Changing research workflows at the University of Pretoria (UP) and the CSIR: results of an international survey

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Content

- Background of the international survey
- The survey (international, UP, CSIR)
- Example of the survey
- Examples of the results (data)
- International, UP and CSIR trends
- So what - what should the role of the research library be?
Many new websites and online tools have come into existence to support scholarly communication in all phases of the research workflow. To what extent researchers are using these and more traditional tools has been largely unknown. This 2015-2016 survey aimed to fill that gap. Its results may help decision making by stakeholders supporting researchers and may also help researchers wishing to reflect on their own online workflows. In addition, information on tools usage can inform studies of changing research workflows.
International survey

- The survey ran from the 10th of May 2015 to the 10th of February 2016
- In over 9 months the survey received 20,663 responses
- More than 100 academic institutions and publishers used the custom URL and distributed it to researchers in their institutions
- The survey was written in 7 languages which contributed to the high response rate
- The response rate is estimated at 1.5%
- The survey is part of an ongoing effort to chart the changing landscape of scholarly communication
  http://f1000research.com/articles/5-692/v1
UP & CSIR survey

- Both the UP and the CSIR took up the survey and were each given a unique custom URL which was then distributed to researchers
- 19 January - 10 February: period of the survey
- UP received 183 results (6.5% response rate)
- CSIR received 43 results (5.7% response rate)
- NB: This survey (international & local) is a non-representative survey and results can not be generalised: http://www.sciencedirect.com/science/article/pii/S2212977413000331
- This is an example of big data research where hypotheses can be deduced from the data for further research
- Interesting trends and patterns can also be identified
The Survey
Research workflow tools

Six research workflow phases, with examples of research workflow tools & sites:

1. **Discovery**: Google Scholar, Paperity, ResearchGate, Deepdyve, Browzine, Mendeley
2. **Analysis**: R, SPSS, Matlab, OpenSci, Benchfly
3. **Writing**: Word, Google, LaTeX, Scalar, Endnote, Zotero
4. **Publication**: arXiv.org, IR, bioRxiv, GitHub, Figshare, Dryad, BitBucket, Scopus, SherpaRomeo, Topical journal, Data journal
5. **Outreach**: SlideShare, Figshare, Speakerdeck, Wikipedia, Pint of Science, Famelab, ORCID, Academia.edu
6. **Assessment**: Peerage of Science, PubPeer, PaperCritic, Altmetric, ImpactStory, Web of Science, Scopus

World Participation in the survey

Number of survey respondents per 100 billion US$ GDP for all countries with at least 1 response at the end of the survey period – February 2016

Automatic feedback received by survey participants

Innovative and more traditional tools in your workflow and that of your peer group (PhD student)
a. What tools/sites do you use to search literature / data / etc.?

- Google Scholar
- Web of Science
- Scopus
- Mendeley
- WorldCat
- PubMed
- Papperity
- (and also others)
Data example
What tool/sites do you use to search literature/data?

Research activities

Search literature / data etc.
Get access to literature / data etc.
Get alerts / recommendations
Read / view / annotate
1. Search

What tools/sites do you use to search literature / data / etc.?

Choose as many as you like

- Google Scholar
- Web of Science
- Scopus
- Mendeley
- WorldCat
- PubMed
- Paperly
- (and also) others
- (and also) others
Filtering example

Search literature / data / etc (PRESET ANSWERS)

<table>
<thead>
<tr>
<th>Filter by Research role</th>
<th>Filter by Discipline(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filter by Year of first scholarly publication</td>
<td></td>
</tr>
<tr>
<td>Filter by Country of current (or last) affiliation?</td>
<td></td>
</tr>
</tbody>
</table>

Search literature / data / etc (OTHERS)

<table>
<thead>
<tr>
<th>Filter by Research role</th>
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<tbody>
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<td>Filter by Year of first scholarly publication</td>
<td></td>
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</tr>
</tbody>
</table>

- Google Scholar - 18k
- Web of Science - 8k
- PubMed - 8k
- (and also) others - 7k
- Scopus - 5k
- Mendeley - 3k
- WorldCat - 2k
- Papery - 549

20427 of 20663 respondents answered this question

http://dashboard101innovations.silk.co/
## Most used tools & sites (preset answers)

<table>
<thead>
<tr>
<th>Research Phase</th>
<th>Research Activity</th>
<th>International</th>
<th>University of Pretoria</th>
<th>CSIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discovery</td>
<td>Search</td>
<td>Google Scholar</td>
<td>Google Scholar</td>
<td>Google Scholar</td>
</tr>
<tr>
<td></td>
<td>Get access</td>
<td>Institutional Access</td>
<td>Institutional Access</td>
<td>Institutional Access</td>
</tr>
<tr>
<td></td>
<td>Alerts</td>
<td>Google Scholar</td>
<td>Google Scholar</td>
<td>Google Scholar</td>
</tr>
<tr>
<td></td>
<td>To read, view &amp; annotate</td>
<td>Acrobat Reader</td>
<td>Acrobat Reader</td>
<td>Acrobat Reader</td>
</tr>
<tr>
<td>Analysis</td>
<td>Data &amp; text</td>
<td>MS Excel</td>
<td>MS Excel</td>
<td>MS Excel</td>
</tr>
<tr>
<td></td>
<td>Sharing notes, protocols &amp; workflows</td>
<td>Other (OSF / Dropbox)</td>
<td>Other</td>
<td>Other</td>
</tr>
<tr>
<td>Writing tools</td>
<td>Write and prepare manuscripts</td>
<td>MS Word</td>
<td>MS Word</td>
<td>MS Word</td>
</tr>
<tr>
<td></td>
<td>Reference management</td>
<td>EndNote</td>
<td>EndNote</td>
<td>Refworks</td>
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## Most used tools and sites (preset answers)

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<th>University of Pretoria</th>
<th>CSIR</th>
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</thead>
<tbody>
<tr>
<td>Publication tools</td>
<td>Archive &amp; share publications</td>
<td>ResearchGate</td>
<td>ResearchGate</td>
<td>Institutional Repository</td>
</tr>
<tr>
<td></td>
<td>Archive &amp; share data &amp; codes</td>
<td>Github</td>
<td>Other</td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>Deciding which journal to submit a manuscript to</td>
<td>JCR (impact factors)</td>
<td>JCR</td>
<td>Scopus</td>
</tr>
<tr>
<td></td>
<td>Publishing</td>
<td>Topical journal (traditional)</td>
<td>Topical journal (traditional)</td>
<td>Topical journal (traditional)</td>
</tr>
<tr>
<td>Outreach tools</td>
<td>Archive/share posters and presentations</td>
<td>Slideshare</td>
<td>Slideshare</td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>Spreading research outside academia</td>
<td>Twitter</td>
<td>Twitter</td>
<td>Twitter</td>
</tr>
<tr>
<td></td>
<td>Researcher profiles</td>
<td>ResearchGate</td>
<td>ResearchGate</td>
<td>ResearchGate</td>
</tr>
<tr>
<td></td>
<td>Peer review outside normal Journal peer review</td>
<td>PubMed Commons</td>
<td>Publons</td>
<td>PubPeer; Peerage of Science, PaperCritic</td>
</tr>
<tr>
<td></td>
<td>Measure impact</td>
<td>Web of Science</td>
<td>Scopus</td>
<td>Scopus</td>
</tr>
</tbody>
</table>
Do you support open access goals? 90%

Do you support open science goals? 86%
Do you support open access goals?

- Yes: 77%
- No: 14%
- I don't know: 9%

Do you support open science goals?

- Yes: 82%
- No: 9%
- I don't know: 9%
What is your research role?

31% of the total respondent group identified themselves as professors/assistant professors, 26% as bachelor/masters students, 16% as PhD students, 9% as post-doctoral students, 5% as librarians and the remaining respondents identified themselves as “other”, publisher or industry/government employees.
What is your research role?

39% of the total respondents identified themselves as industry/government, 14% as bachelor/masters students, 12% as postdoctoral students, 12% as PhD students, 12% as “other”, 9% as librarians and the remaining 2% identified themselves as professor/associate professor/assistant professor.
So what - what should the role of the research library be?

- Research libraries and research librarians should tap into this trove of research workflow data to identify what their researchers are doing.
- More in-depth surveys, e.g. interviews and focus groups could be used to verify the results in your institution.
- Should research libraries take on the new role of keeping tabs on new research tools and sites, and train researchers how to use it?
Bibliography