

Help or hype? Assessing digital literature review tools for graduate students

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Slides: go.illinois.edu/tlgs24

Introductions

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Agenda

Background

Themes

Method

Analysis

Brief review of selected
tools

Discussing tools with
grad students

A question for you:

Have you received questions from graduate students about using literature review tools?

What tools do you receive questions about the most often?

Why these tools are of interest

Literature review is a core task of conducting any research project, especially for grad students.

Graduate work is both task based and a process of socialization (1). Learning and analyzing the literature is part of this process.

Why these tools are of interest

Growing number of tools and interest in using them among researchers.

Tools are only part of the process of conducting research and should always be approached critically.



Digital literature review
tools: help or hype?

Method

Broad exploration of available tools (data collected by graduate assistants) and determining what sort of details we would want to investigate further



Evaluation rubric developed for consistently exploring the tools we chose as our focus



Each member of the research team evaluated two tools and filled in the rubrics documenting their evaluations and observations

Tools explored

Elicit

JH

Research Rabbit

NT

Semantic Scholar

JH

Connected Papers

CB

scite

NT

Inciteful

CB

Major areas of focus in the evaluation rubric

Access: is the tool free? Do you need an account?

What does the tool provider say that it does?

What does the tool actually do?

What are your reactions to the tool as a librarian?

Elicit

“Analyze research papers at superhuman speed”

Extracts data from PDFs (or from your Zotero library) to a matrix display.

Search for papers using natural language questions. Results include a summary and matrix display.

Get a list of concepts from a topic search.

Semantic Scholar

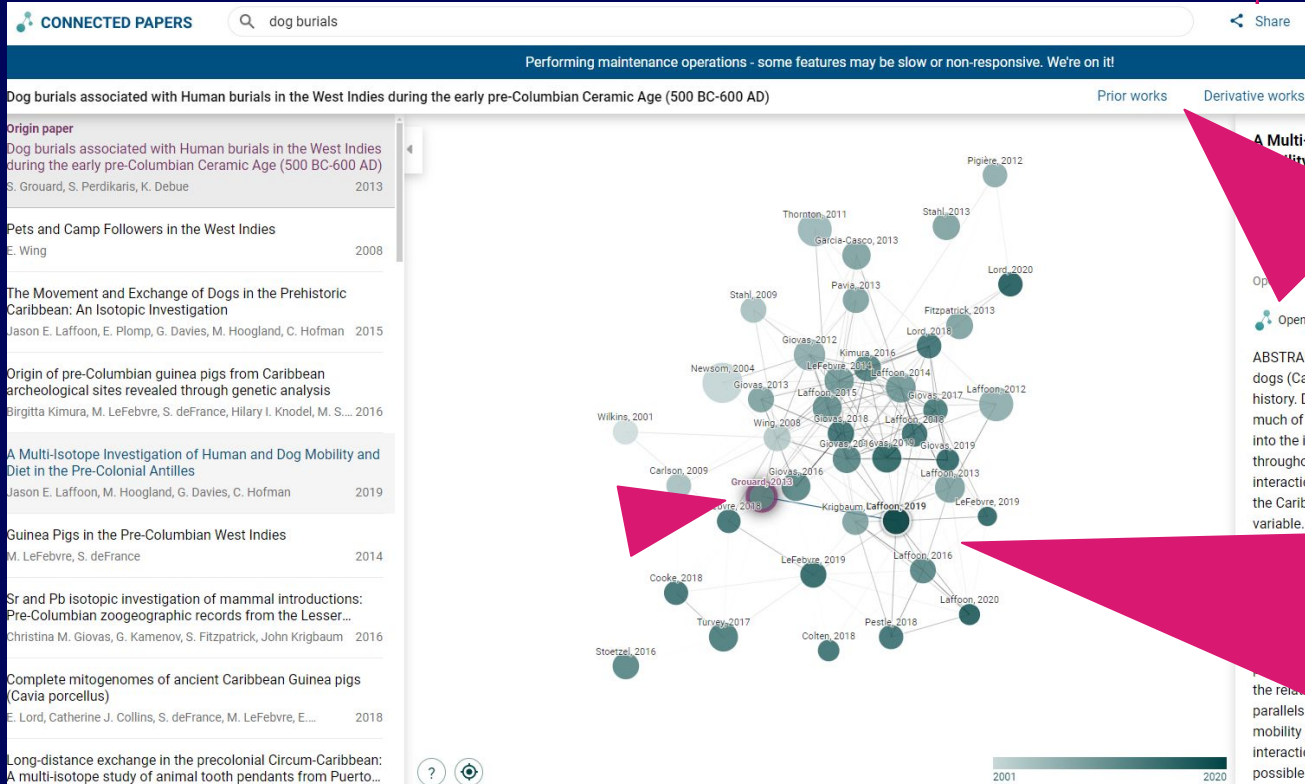
“...a smarter way to search and discover research”

Save papers to a library and get recommended articles

Ask questions to better understand a paper (using AI)

See citing articles with types of citations

Connected Papers



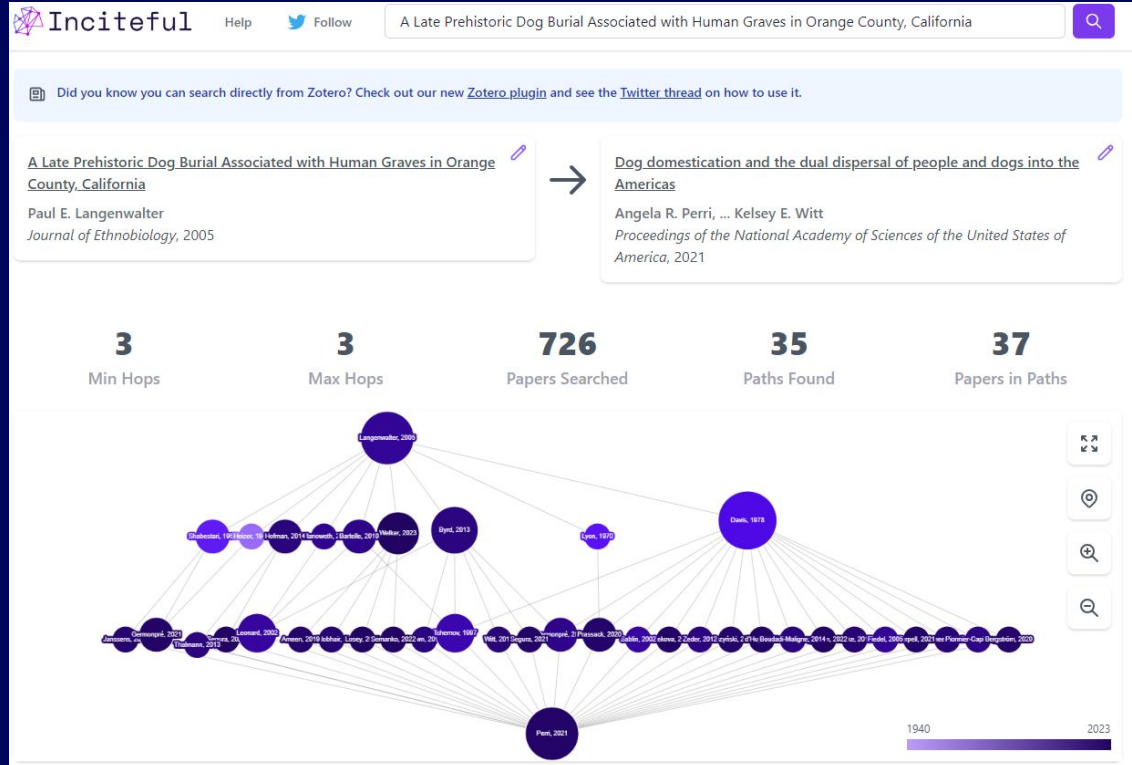
Access to prior works and derivative works

Papers connected by similarity and citations.



Inciteful

- Top Journals
- Similar Journals
- Similar Papers
- Most Important Papers
- Review papers
- Most important recent papers
- Recent papers by top 100 authors
- Top authors
- Upcoming authors
- Institutions



Paper discovery and literature connector

ResearchRabbit

“Reimagine the research process”

“Supercharge your workflows”

“Spotify for papers”

scite

“scite **saves you hours** by surfacing critical engagement around a topic, so you don't have to read every paper”

“Using scite to **speed up literature reviews** and critical analysis”

“**Identify complex ideas** in the literature to surface them in your writing”

“scite helps you **find research gaps**”

Theme: Who is the audience for the tools?

Academic researchers & interdisciplinary scholars

“Machine learning researcher, student or philosopher”

Pharma, Industry, Non-academics

Experts and novices (“quickly get up to speed”)

Absent: librarians

*who can pay for the tool?

Literature
review..or
dissertation?

Theme: Time and the savings thereof

Buzzwords: surfacing, optimize, coverage

Time, time, time: How quickly does a graduate student's literature review need to be written? What is the problem with a literature review taking a long time?

Task vs socialization. Literature review is the work of the discipline, and knowing how to do it matters.

Theme: Depth of coverage

What matters to a graduate student's learning process? What do their advisors want?

Landing pages appeal to a fear of missing *something*

Across the 6 apps we tried, various claims of coverage: more than 125 million papers, 50,000 papers, 240 million papers, 2 billion citations

Theme: How does the tool actually support research?

Typology of shows connections between literature to more extensive supporting data analysis

Extractive or analytical tools

Scite, Elicit,
Semantic Scholar
(analytics in beta)

Connector or discovery tools

Research Rabbit, Inciteful,
Connected Papers, Semantic
Scholar

Help or hype? Constructing the literature review process

Old vs new ways of doing a literature review (as presented by product vendors):

- Old: citation chaining or snowballing, using full text and synthesizing into a review of the literature. Time consuming! Fear of missing a vital work!
- New: Efficiency and completeness through the large data sets and AI tools for searching and analysis, including the relationship between works. Less time consuming? Less likely to miss something important?

Hype or help? Time savings

- What does it mean to “save time” on the literature review process?
- Can you save time if you don't yet know the literature well?
- Getting access to the full text will still be time consuming - unless readers are just not going for the full text at all. Are these tools become the **site of reading and analysis?**

Help or hype? Coverage and inclusion

Disciplinary coverage varies greatly (2). How do researchers know this before they invest time (and maybe money) in a tool?

We also note a focus on research articles and suspect that tools that extract data are going to work better for articles that are well formatted for ingest, including consistent sections for methods/findings, etc. Fields where published work in this format may not be well suited for these tools.

Help or hype? Analyzing literature

The tools we explored go beyond listing sources to including analysis of research literature.

How does this fit into the process of understanding previous work for developing a literature review?

How do researchers perceive the analysis capabilities of the tools?

Reflection: Would you recommend to students?

optimize, v.

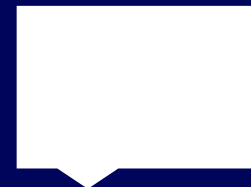
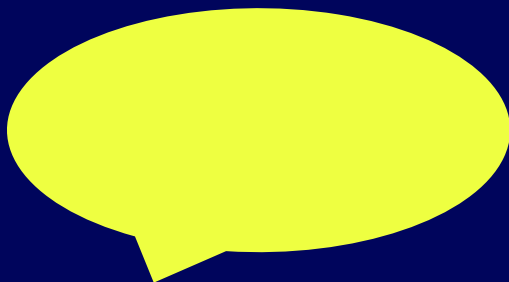
transitive. To render optimal, to make as good as possible; to make the best or most effective use of.

(Oxford English Dictionary Online)

Recommendations: How to discuss in library and with students

- What kind of literature review is it? Data/evidence driven or argumentative/persuasive?
- How many other tools and applications are they using right now?
- Can one of the tools potentially “solve” a problem the student has? Time crunch, lack of organization, trouble keeping up with new research, not able to identify gaps, etc.
- What is the student’s comfort level with new applications will it help or hinder their progress and learning?

Discussion: Your POV



Citations

- (1) Lehnen, C. A. (2021). Skills, support networks, and socialization: Needs of dissertating graduate students. *The Journal of Academic Librarianship*, 47(5), 102430. <https://doi.org/10.1016/j.acalib.2021.102430>
- (2) Gusenbauer, M. (2022). Search where you will find most: Comparing the disciplinary coverage of 56 bibliographic databases. *Scientometrics*, 127(5), 2683–2745. <https://doi.org/10.1007/s11192-022-04289-7>