

"Mendeley": A Review

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On its website, Mendeley (<http://www.mendeley.com/>) refers to itself as a "Reference Manager and Academic Social Network". In Wikipedia, it is categorized as a "Reference Management Tool". Similar products, such as Papers and Colwiz, call themselves "Personal Research Libraries" or "Research Management, Collaboration and Productivity in one place". These varying methods of classifying this new type of tool demonstrate the confusion about what Mendeley is and what it can do for the user. The answer is quite a lot.

Created in 2007 in London, Mendeley draws its name from the biologist Gregor Mendel and the chemist Dmitri Mendeleev whose research looked at cross pollination of plant traits and the prediction of undiscovered chemical elements. In a fitting analogy, Mendeley claims that users will similarly be able to "trace how ideas and academic theories evolve and cross-pollinate each other... and help you discover new literature based on the known elements in your library." Since its inception, Mendeley has grown exponentially and at the time of writing includes citations to almost 90,000,000 articles, and close to 100,000 registered users in the most popular discipline (biological sciences) alone. While it remains difficult to classify, however, it is clear that Mendeley builds on and combines traditional reference management tools such as RefWorks or EndNote, with academic social networking tools such as LinkedIn or academia.edu to create a super category of productivity tools that may even rival Google Scholar.

What Does It Do?

On a basic level, Mendeley stores citations and PDFs. So, if I were starting a new project and I found 30 papers that I was reading for my literature review, I could download them to my computer and add the PDFs to my desktop Mendeley client. Mendeley would store and organize these papers for me, including automatically

pulling out citation information from the PDF where possible. If the document's citation information does not automatically upload (scanned copies of ILL articles are problematic, for example) it is possible to add citation information by hand or to check and add the citation from Google Scholar. I can then sync the desktop Mendeley with the web-based version, as well as an iPhone or iPad app, which would enable me to organize or read citations and papers on the go. So far, this functions very similarly to traditional tools such as RefWorks or EndNote.

However, where Mendeley differs from traditional tools is that it also builds in an element of citation social networking. If, for example, I find a great article, I can search for this paper in the Mendeley database of user-stored citations to see related or similar research. I can also pull up citations from the original article bibliography and add these to my Mendeley account. It is then possible to use my institution's open URL resolver to check local library holdings, download the article PDF if it is available and add it to my personal library. This is not a completely seamless experience yet, and some parts are marked as experimental on the Mendeley website. However, when it works, it is impressive. Related research suggestions are drawn from tags that users add to citations as well as semantic analysis.

Finally, Mendeley offers strong people-oriented or collaborative tools too. On setting up an account with Mendeley, the user creates a profile of research interests (no Facebook style relationship questions here!) which populates the user directory. This can then be searched by user or research interest e.g. linguistics. People can also be added as contacts to build a network of colleagues. Alternatively, the user can also set their profile to be private. Due to the privacy features, it is not possible to see what other researchers are reading. Private, invite-only or open groups can also be set up, which allow people to colla-

borate on building shared collections of citations. This is useful not only for colleagues working together but also for people looking to build up collaborative bibliographies on specific research areas.

Logistics

There are three different levels of accounts; the basic free version allows for 500MB of personal space and 500MB of shared space as well as 5 private groups. Other plans range from \$5/month for 7GB space to \$10/month for 15GB. Mendeley integrates with Windows, Mac and Linux, as well as all browsers. There is also a wealth of plugins and extra features that cover most eventualities; specific highlights include the ability to import documents from other reference management tools and the ability to link Mendeley to Microsoft Office and Open Office. The web importer allows the importing of webpages and articles from academic databases such as ISI, EBSCO, and JSTOR, among others, although this is not as straightforward or useful as tools such as RefWorks that are supported by academic databases. Finally there is integration with most webmail clients in order to build contact lists, and for those who can't live without traditional social media, there is even the possibility to sign in using a Facebook profile.

Analysis

Mendeley is an impressive tool. It marries most of the functionality of traditional reference management tools with the growing collaborative nature of academia while allowing the user full control over documents and personal profiles. The related research feature is a remarkable attempt to capitalize on the "recommend" feature that Amazon uses so well, while acknowledging the importance of the academic conversation and communities of practice. This tool will be especially useful for graduate students who can take advantage of new technology to easily link to and learn from the expert research in their discipline, as well as providing another way to complement traditional research skills. The number of researchers already using this tool makes it extremely effective, as does the ability to create a virtual workspace to store and annotate PDFs.

Mendeley is not without its drawbacks. Its integration with academic databases is not as thorough as EndNote or RefWorks, and as databases protect their own citation managers, it is hard to imagine how it will become more user-friendly. Currently the web importer takes "snapshots" of article pages, rather than importing full citation or folder information. Consequently for researchers who rely heavily on easily dumping data into their citation manager this is likely to be ineffective. Another issue that is particularly relevant for libraries is the potential conflict with copyright and document sharing between groups. Private groups can share documents easily, thus potentially circumventing copyright restrictions. However, email has long facilitated similar document sharing between cross-institutional teams and the problem is not limited to Mendeley. Finally, mobile users are limited to Apple devices, which are the only supported apps.

Mendeley and Libraries

It is vital that libraries are aware of the possibilities of Mendeley. The tool is extremely popular among faculty and graduate students, and as a free, non-institutionally limited tool, its influence is only likely to grow. Specific library features can be hard to navigate however, for example, setting up the Open URL resolver, and additional help may need to be offered to researchers. Furthermore, the open nature of the group features does raise questions about copyright and the sharing of articles so it is vital that libraries are aware of how their resources may be being used.

In conclusion, Mendeley is an exciting tool that brings many new features to the world of scholarly communication. While traditional citation managers should not yet be forgotten, programs such as Mendeley and Colwiz have definitely shown how the power of Web 2.0 can encourage innovative and useful developments in research and academia.

Acknowledgements

My thanks go to my colleague Caroline Sinkinson who pointed out the potential problem with copyright.

