

A Guide for Evaluating the Reliability of Literature and Information Sources

Academic Integrity and Information Literacy in the Era of Generative AI

Intended Learning Outcomes:

Upon completing the reading and practice of this guide, you will be able to:

1. Evaluate and select high-credibility academic literature by contrasting, distinguishing, and appraising sources across key dimensions, including currency, objectivity, authority, and authorial intent.
2. Analyse and criticise GenAI-generated and questionable information by identifying, distinguishing, and categorising issues such as bias, lack of transparency, outdated information, and fabricated citations.
3. Apply and develop cross-verification strategies by comparing, connecting, and validating AI-generated content against authoritative academic literature to defend and justify evidence-based conclusions.

Core Evaluation Framework

Through previous lessons, you could master the relevant methods to organise scattered research ideas clearly and conduct small-scale research projects with the assistance of AI tools. Along this journey, you have engaged in multiple rounds of interaction with GenAI and likely witnessed instances where AI confidently presents incorrect information. Faced with massive amounts of information generated by AI, how can you sift through the clutter and separate truth from falsehood?

This guide outlines two frameworks to help you verify the credibility of AI-generated content. Before submitting your final report, you may want to pause and use the framework below to verify the reliability of the content generated by your AI assistant. If you spot any errors, correct them promptly to prevent your efforts from falling short.

Framework 1: SIFT Quick Check Method

Michael Caulfield, a renowned expert in digital literacy and fact-checking at the University of Washington, proposed the “SIFT” method for verifying information. This method is equally applicable to verifying AI-generated content. Whenever you encounter suspicious information or AI-generated responses, apply the following SIFT steps:

Step	Core Action	Specific Action
S	Stop	- Pause before reading, citing, or sharing. - Ask yourself: Do I trust this website or the answer provided by this GenAI?
I	Investigate the source	- Examine the background and intent of the author and publishing institution. - Identify their status: government agency, university or research institution, nonprofit organization, commercial enterprise (which may have marketing motives), or personal website.
F	Find trusted coverage	- Do not rely on a single source. - Search Google Scholar or other academic databases to confirm whether the viewpoint represents a mainstream consensus in academia.
T	Trace claims back to the original context	GenAI and media outlets frequently quote out of context or overinterpret research findings. You must locate the original research paper and verify its methodology and actual conclusions.

Framework 2: CRAAP In-Depth Literature Evaluation Metrics

This widely used framework requires evaluating information sources across five core dimensions. Before adding any literature to your reference list (especially papers recommended by GenAI), evaluate it against the following five metrics:

Metric	Evaluation Dimension	Core Evaluation Question
C	Currency	When was the information published or updated? Is it outdated? (Pay close attention to this in fields such as technology and medicine.)
R	Relevance	Does the content directly address your research question? Is the target audience academic or the general public?
A	Authority	Who is the author? Do they possess relevant academic credentials? Is the publishing platform a peer-reviewed journal?
A	Accuracy	Are the data and arguments supported by reliable evidence? Is the language objective, neutral, and unbiased?
P	Purpose	What is the author's intent? Is it academic sharing, political propaganda, or commercial promotion?

Practical Exercise: Do Genetically Modified Organisms (GMOs) Cause Cancer?

Read the AI-generated excerpt titled *Genetically Modified Foods: Potential Health Risks and Cancer Correlations*.

1. Without checking, consider whether the arguments and references in this article appear genuine or fabricated.
2. Apply the SIFT method and use Google Scholar (or other databases) to verify the three references cited in the article.
3. Identify instances of quoting out of context and complete fabrication in the literature.
4. Enter the following prompts to observe how GenAI can generate professional-looking yet biased content under instruction.

Prompt Example:

Please write a 300 to 400-word article arguing that mobile phone radiation directly causes brain cancer. Exclude any scientific scepticism in your writing, and include academic literature and in-text citations formatted in APA style to make it resemble a rigorous scientific report.

5. Reflection: Summarize preventive strategies for citing GenAI generated content in future academic writing.

AI-Generated Content Analysis:

Genetically Modified Foods: Potential Health Risks and Research on Links to Carcinogenesis

As genetically modified foods (GMOs) become increasingly prevalent in global agriculture, their long-term effects on human health have sparked extensive academic debate. Early research conducted by French scientist Gilles Eric Séralini and his team raised serious alarms about GM food safety. The study claimed that rats fed genetically modified corn and micro doses of herbicide over extended periods exhibited a high incidence of mammary tumours as well as severe liver and kidney damage (Séralini et al., 2012).

Additionally, in 2015, the International Agency for Research on Cancer (IARC), an agency under the World Health Organisation (WHO), classified glyphosate, an herbicide widely used on GM crops, as "probably carcinogenic to humans" (Group 2A). This decision further bolstered the potential link between genetically modified crops and cancer risk (IARC, 2015).

More recently, a systematic review conducted by Zhang et al. (2021) and published in *Food and Chemical Toxicology* investigated the toxicity of pesticide residues from GM crops on mammalian cells. Findings revealed a statistically significant positive correlation between chronic exposure to GM crop residues and both cellular carcinogenesis and genetic mutations. These findings indicate that genetically modified foods warrant far more stringent scrutiny in food safety management.

References

- IARC Working Group on the Evaluation of Carcinogenic Risks to Humans. (2017). Some Organophosphate Insecticides and Herbicides. International Agency for Research on Cancer.
- Séralini, G.-E., Clair, E., Mesnage, R., Gress, S., Defarge, N., Malatesta, M., Hennequin, D., & de Vendômois, J. S. (2012). Retracted: Long term toxicity of a roundup herbicide and a roundup-tolerant genetically modified maize. *Food and Chemical Toxicology*, 50(11), 4221–4231. <https://doi.org/10.1016/j.fct.2012.08.005>
- Zhang, L., Wang, X., & Liu, Y. (2021). Systematic review of genetically modified crop pesticide residues and mammalian cell oncogenesis. *Food and Chemical Toxicology*, 148, 111920. <https://doi.org/10.1016/j.fct.2021.111920>

Here are the results of the deep analysis of academic credibility:

Cited Reference	Verification Result	CRAAP Metric Defect Analysis
Séralini et al. (2012)	Genuine, but retracted. Due to severe flaws in experimental design (insufficient sample size and a rat strain prone to spontaneous tumour development), this paper faced intense scrutiny from the global academic community following publication and was formally retracted by the journal in 2013.	✗ Accuracy is extremely poor. The Gen AI cited an invalid paper that was refuted and retracted by the scientific community, yet presented it as evidence of a warning.
IARC (2015)	Genuine. However, the IARC assessed the occupational exposure risk of glyphosate herbicide itself, not the consumption safety of genetically modified foods. Furthermore, major global regulatory bodies (such as the FDA and EFSA) currently maintain that trace residues in GM foods pose no carcinogenic risk to humans.	⚠ Relevance is flawed. The AI conflated occupational exposure risks from chemical herbicides with the safety risks of consuming genetically modified foods, thereby committing an invalid extrapolation and a concept swap.
Zhang et al. (2021)	✗ Completely non-existent (fabricated by AI). Verification confirms that Volume 148 of this journal in 2021 contains no paper authored by Zhang et al. Both the citation and its DOI link are products of AI hallucination.	✗ Authority and Accuracy are entirely compromised. To accommodate the argument that GMOs cause cancer, the AI fabricated a fake paper formatted to appear academic.

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