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AI for research and writing

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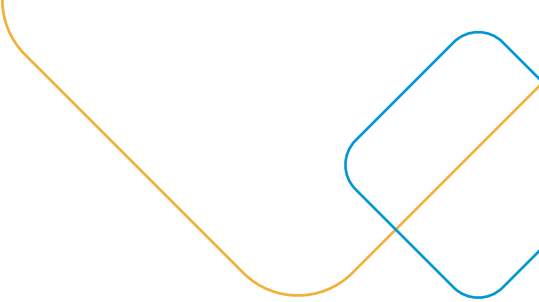

Questions facing researchers



1. To what extent should we use GenAI tools? (if at all)
2. To what extent should GenAI be incorporated into our research practices? (if at all)
3. How does the use of Generative AI interact with the fundamental principles of research and the institutional research framework?

Key ethical principles (Research)

- The core work of research – such as the design of research instruments, the analysis of data, the generation of statistics, the writing up of the literature review – cannot be outsourced and **must be completed by the researcher**.
- Authors are solely responsible for ensuring the authenticity, validity, and integrity of their work.
- Any research should be conducted aligned to **principles of academic integrity** (ICAI, n.d.) which calls on academic community members to be honest, trustworthy, respectful, responsible, and courageous.
- **Research integrity** forefronts the need for intellectual honesty, researcher responsibility, and the protection of research participants and their data.



Senate Ethics in Research Committee (EiRC) Guidelines and recommendations for the use of generative artificial intelligence (AI) tools in researches

1. Honesty in all aspects of research
2. Professional courtesy and fairness in working with others
3. Good stewardship of research on behalf of others⁵
4. Transparency in conducting research and dissemination of findings⁶
5. Fair practice from conception to implementation of research
6. Shared accountability in the conduct of research
7. Indigenous knowledge recognition and epistemic justice⁷

https://uct.ac.za/sites/default/files/media/documents/uct_ac_za/87/EiRC_GenerativeAI_guideline_Oct2023_final.pdf



Authorship (ASSAf, 2024)

- Only **humans** can be considered authors.
- All cited material should be **properly attributed**. See [APA style guide](#) and other style guides.
- Cited sources need to **support the claims made by the GAI tool**, as it is not uncommon for AI to generate references to non-existent works, i.e., all citations need to be checked.
- Commonly used AI tools, such as spelling and grammar checks, do not need to be disclosed.
- It is important to carefully scrutinise the suggestions provided by AI tools to avoid the misinterpretation of the context or terminology.
- Concealing the use of AI tools is unethical and violates the principles of transparency and honesty in research.

Using GenAI in Research



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GenAI benefits in research (Bekker, 2024; CILT, 2024)



Language generation:

GAI can generate coherent and grammatically correct content. Useful for tasks like summarising, changing styles and proofreading (tiers 2-3).



Large-scale information base:

Provides a broad information base, however there are gaps. Gain insights into subjects, identify literature, explore discourses and discover interdisciplinary connections (tiers 3-4).



Speed and efficiency:

GAI can process large data quickly. Save time and effort on tasks such as identifying possible literature sources, creating artificial data sets or learning how to undertake types of data analysis (tiers 3-4).



Pattern recognition:

GAI can help identify patterns, trends, and relationships within data. Generate code to perform additional analysis and outputs. Can lead to new insights (tier 4).



Customisability:

Tailor GAI models to specific needs. GAI also offers researchers the opportunity to fine-tune models (tiers 3-4).

GAI limitations in research (Bekker, 2024; CILT, 2024)

Hallucinations:

Responses are based on next word predictions. No real understanding of the information. This leads to ‘hallucinations’ or ‘credible untruths’, thus resulting in misinformation.

Verify outputs for accuracy and reliability.



Plagiarism:

GAI tools tend not to attribute their sources or training data. There are concerns about how datasets have been sourced. This means that ideas could be misattributed or used out of context. *Fact check information generated by GAI, and find credible sources.*



Lack of transparency:

GAI models are complex and opaque (“black box algorithms”), making it difficult to understand how they generate their outputs. This can be challenging for researchers to be transparent about their intellectual processes.



Data protection and privacy:

Be aware that data entered into GAI tools, for example, OpenAI stores and can use data in ChatGPT, could lead to privacy issues. *Do not upload any personal or identifiable information.*



GAI limitations in research

(Bekker, 2024; CILT, 2024)



Inherent biases or errors in training dataset: GAI models learn from the data they are trained on, which may contain bias or particular perspectives. *Critically evaluate outputs for bias/hegemonic perspectives.*



Misuse of generated data: GAI can be used to create fake data or manipulate existing data. *Critically evaluate all data.*



Reproducibility issues: The same model may produce different outputs each time it is run due to the nature of the generative process. This can make it difficult for researchers to replicate results.

Possible ethical uses of GAI tools

Possible uses (check with supervisors, colleagues and publishers first)

- **Drafting consultant:** shaping and improving ideas and writing based on conversations, counsel and correspondence
- **Language editing:** Rephrasing text, expanding/shortening sentences, reviewing citations
- **Proofing tool:** Fix spelling, grammar, tone and style issues
- **Technical help:** as would be available in other forms such as word processors, spell checkers, software and human proofreaders and language editors



Others

- Brainstorming
- Structuring / headings
- Critique / feedback (i.e in response to a rubric)
- Summarising literature / Systematic literature reviews
- Findings links / mapping literature
- Transcription of interviews / focus groups?

• Data analysis?



Non-ethical uses of GAI tools

Non-acceptable uses

- **Authoring or co-authoring:** Any process that outsources the thinking, reasoning and originality that goes into the research process.
- **Plagiarism:** Presenting work as if it is your own when it has been generated by others or a tool and/or not attributing sources.
- **Reliance on data analysis:** Outsourcing GAI tools to interpret results and draw conclusions.

Why Educators Should Avoid Using AI Apps to Help with Assessment

Sarah Elaine Eaton, PhD

September 2024

One day (soon!) we may have AI apps that can help with assessment of student learning, but we are not there yet. For now, there are good reasons not to use AI apps to assist with the assessment of student learning. Here are a few...



Intellectual Property

A student's work is their intellectual property. Unless you have permission to use it outside of class, then avoid doing so.



Privacy

A student's personal data, including their name, ID number and other details should never be uploaded to an external app without consent.



Data security

Content uploaded to an AI tool may be added to its database and used to train the tool.



Bias

AI apps are known to be biased. Feedback generated by an AI app can be biased or unfair.



Lack of context

An AI app does not know your student like you do. It can provide generic feedback but may not help to scaffold a student's learning.



Impersonal

AI apps can provide generic feedback, but as an educator, you can personalize feedback to help the student grow.



Academic Integrity

Educators model ethical behavior, this includes transparent and fair assessment.



Your Employee Responsibilities

If your job description includes assessing student work, you may be violating your employment contract if you offload assessment to an AI app.

What does it mean to honor the sacred metabolic web that sustains us? How might we shift from exploitation and extraction to metabolic attunement and care, from consumption to reciprocity?



AIDEN CINNAMON TEA & DOROTHY LADYBUGBOSS

BURNOUT FROM HUMANS: [HTTPS://BURNOUTFROMHUMANS.NET/](https://burnoutfromhumans.net/)

The choice isn't between screens and soil, but between consuming endlessly and participating deeply. It's about choosing to make the sacred resources you use — energy, attention, effort — worthwhile.



A Note on the use of AI Detectors

(UCT Senate T&L Committee, 2024)

Detection of AI generated text is difficult due to unreliability of tools for evasion.

AI detectors are available in tools such as Turnitin but should be used cautiously as can contain false flags.

A Turnitin AI Score should not be used as part of any academic misconduct judgement.

This means that the AI score may be used to prompt further discussion or investigation, but should not form part of an academic misconduct case.



AI in the research cycle

For ideas to rephrase research questions
(ChatGPT, Claude,

To summarise articles
(Scispace, Notebook LM),
to identify literature in the field, rank journals etc.
(litmaps, ...)

To transcribe interviews, summarise interviews, create keywords
(otter, Turboscribe...)

To generate Python code to analyse data
(ChatGPT Plus, ...), for thematic analysis
(ChatGPT, Nvivo)

To rewrite paragraphs
(Quillbot, Grammarly)
convert bullet points into paragraph, conference abstract
(ChatGPT, ...)



CONCEPTUALISATION



LITERATURE REVIEW



DATA COLLECTION



DATA ANALYSIS



WRITE UP

ChatGPT

- ChatGPT is a very useful tool for the conceptualization phase of the research cycle as it aids brainstorming and planning (for abstracts, papers, proposals, etc);
- Prompts are an important aspect of this process as they allow for the generation of different kinds of information;
- Prompts have to be crafted in specific ways for you to get the kind of info you need.

Examples of ChatGPT prompts



Spectrum of Perspectives (SoP) Prompt: "Present [*Topic*] from multiple perspectives or viewpoints, highlighting the pros and cons of each."

Explanation: Presents a topic from multiple viewpoints, highlighting pros and cons.

Benefit: Encourages a balanced and holistic understanding.



Panorama of Parallels (PoP) Prompt: "Draw parallels between [*Topic*] and other similar topics or phenomena, highlighting similarities and differences."

Explanation: Draws parallels between a topic and other phenomena.

Benefit: Enhances comprehension through comparison.



Matrix of Metrics (MoM) Prompt: "Identify key metrics or indicators relevant to [*Topic*], and explain their significance in evaluating its impact."

Explanation: Identifies key metrics for evaluating a topic's impact.

Benefit: Quantifies and measures aspects of a topic.

Litmaps

 Litmaps

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Question prompts:

What are novel methodologies in these papers?
What are unexpected results in these papers?



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OR

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\$20 billed monthly
≈ ZAR 363.89 billed monthly ⓘ

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goals and responsible for P&L and things like that?

(27:04) Or what does that generally look like when they start to own revenue?

Speaker 1

(27:08) There's two ways that you can own revenue.

(27:12) Revenue stream number one will be your self-serve revenue. (27:15) If there's self-serve revenue, that means product is selling literally itself.

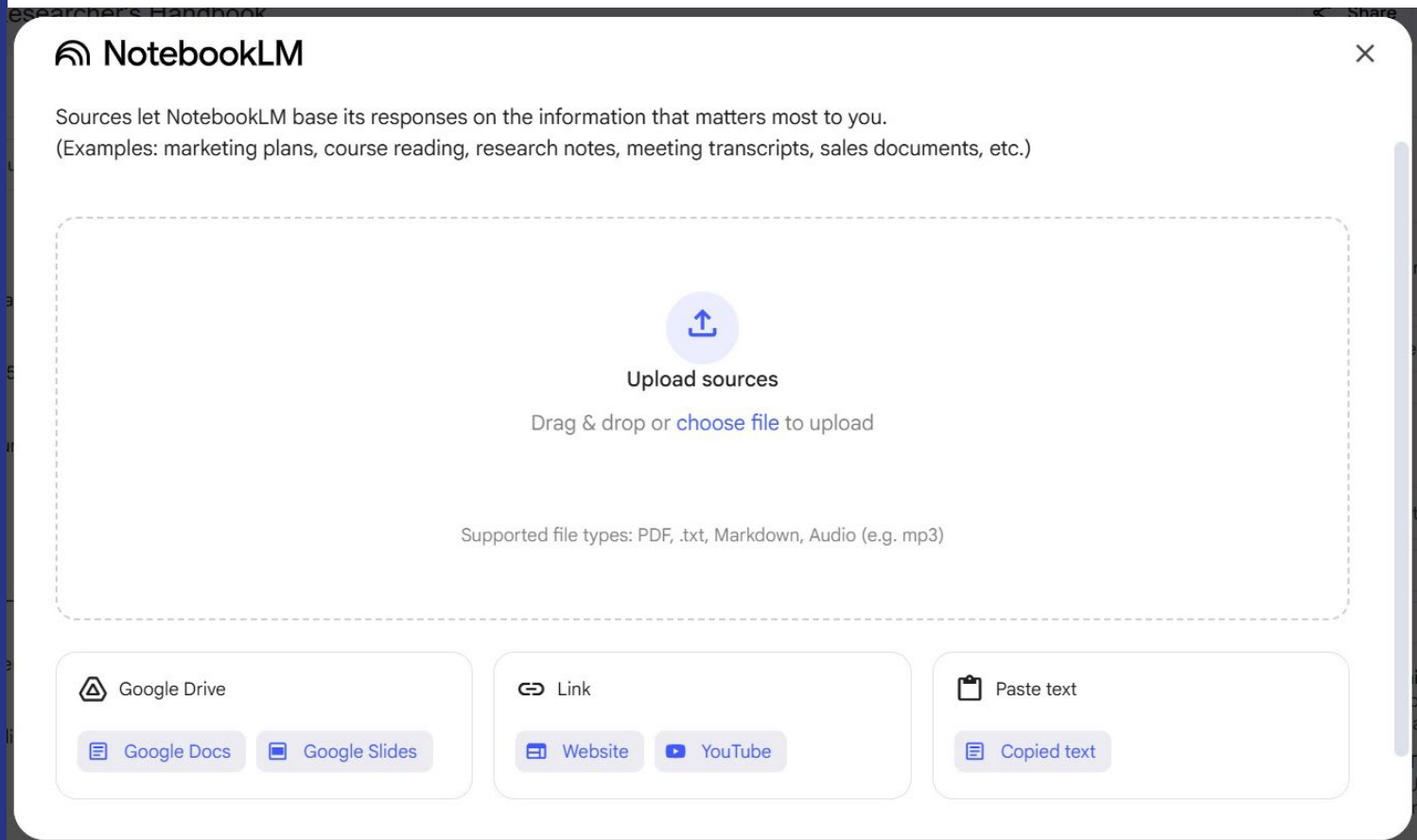
(27:21) So yes, there has to be somebody in product that

Session 6-Q&A

⏸  -49:02  

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Nvivo

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NVivo

NVivo is a powerful qualitative data analysis tool, with features that provide functionality far beyond that of the average statistics package. Rather than simple number-crunching, qualitative analysis is about exploring issues and finding the patterns in unstructured data. As a qualitative research software package, NVivo lets you analyse your materials, identify themes and patterns and develop meaningful conclusions, with powerful tools for classifying, sorting and arranging information.



See also

[The features of NVivo](#)

[NVivo 2018 Essential training](#)

[Learning Nvivo](#) (a LinkedIn Learning course)

How do I install NVivo?

NVivo is available for download from the [Downloads section](#) of the ICTS website:

New to GenAI? Perhaps try Copilot

If you are new to GAI we suggest you use Microsoft Copilot

Provides a secure Copilot integrated with UCT Microsoft account

Sign in using your UCT credentials

<https://m365.cloud.microsoft/>


This means interactions are not used to train the models and data is not shared

it sites. This limits the content Copilot can search and reference when

Work

Web



 Prep for that meeting

Help me prepare for

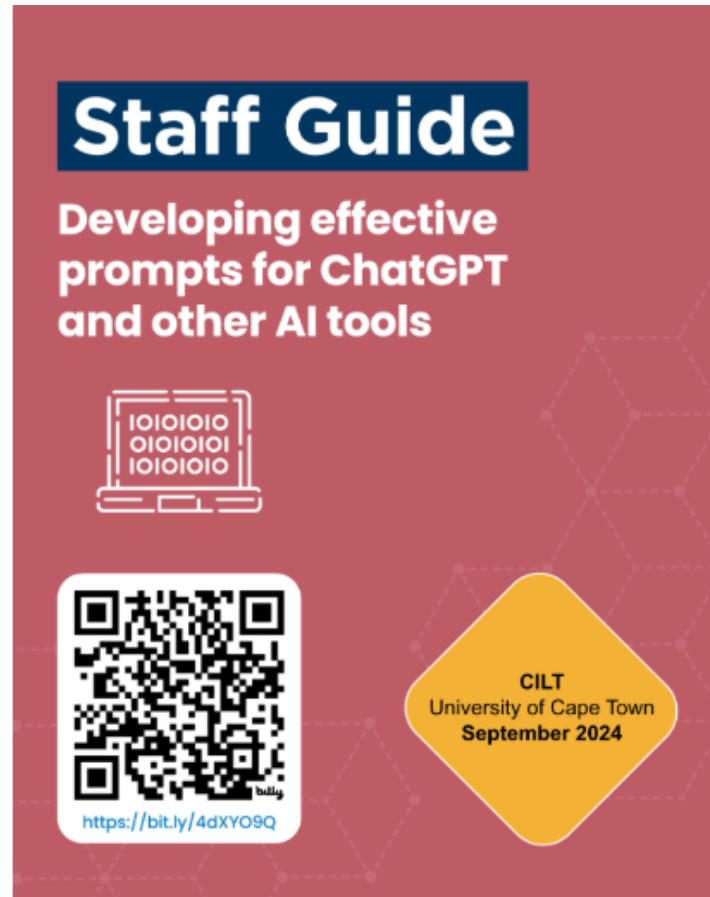
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Checkout: What is your next step
in terms of GenAI and research?



CILT Guides (2024)



Staff Guide: Developing effective prompts for generative AI tools

Bitly Link: <https://bit.ly/4dXYO9Q>



Researchers' Guide: Ethical use of generative AI for research purposes

Bitly Link: <https://bit.ly/3yTsA0G>

References and Resources

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UCT policies and guides



- General policies (not specifically covering GAI)
 - [UCT Policy for Responsible Conduct of Research](#)
 - [UCT Research Ethics Code for Research Involving Human Participants](#)
 - [UCT Authorship Practices Policy](#)
 - [UCT Policy and Procedures for Breach of Research Ethics Codes and Allegations of Misconduct in Research](#)
- Guide
 - [Senate Ethics in Research Committee \(EiRC\) Guidelines and recommendations for the use of generative artificial intelligence \(AI\) tools in research](#)