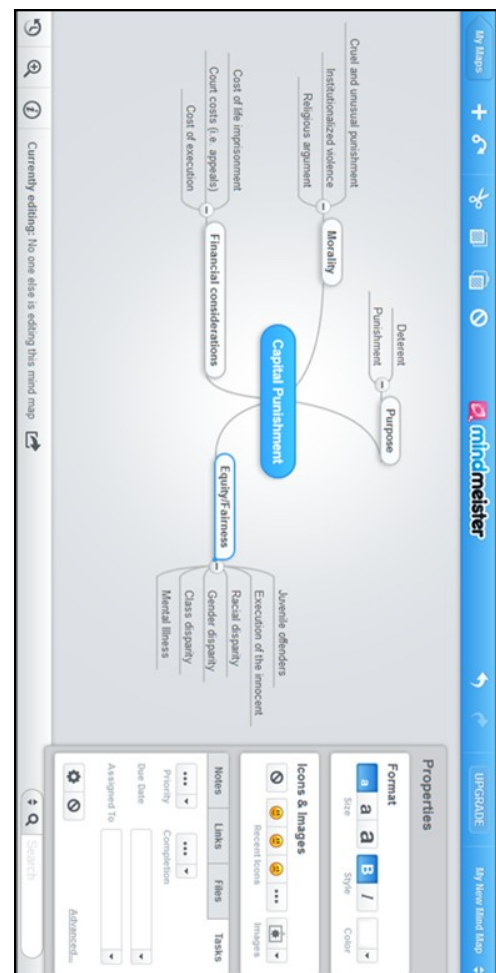


Figure 4: Concept map created using MindMeister

extensive text-based content on a topic. These pages would allow the public to review information needed to make an informed decision about the truth of any story. Journalists could then monetize knowledge pages through targeted consumer interest advertisements and create an economically sustainable business though, in my opinion, this business model might be difficult to pull off if the goal is unbiased, non-commercial content. The authors assert that journalists are equipped to create pages unlike anything else available on the web because of their ability to do extensive research and fact checking. The similarities between a knowledge page and LibGuides, utilized by so many libraries today, were obvious. LibGuides are typically filled with web links directing users to click URLs for additional resources. Alternatively, knowledge pages are much more than links, containing a great deal of text and media-rich content. Can librarians learn from the knowledge page model to create more informative and useful LibGuides? LibGuides could easily be transformed to include textual information about topics. The new text-filled LibGuides could orient undergraduate students to the disciplinary context of their topics, a concept most students struggle to grasp.

Informed Citizenry

The parallels between the authors' call for an informed citizenry and information literacy are striking. The six ways of skeptical knowing are essentially good questions for anyone to ask when they are evaluating sources of information. The questions are a roadmap to discovering bias, incomplete, or inaccurate information and can easily find a home adjacent to information literacy instruction. The book, or chapters from the book, are well suited for use in for-credit information literacy classes or as supplementary reading for students

before a one-shot instruction session. Specifically, Librarians might find it helpful to have students read the pages where Kovach and Rosenstiel introduce the way of skeptical knowing and the four models of journalism (p. 26-31).

In the epilogue, Kovach and Rosenstiel make their boldest claims on the importance of the ways of skeptical knowing. Most poignantly, they state that the information gap of the twenty-first century will be "between people who have the skills to create knowledge and those who are simply in a process of affirming preconceptions without ever growing and learning. It is the new gap between reason and superstition" (p. 201). They continue by stating that civic literacy, and therefore their ideas on the ways of skeptical knowing, should be reintroduced into middle and high school curricula in order to better prepare students for college and beyond. Additionally, they claim without a civically literate citizenry, democracy may be at risk.

It is heartening that a field outside of librarianship is calling for education reform which includes teaching students how to critically evaluate sources of information. Other professionals now see the need for teaching information literacy. Unfortunately, the authors did not identify, at any point, that librarians were already doing this type of work, which speaks to the fact information literacy tends to be "owned" by librarians and much more could be done to reach outside our profession. At the close of the book, I had a new appreciation for the relevance of information literacy, a feeling of vindication, and a motivation to promote more outwardly the work of librarians in the field of information literacy. Librarians' ideas and voices need to be heard more loudly in a world that seems to be craving guidance through the information fog.

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Apps for Tablets

It should be briefly noted that while the focus of this article is on using tools available directly via the web, be aware there are concept mapping apps available for tablet computer. Some of the tools mentioned in this article, such as MindMeister, have Android & iPad apps that allow a user to access their maps on the tablet, syncing and sharing information across devices. Search the App Store or Google Play Store to see if your concept map website also has an "app for that".

Wrap-Up

Although each has different strengths, all of the tools reviewed above are fairly easy and intuitive to use. For most students who possess basic information technology experience and/or skills, learning to use these tools will not present a significant challenge.

Concept mapping techniques can certainly be taught and undertaken without the use of online tools; however, we know that many of our students are preconditioned to prefer to work in this mode. You may find that for those students introducing them to concept mapping within the context of this type of technology may make them more receptive to the practice and willing to experiment with this method of exploring their research interests.

References

Novak, J. D. (2010). *Learning, creating, and using knowledge: Concept maps as facilitative tools in schools and corporations*. New York: Routledge.