

Using AI as a Research Tool: Practical Strategies for Educators and Emerging Scholars



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Steve Baule

Session Description

This on-demand session will explore how generative and task-specific AI tools can be used throughout the research process, from topic generation and literature reviews to survey design, data analysis, and presentation. Participants will be introduced to a range of free and paid tools with examples of how each can support specific research tasks in both academic and practitioner settings.

- ✓ Brainstorm and refine research questions
- ✓ Conduct deep search literature reviews
- ✓ Summarize key findings and code qualitative data
- ✓ Draft IRB documentation and consent forms
- ✓ Visualize results and prepare publication-ready materials.



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A Little Context About Me

- Loras College
- University of Iowa
- Northern Ill. University
- Loyola University of Chicago
- History teacher in Cascade, IA
- Library media specialist in Saint Charles, IL
- High school principal and assistant principal
- Assistant superintendent for information technology
- PK-12 superintendent
- Currently in higher ed

Why AI Involvement

Why AI Matters for Researchers

- Exploding volume of scholarly literature
- Time constraints for practitioner-scholars
- AI as a cognitive exoskeleton; not a shortcut

AI Is *Not* a Shortcut assuming:

- AI does not make analytic decisions
- The researcher retains epistemic control
- All interpretations are reviewed, justified, and documented
- An AI-use disclosure is included in the methodology section

Notebook LM Example

- Added all the articles into NotebookLM
- Added my Word doc notes as well
- Was able to ask it questions, to find which article to go to

Professionalization in the U.S. Army Officer Corps During the Age of Jackson

WILLIAM B. SKELTON
University of Wisconsin–Stevens Point

A striking paradox of American history in the first half of the nineteenth century was the appearance of a distinct military profession in a society generally considered to be rugged, fluid, undisciplined, and egalitarian. While military historians have recognized this development—dramatically revealed in the comparative performance of the Regular Army in the War of 1812 and in the Mexican War—few have placed it in a broad historical context. Those who have done so have attributed it to one of two basic causes: the unique military interests of the Southern plantation aristocracy, or an ambiguity in American character which at once distrusted a military elite and tolerated it as a reflection of a popular martial spirit.¹ In either case, the Regular Army emerges as a historical

The screenshot displays the NotebookLM interface. On the left, a 'Sources' panel lists several documents, including 'Ailes-PowerStatusWeal...', 'Appraise_purchasesyst...', 'Conway-SubdueAmeric...', and 'Crisis_Poand.pdf'. The main chat window shows a user's query: 'Officers_social_status'. The AI response provides a summary of the sources, stating they examine the 'evolution of European and American military structures between the seventeenth and early twentieth century' and the 'professionalization of the officer corps'. The response highlights 'noble dominance, strict behavior, and emerging educational requirements' and notes that the texts analyze the 'social composition of the military', including class hierarchies, recruitment, and social opportunities. A 'Start typing...' input field is visible at the bottom of the chat. Below the chat, a note reads: 'NotebookLM can be inaccurate; please double check its resp...'. On the right side of the interface, a preview of the source document 'Officers_social_status' is shown, featuring a circular seal and the title 'Pranks in Transition: Society and Politics under the Stein Reform Ministry of 1808' by Marion W. Gray.

Journal of the Society for Army Historical Research 92 (2016), 148-162

THE COMMISSIONING OF NON-COMMISSIONED OFFICERS, 1725-1792

J.A. HARRISON

On their celebrated trip through the Scottish Highlands in 1771, Boswell and Dr. Johnson, having dined with the gentlemen of the 71th Foot in garrison at Fort George Anderson and, a few days later, having breakfasted, merrily, with three officers of the 103rd Foot at Fort Augustus, encountered another soldier as he sat at Glattonmore. Boswell wrote: 'A mid-capt of the 11th regiment, whether officer, or only sergeant, I could not be sure, came in the shape of a man to the mountain in 1800-01. He had not a remnant left of his hair, and he, the modern reader must wonder, that two generations could not distinguish between an officer and an NCO.'

Although it is well known that it was the practice in the 18th-century British Army to commission capable and deserving non-commissioned officers, little has hitherto been known of their number, or of the details of their service, or about what was achieved by such individuals once accepted above the regimental officers. Nor is it known what might be attained by their children once under the 'patronage' of the more influential of their fellow officers. Two examples might be given, before proceeding.

Christopher Green was an Irishman who, born in 1730, enlisted in the 37th Foot in Ireland in 1754 and, twelve years later, by which time he had reached the rank of sergeant, was commissioned as a mid-capt in the regiment in April 1760 in a cadetship (de facto rank) promotion equivalent to that of 1760. He was killed in action with the 37th at Minden on 1 August 1759. While serving, Green had married Elizabeth Hamilton of Monaghan and had four children with her, all 'born in the army': Nicholas, born in 1742; Christopher Jr. in 1747; Charles in 1749; and a daughter Anne, but both unnamed.

Two of Green's sons were to be commissioned in the regular army and the third in the Royal Artillery. Nicholas was made ensign in the 71st in 1759 and died a lieutenant with the regiment in Minorca in 1768, while Christopher Jr. was admitted a cadet in the Honourable East India Company's service in 1770 and was made lieutenant-governor in the artillery of the Bengal presidency in 1771. When he died at Calcutta in 1803 he was a major-general and Commander-in-Chief of the Bengal Artillery. This was remarkable enough for a common soldier's son, but Charles's success was the more so. Entered as a cadet in the Royal Military Academy, Woolwich in 1760, he went on to graduate with the 1st Foot to the diamond-shaped West Florida post where, in 1768, he was commissioned ensign in the corps. Promoted captain in the 1st in 1778 and major there in 1788, he was knighted in 1803, was created baronet in 1805, and

¹James Russell, *The Band of a Fair and Faithful and Samuel Johnson, LL.D. London, 1790*, p. 101.

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This content downloaded from 93.47.93.104 on Tue, 20 Jun 2016 12:15:17 UTC All use subject to [http://about.jstor.org/terms](#)

AI as a Cognitive Exoskeleton

AI didn't do my analysis—it reduced mechanical workload so I could spend more time on theory, interpretation, and scholarly judgment. That is cognitive exoskeleton at work, not academic outsourcing.

A researcher is evaluating the effectiveness of a district's new AI-supported formative assessment initiative. The student has 18 semi-structured interview transcripts from principals and instructional coaches and limited time to conduct first-cycle coding.



An Example

Without AI Support

- Read all transcripts manually 6–8 hours
- Develop initial codebook 2–3 hours
- First-cycle coding 8–10 hours
- Summarize emerging themes 2–3 hours

Total: ~20–24 hours

With AI Support

- AI-assisted first-cycle coding 2–3 hours
- Human validation & refinement 2–3 hours
- Thematic synthesis & writing 2–3 hours

Total: ~7–9 hours

The AI Supported Process

Step 1 – AI-Assisted Open Coding

Prompt: “Apply open coding to the following transcript excerpt. Identify possible codes related to leadership decision-making and instructional change.”

AI produces candidate codes such as:

- Perceived instructional efficiency
- Data-driven leadership confidence
- Professional learning gaps

Step 2 – Human Validation & Refinement

The student reviews all AI-generated codes and deletes weak or vague codes, Adds theory-aligned codes (e.g., *distributed leadership, improvement science cycle alignment*); Revises language to match the conceptual framework

Step 3 – Thematic Synthesis

Prompt: “Group these validated codes into preliminary themes aligned to the CIPP evaluation model.”

AI suggests thematic clusters. The student:
Rejects two groupings as conceptually unsound
Reorganizes themes to better fit the literature
Writes analytic memos manually

Some Basic Examples

From Curiosity to Research Questions

Help to identify potential research avenues

- Prompt: Review the attached articles and suggest 5-6 potential research questions

Topic scoping and gap identification

- Prompt: Generate 10 researchable questions on AI-supported assessment

Revise draft research questions

- Prompt: Rewrite and suggest variables, designs, and theories

Some Prompt Cheats (thanks to ChatGPT)

- TL;DR
- ELI5
- FAQ
- YOLO
- TMI
- IMHO
- Pros/Cons
- SWOT
- FAQ

As an example, this prompt generated a duplicate among the ten examples.

Deep Search Research Tools

[ChatGPT's Deep Research Tool] is much like Wikipedia itself, it's a good place to start your research and a bad place to end it. Deep Research can help you get a fast overview of a topic and suggest research to review, but actually assessing that research and deciding what implications it has is still best performed by a human.

Erik Ofgang, Tech & Learning, 8 July 2025

Deep Search Basics

Use AI to identify themes, methods, and gaps

Which tool to choose depending on your need:

- If you're doing academic research (papers, literature review): go with Elicit.
- If you're doing market analysis / strategy: ChatGPT Deep Research or Gemini Deep Research might suit.
- If you need something fast & lightweight for general research/gathering: Perplexity is good.
- If you deal with multilingual sources or need to build a knowledge-base: consider Sider.

More about AI Search Tools

Beyond the tools available within the more common generative AI tools, there are a number that are entirely devoted to deeper research.

- Semantic academic search tools such as Elicit, Research Rabbit, and Consensus
- AI-enhanced databases such as Gale in Context: High School or ProQuest Education Database
- Browser-integrated extensions that refine search results in real-time, such as Perplexity AI's Pro Search or Google Scholar's advanced filters

Reasons to use Deep Search Tools

- Potential for Improved Research Relevance
- Opaque Algorithms and Bias in Traditional Results
- Age-Inappropriate Content and Misinformation
- Academic Integrity
- Equity and Access Gaps

Concerns with Deep Search Tools

- Over-Reliance and Reduced Critical Thinking
- Guided Access to Credible Sources
- Time Efficiency and Cognitive Support
- Democratization of Research Skills

Deep Search Example

Prompt: "Hello! I am a preservice adapted physical education (APE) teacher, and I want to see which states in the US mandate adapted physical education licensure for those who are implementing APE services to students with special needs. Also, could you give me an overview of the attributes a student would need to demonstrate in order to qualify for adapted physical education services?"

- *From Dillon Martinez*

With Grok, an AI constructed by XAI. Taking 2 minutes and 11 seconds to complete the research, Grok examined 77 webpages and delivered results that demonstrated both accuracy and methodological sophistication. Grok accurately identified the 14 states that require additional certification, including Washington state's recent 2024 addition, a detail that tests whether tools can capture very current policy changes. More importantly, Grok demonstrated nuanced understanding of the regulatory landscape with this crucial note:

Historical Example

Prompt:

Can you find all the information possible on the 75th Regiment of Foot in the British Army that was raised in 1778?

Response:

Google Gemini's Deep Search tool cited four sources in its final two-page summary but identified 32 sources that it reviewed. Gemini covered the information of the regiment available via Wikipedia, that it was raised in Wales, and generally served in Wales. Some of the officers were sent to serve in America. Although none of the officers served in America after joining the 75th Foot, a few officers served in America prior to serving with the 75th. Gemini wrote its summary in such a way that it raised several questions about the 75th that should be further investigated.

Supporting Methodologies

AI for Qualitative Coding

- Support open, axial, and thematic coding
 - Prompt: Code excerpts using constant-comparative method
- Review raw data and look for trends
- Clean data and explain outputs
 - Prompt: Translate statistics into practitioner language
- ChatGPT + Python, Excel Copilot, Flourish, Power BI Copilot
 - Use for charts and dashboards, create images

Survey Design

Generate items, check bias, suggest reliability improvements

- Prompt: Create 15-item Likert scale survey

Modify a given survey for a different audience

Draft a survey cover letter



Drafting IRB and Consent Forms

- Prompt: Draft IRB-compliant consent form based on the attached
- Human review is mandatory of all AI driven work product

Survey Tools

The screenshot shows the 'ANALYZE RESULTS' step of a survey analysis process. The survey title is 'WSU_EndofCourse_Survey'. The navigation bar includes 'SUMMARY', 'DESIGN SURVEY', 'CONNECT APPS', 'COLLECT RESPONSES', and 'ANALYZE RESULTS'. Below the navigation bar, there are tabs for 'Question summaries', 'Insights and data trends' (which is active), 'Individual responses', and 'Dashboards'. A 'Rules' panel on the left shows 'No rules applied'. The main area displays 'RESPONDENTS: 128 of 128' and a section titled 'Insights' with four cards: 'TOTAL RESPONSES: 128', 'COMPLETION RATE: 81%', 'TYPICAL TIME SPENT: 5m:6s', and 'MOST-SKIPPED QUESTION: Q2-Was it beneficial to have a student discussion leader each week? Skipped:79'. A 'Feedback' button is visible on the right side of the insights section.

The 'Export Survey Data' dialog box allows users to export their survey data. It features the following options:

- Question summaries
- Individual responses

File format

PDF | PPT | **XLS** | CSV

- One question per worksheet
- All questions on one worksheet (no charts)

Include

- Filters and rules ⓘ
- Open-ended responses

File name

Data_All_260109.zip

Buttons: Cancel, Export

Disclosure of AI Use

Attribution vs. Citation in AI Use: A Simple Decision Tree for Students

Faculty can offer students this three-question test to determine how to disclose their use of AI Tools.

- **Did AI generate ideas, analysis, or prose that appear in my work?**
 - Yes → Cite AI as a source.
 - No → Continue.
- **Did AI meaningfully support my thinking or writing process including editing rough drafts?**
 - Yes → Add a disclosure statement.
 - No → Continue.
- **Was AI only used for mechanical or formatting tasks?**
 - Yes → No action needed.
 - No → Why not?

This framework is easy to teach, easy to audit, and easy to defend in academic integrity hearings.

Sample Student Disclosure Statement

The author used the generative AI tool ChatGPT to assist with language editing, organization, and refinement of this manuscript. All AI-generated suggestions were reviewed, revised, and integrated by the author, who takes full responsibility for the final content.

Example from Kristin Berndt, WSU EdD Student.

Sample Citation Guidance

How to Cite AI (APA 7th Ed. Example)

Reference list:

OpenAI. (2025). ChatGPT (GPT-5.2) [Large language model]. [I recommend including the specific prompt]. <https://chat.openai.com/>

In-text citation: (OpenAI, 2025)

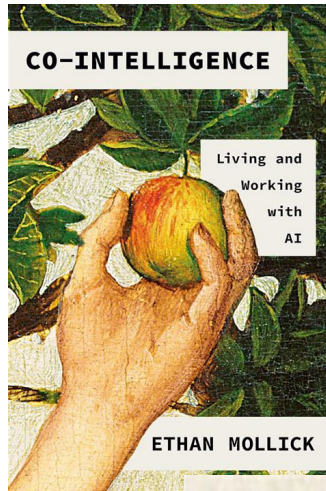
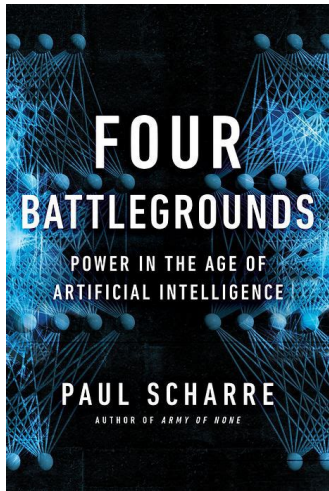
For major assignments, best practice is to include a brief appendix with the prompts used so that the AI's contribution is transparent and reproducible.



S	Stop	Take a moment to consider the information or output provided by the AI tool in more depth
I	Investigate the source	Investigate the AI tool you are using with the ROBOT Method to identify any possible weaknesses, shortcomings, or bias in the tool. Check how current the data that the AI tool is trained on is.
F	Find better coverage	Locate additional resources on the same topic as the information generated by the AI tool and compare what the scholars have argued to the AI generated content
T	Trace claims, quotes, and media to the original context	Ask GenAI to list its sources when generating content, and confirm that: <ul style="list-style-type: none"> • Those sources are real • The information in those sources match what the AI tool's output claims

**Mike Caufeld's
SIFT method
adapted to
generative AI**

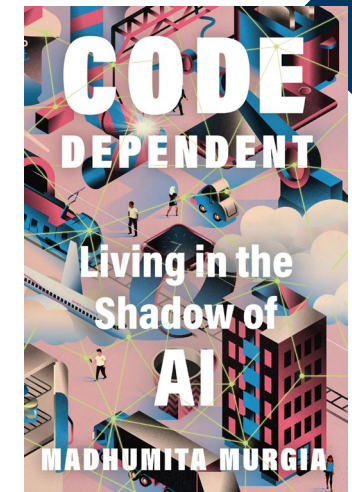
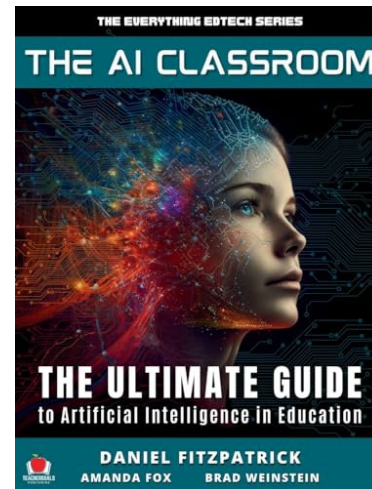
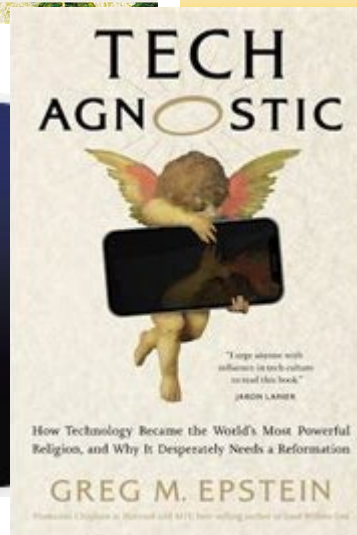
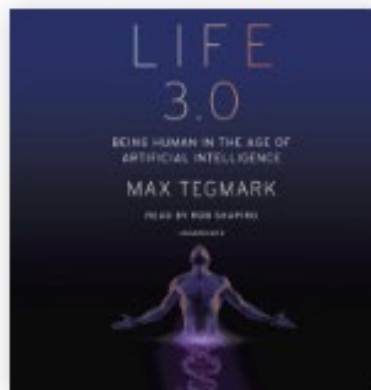
A Brief Reading List on AI



Brave New Words

How AI Will Revolutionize Education (and Why That's a Good Thing) ☀

Salman Khan
Founder of Khan Academy



9 Suggestions For Your AI Reading List | Tech & Learning

Exploring generative AI through the lens of science fiction: A framework for educational dialogue - eCampus News

Additional Articles & Tool Lists

- [Like it or not, ChatGPT is our new learning partner \(eschoolnews.com\)](#)
- [AIToolsReport \(AI tool search\)](#)
- [40 AI tools for the classroom - Ditch That Textbook](#)
- [Classroom Tools That Use AI | Common Sense Education](#)
- [AI Tools for Teachers \(schoolai.com\)](#)
- [19 Best AI Tools for Students in 2024 \(Mostly FREE\) - Kripesh Adwani](#)
- [Future Tools - Find The Exact AI Tool For Your Needs](#)
- [There's An AI For That - Discover The Newest And Best AI Tools \(theresanaiforthat.com\)](#)
- [Deep search: How do emerging research tools handle ambiguous topics? - eCampus News](#)
- [Deep Search in Academic Research: Opportunities and Cautions for K-12 Education | Tech & Learning](#)
- [I Used ChatGPT's Deep Research Tool For Academic Research. Here's What I Learned | Tech & Learning](#)
- [An Opinionated Guide to Using AI Right Now](#)

Thank you

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