Keeping an Ear to the Ground

Evaluating Recent Developments in Citation Manager Technology with User Feedback

Carolyn Bishoff, Amy Claussen, Jody Kempf, & Megan Kocher
University of Minnesota Libraries
Poll - [http://z.umn.edu/cmpoll](http://z.umn.edu/cmpoll)

What citation managers do you support?

What citation manager do you recommend most?

Do you have an institutional subscription to a citation manager?
The setup: Where are we coming from?

- Large academic institution
- Currently support four citation managers at the Libraries
  - EndNote
  - Mendeley
  - RefWorks
  - Zotero
- Distributed expertise managed by a small group
- No recent overall comparison of citation managers
- Some data on users from some vendors
And then there was some big news from RefWorks...

... and very little follow-up.

Meanwhile, we ran into a Mendeley rep at a conference who tried to sell us on their institutional version.

This seemed like as good a time as any to do a serious evaluation of what our users needed and where we were spending our money.
Roundup: What’s New?
What’s new with EndNote X7?

● New reference types such as interview, podcast, conference and press release

● Advanced PDF handling renames your pdf’s during the import process based on your preferences.

● Install on 3 computers total per user. Use same product key to install endnote on both mac and windows (with standard single-user license)
What’s new with Mendeley

- Connect to other apps
  Shared logins and integration with Overleaf, Peerwith, Scopus

- Now accepting research data
  Mendeley Data, a new repository connected to ScienceDirect and Cell

- Enhanced user features
  Altmetrics (“Stats”), suggested articles (“Suggest”), prettier profiles
What’s New With RefWorks?
What’s New With RefWorks?

- Flow = RefWorks
- Totally new interface
- PDF metadata extraction
- PDF annotation
- Google Docs add-on
- Groups for sharing citations and documents
- Write-N-Cite does not work with Word 2016 for Mac
- More information -- FAQs, feature comparison
What’s new with Zotero

- works well in a variety of different languages

- Save button has moved:
  - from the address bar
  - to the toolbar
The Survey
Faculty and graduate student survey

- Which citation manager do you use most frequently?
- Please indicate how important each of the following features is to you in a citation manager.
- Have you ever reached or come close to reaching a storage space limit with your citation manager?
- Is there anything we have not covered in this survey that is very important to you in a citation manager?
- Department and Status
Response by Status (N=787)

Grad Students: 399
Faculty: 354
(blank): 19
Other: 15
Response by College (N=787)

- Science & Engineering: 207
- Health: 204
- Agriculture: 89
- None: 76
- Liberal Arts: 70
- Biology: 53
- Education: 51
- Management: 16
- Design: 9
- Public Policy: 8
- Law: 4
Citation Manager preferences

53% of faculty respondents use EndNote
16% of graduate students use EndNote

9% of faculty use Mendeley
46% of grad students use Mendeley
Subsets of users

**Citation Managers used by Grad Students (n=399)**

- EndNote: 64
- Mendeley (free version): 186
- Mendeley (paid version): 3
- Other: 50
- RefWorks: 31
- Zotero (free version): 59
- Zotero (paid version): 6

**Citation Managers used by CLA (n=68)**

- EndNote: 18
- Mendeley (free version): 7
- Mendeley (paid version): 1
- Other: 17
- RefWorks: 4
- Zotero (free version): 19
- Zotero (paid version): 2
### Important Features (n=787)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Required</th>
<th>Would like to have</th>
<th>Don’t need</th>
<th>Blank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offline Access</td>
<td>488</td>
<td>199</td>
<td>57</td>
<td>43</td>
</tr>
<tr>
<td>Support for diverse sources</td>
<td>436</td>
<td>244</td>
<td>65</td>
<td>42</td>
</tr>
<tr>
<td>De-Duplication</td>
<td>390</td>
<td>311</td>
<td>41</td>
<td>45</td>
</tr>
<tr>
<td>Storing PDFs</td>
<td>351</td>
<td>263</td>
<td>128</td>
<td>45</td>
</tr>
<tr>
<td>Sharing citations</td>
<td>294</td>
<td>328</td>
<td>123</td>
<td>42</td>
</tr>
<tr>
<td>Annotate/highlight PDFs</td>
<td>290</td>
<td>292</td>
<td>162</td>
<td>43</td>
</tr>
<tr>
<td>Tagging</td>
<td>206</td>
<td>312</td>
<td>163</td>
<td>106</td>
</tr>
<tr>
<td>Sharing documents</td>
<td>186</td>
<td>346</td>
<td>203</td>
<td>52</td>
</tr>
</tbody>
</table>
Most important features in a citation manager or what do our users want?

Top Five

- Offline access
- De-duplication of results
- Support for diverse sources
- Storing PDFs
- Sharing citations
What else?

Desired Features (Top 12, free response)

- Integration with MS Word: 46
- Multiple devices/platforms: 22
- Ease of use: 21
- Free/discounted: 21
- Export to citation style (APA, MLA): 19
- Import PDFs with citation: 13
- Integration with LaTeX: 12
- Export to BibTeX: 12
- Transfer between citation managers: 10
- Import citations from databases: 9
- Cloud access: 9
Less than 10% of responding faculty and graduate students use RefWorks

10% of respondents want additional storage beyond currently available free storage

BibTeX, Papers, JabRef are other commonly used citation managers
The Rubric
Applying the results

Features were weighted based on how they were ranked by survey respondents.

<table>
<thead>
<tr>
<th>Core Criteria</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offline access</td>
<td>20%</td>
</tr>
<tr>
<td>Support for diverse sources</td>
<td>20%</td>
</tr>
<tr>
<td>De-duplication</td>
<td>20%</td>
</tr>
<tr>
<td>Storing PDFs</td>
<td>10%</td>
</tr>
<tr>
<td>Sharing citations</td>
<td>10%</td>
</tr>
<tr>
<td>Annotate/highlight PDFs</td>
<td>10%</td>
</tr>
<tr>
<td>Tagging</td>
<td>5%</td>
</tr>
<tr>
<td>Sharing documents</td>
<td>5%</td>
</tr>
</tbody>
</table>
Applying the results

Write-in features were also weighted based on number of responses.

<table>
<thead>
<tr>
<th>Desired Features (Top 12, free response)</th>
<th>Bonus Criteria</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integration with MS Word</td>
<td>Integration with MS Word</td>
<td>40%</td>
</tr>
<tr>
<td>Multiple devices/platforms</td>
<td>Available on multiple devices/platforms</td>
<td>15%</td>
</tr>
<tr>
<td>Ease of use</td>
<td>Ease of use</td>
<td>15%</td>
</tr>
<tr>
<td>Free/discounted</td>
<td>Free/discounted</td>
<td>15%</td>
</tr>
<tr>
<td>Export to citation style (APA, MLA)</td>
<td>Export to specific citation styles</td>
<td>15%</td>
</tr>
<tr>
<td>Import PDFs with citation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integration with LaTeX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Export to BibTeX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transfer between citation managers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Import citations from databases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cloud access</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Grading the citation managers

<table>
<thead>
<tr>
<th>Grade (core criteria)</th>
<th>Point value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perfect</td>
<td>Weight x 50pts</td>
</tr>
<tr>
<td>Great</td>
<td>Weight x 40pts</td>
</tr>
<tr>
<td>Adequate</td>
<td>Weight x 30pts</td>
</tr>
<tr>
<td>Poor</td>
<td>Weight x 20pts</td>
</tr>
<tr>
<td>The Worst</td>
<td>Weight x 10pts</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade (bonus criteria)</th>
<th>Point value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perfect</td>
<td>Weight x 5pts</td>
</tr>
<tr>
<td>Great</td>
<td>Weight x 4pts</td>
</tr>
<tr>
<td>Adequate</td>
<td>Weight x 3pts</td>
</tr>
<tr>
<td>Poor</td>
<td>Weight x 2pts</td>
</tr>
<tr>
<td>The Worst</td>
<td>Weight x 1pt</td>
</tr>
</tbody>
</table>
Creating a rubric

Maximum possible points: 55 (50 + 5 bonus)
Citation managers are scored on a scale and receive points for each category
Available at [z.umn.edu/cmrubric2016](z.umn.edu/cmrubric2016)

<table>
<thead>
<tr>
<th>Criteria (out of 50 points)</th>
<th>Perfect</th>
<th>Great</th>
<th>Adequate</th>
<th>Poor</th>
<th>The Worst</th>
</tr>
</thead>
<tbody>
<tr>
<td>De-duplication</td>
<td>10</td>
<td>8</td>
<td>6</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Offline access</td>
<td>10</td>
<td>8</td>
<td>6</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Support for diverse sources</td>
<td>10</td>
<td>8</td>
<td>6</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Sharing citations</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Storing PDFs</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Annotate PDFs</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Tagging</td>
<td>2.5</td>
<td>2</td>
<td>1.5</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Sharing documents</td>
<td>2.5</td>
<td>2</td>
<td>1.5</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Bonus (out of 5 points)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integration with MS Word</td>
<td>2</td>
<td>1.6</td>
<td>1.2</td>
<td>0.8</td>
<td>0.4</td>
</tr>
<tr>
<td>Available on multiple devices/platforms</td>
<td>0.75</td>
<td>0.6</td>
<td>0.45</td>
<td>0.3</td>
<td>0.15</td>
</tr>
<tr>
<td>Ease of use</td>
<td>0.75</td>
<td>0.6</td>
<td>0.45</td>
<td>0.3</td>
<td>0.15</td>
</tr>
<tr>
<td>Free/discounted</td>
<td>0.75</td>
<td>0.6</td>
<td>0.45</td>
<td>0.3</td>
<td>0.15</td>
</tr>
<tr>
<td>Export to specific citation styles</td>
<td>0.75</td>
<td>0.6</td>
<td>0.45</td>
<td>0.3</td>
<td>0.15</td>
</tr>
</tbody>
</table>
Testing the rubric

8 citation manager “experts” at the UMN rated them on all these criteria, based on a 1 (worst) - 5 (best) rating scale.

Ratings were applied to the rubric, and here are the averaged results:

<table>
<thead>
<tr>
<th>Tool</th>
<th>Grade</th>
<th>Percent</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>MENDELEY (FREE)</td>
<td>B+</td>
<td>88%</td>
<td>48.6/55</td>
</tr>
<tr>
<td>ENDNOTE</td>
<td>B-</td>
<td>82%</td>
<td>45.4/55</td>
</tr>
<tr>
<td>ZOTERO</td>
<td>C+</td>
<td>78%</td>
<td>43.2/55</td>
</tr>
<tr>
<td>REFWORKS CLASSIC</td>
<td>C-</td>
<td>70%</td>
<td>38.7/55</td>
</tr>
</tbody>
</table>

Available at z.umn.edu/cmrubric2016
Using the rubric

Rubric scores help explain why Mendeley and Endnote are popular among graduate research assistants and faculty. They score well on features that are important to that population.

Information from the rubric scores can be combined with other data (cost, undergrad surveys, use cases) to evaluate long-term investments in each tool, such as:

- Renewing/purchasing subscriptions
- Instruction
- Guidance for librarians on citation managers to recommend to specific populations

Available at z.umn.edu/cmrubric2016
Where do we go from here?

To do:

- Give liaisons college-level reports from user survey
- Talk more with vendor reps about our concerns
- Look at “off-label” uses of RefWorks to see if we could support those with other tools
- Engage with other audiences for our citation managers (e.g. librarians, undergraduate students) to find out what is important to them
- Weigh other, more slippery factors (e.g. customer support)
- IF we do decide to change our citation manager offerings, create a timeline and plan for migrating and assisting users.
Discussion

- Has anyone else done a similar survey?
- What features are most important to your users?
- What is your users’ biggest problem with citation managers.
- Share your experiences with a citation manager in terms of customer support from the vendor (or lack of customer support) ;}
Resources

- Weighted rubric
- Our survey results (Data Repository for University of Minnesota)
Image Credits

I listen | Flickr - Photo Sharing! : taken from - https://www.flickr.com/photos/meolog/14267000334/in/photolist-nJJ79o-8MhX5Z-9ZWaZ-atRJ9b-ojNab-3G34h-ARu8sz-A4sw8-4qMj7-9Z8yoC-6Dsd4-5eT8b5-zmmbyK-5ZigUu-So8gGC-LZdCG-dsQ3G5-g8WcsU-U-4FM5k-53F XF-jfyyqg-5Ddtb9-8cfywE-byfccW-g9lIG6-pNlq3p-6iFAuU-6hiwhr-pjLoaw-8h75y3-djafdx-KNQAI-pg3xr-9UXMuU-cM9RF-8MLkg-edo3g5-8zDAf7-7CXm6D-7mQIfV-0kJcG-b8W85B-r3gUIWw-5CVQjy-VX6dM-73K3j-9Ye6-7U6fy5-SSdrc7-7dpwyw/Author: Olaf Meyer https://creativecommons.org/licenses/by-nc-sa/2.0/

Wonder Woman [Original and New 52 Versions] | Flickr - Photo Sharing! : taken from - https://www.flickr.com/photos/han_shot_first/16066856454/in/photolist-qtLQEs-qfDcmC-BNYB54-hyLDLu-BNRJGj-cytM13-poxVxa-bUxq7K-phant9K-e32NN6-rB7gbW-bao7Fl-cCWxhw-48q8x4-4y3aqg-E1Qvmr-FaByk-pete9D+3xAh+ciaZi-oA5p44-dQVVm4-cbLDbG-cP6Vg5-rpPGV-eGXYDQ-qfKrlUn-q8oXr-8z9rd4-7K8PvM-nPnH9k-7k5PUF-7k5PEu-7k1UaT-FGJMTp-Abm3vW-s3Qofs-71BuPw-BbspEy-cp4cTO-5eZMkN-4Nfuxi-dpzBqX-CerWPN-4UZvHK-4UZvRe-bWYIys-fhwpux-8bfF7w/Author: Michael Li https://creativecommons.org/licenses/by-nc/2.0/

Reading by Gerald Wildmoser from the Noun Project

speech by Aneeque Ahmed from the Noun Project

Monster by Paulo Sá Ferreira from the Noun Project

Llama by Gilda Martini from the Noun Project

Question by Remy Medard from the Noun Project

Multiple Choice by Aenne Brielmann from the Noun Project