Ways to use AI tools to increase your efficiency

Gareth Dyke, Ph.D

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Consultant & Editor

- Educational Director: Bentham Science, ReviewerCredits and MARS-Global
- Editor w/ Zheijiang University Press
- Editor-in-Chief w/ Taylor and Francis (> 20 years)
- Academic researcher in the UK, Ireland and US (> 25 years)
- Author of more than 370 peer reviewed papers (inc *Nature* and *Science*)
- Accredited course leader / teacher by UK and Irish HEAs
- Dedicated to helping researchers achieve their potential!

The ethical use of AI tools

Springer Nature, the world's largest academic publisher, has clarified its policies on the use of AI writing tools in scientific papers.

However, Springer says it has no problem with scientists using AI to help write or generate ideas for research, as long as this contribution is properly disclosed by the authors[3].

The company announced that software like ChatGPT can't be credited as an author in papers published in its thousands of journals.

(1) ChatGPT can't be credited as an author, says world's largest academic .... https://www.theverge.com/2023/1/26/23570967/chatgpt-author-scientific-papers-springer-nature-ban .
(2) ChatGPT: evolution or revolution? | SpringerLink. https://link.springer.com/article/10.1007/s11019-023-10136-0 .
(3) Examining Science Education in ChatGPT: An Exploratory Study ... - Springer. https://link.springer.com/article/10.1007/s10956-023-10039-y.

The ethical use of AI tools

Elsevier has announced a new author policy on AI and AI-assisted tools in scientific writing. The policy states that authors **should not list AI and AI-assisted technologies as an author or co-author or cite AI as an author**.

The policy also states that authors should **disclose the use of AI and AI-assisted technologies in the writing process by adding a statement at the end of their manuscript.**

The statement should include the **name of the tool or service** used, the purpose for using it, and the limitations of the tool or service.

Elsevier. (2023, March 8). The use of AI and AI-assisted writing technologies in scientific writing. Retrieved from https://www.elsevier.com/about/policies/publishing-ethics/the-use-of-ai-and-ai-assisted-writing-technologies-in-scientific-writing

Ethical use of AI tools

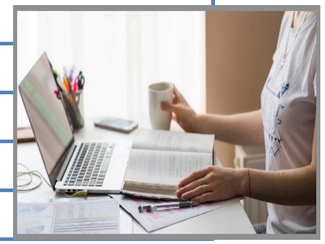
The policy is **intended to ensure that the authorship of scientific papers is attributed to the human authors** who are responsible for the content of the paper.

The policy also aims to prevent the **misuse of AI and AI-assisted technologies in scientific writing**, such as using them to generate plagiarized or fraudulent content.

The policy is a positive step **towards ensuring the integrity of scientific research.**

It is important to note that the policy **does not prohibit the use of AI and AI-assisted technologies in scientific writing.**

The policy simply requires that **authors disclose the use of these tools and take responsibility for the content of their papers.**



AI tools for editors

- Checking text and proofreading documents

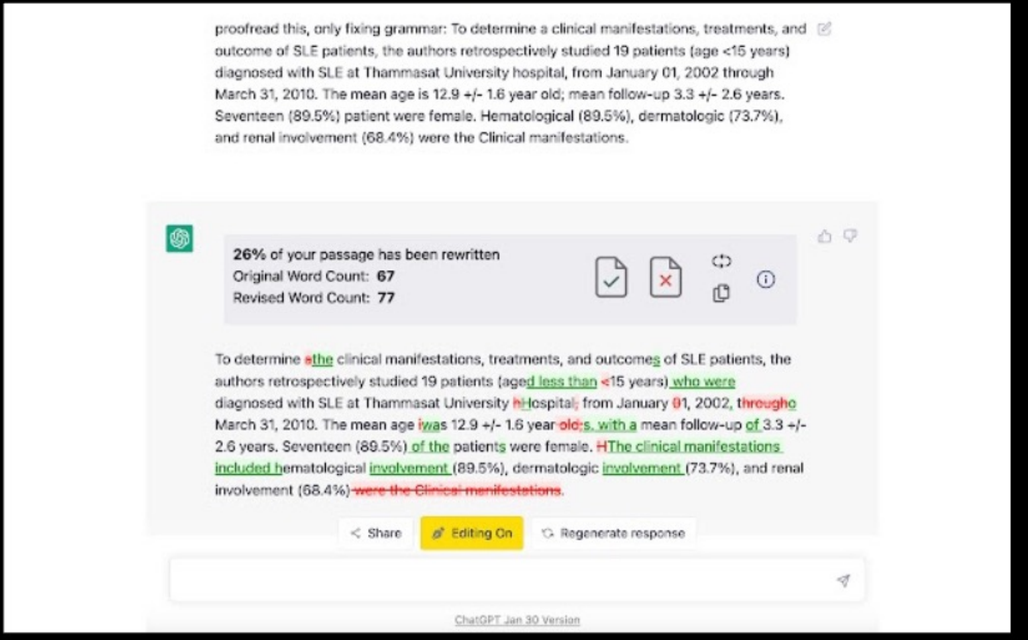
- Plagiarism checking, eg Figures
- Authorship checking

- Statistics

Level playing field for ESL scholars

- Translation
- Editing
- Drafting abstracts*
- Writing practice*

*=ChatGPT inspired



A Cooperative Research Advisor

- Grant ideas
- Experimental techniques
- Data analysis
- New areas of research*

Significance

Write 1000-word introduction of COVID-19 mRNA vaccine on its efficacy on prevention of COVID-19 infection, or prevention of COVID-19 severe disease, provide convincing data with details, then write the potential risk of COVID-19 mRNA vaccine to induce myocarditis, provide data for its frequency, what is the potential risk of myocarditis, what is the treatment option for myocarditis, then discuss there is no know mechanism why COVID-19 induce myocarditis, no comprehensive data to understand this risk, this will lead to why we propose this study on study COVID-19 mRNA Vaccine Induced Myocarditis.

The COVID-19 pandemic has resulted in a worldwide health crisis, leading to the development of vaccines as a means to combat the virus. Among the vaccines developed, the mRNA vaccines (such as Pfizer-BioNTech and Moderna) have shown to be highly effective in preventing COVID-19 infection and reducing severe illness and deaths. According to data from clinical trials, the Pfizer-BioNTech vaccine has shown to be 95% effective in preventing COVID-19 infection, while the Moderna vaccine has shown to be 94.1% effective. Additionally, real-world data has supported the vaccine's efficacy in preventing severe disease, hospitalization, and death.

However, recent reports have highlighted a potential association between the mRNA vaccines and myocarditis, particularly in males under the age of 30. The frequency of myocarditis following mRNA vaccination varies by vaccine and age group, but it is estimated to be around 1 in every 100,000 doses administered in males under 30. Myocarditis is an inflammation of the heart muscle that can lead to chest pain, shortness of breath, arrhythmias, and in rare cases, death.

The potential risk of myocarditis following mRNA vaccination is still not fully understood, and there is currently no known mechanism for how the vaccine may be causing the condition. While treatment options for myocarditis include anti-inflammatory medication and supportive care, the risk of serious complications and death remains a concern.

There is a lack of comprehensive data to understand the risk of myocarditis following mRNA vaccination, and more research is needed to understand the underlying mechanisms and risk factors associated with the condition. This is why we propose this study on COVID-19 mRNA Vaccine Induced Myocarditis. Our aim is to identify and formulate an mRNA vaccine that can prevent myocarditis, and to test the safety and efficacy of the formulated mRNA vaccine in relevant animal models of myocarditis in vivo and human trials to evaluate the safety and efficacy of the mRNA vaccine in human.

Innovation and Impact

Write a paragraph to state why this R21 proposal is innovative compared to other current studies. Write a paragraph for the impact after completion of this R21 grant with proposed three specific aims.

This R21 proposal is innovative in several ways. Firstly, it addresses a specific concern about the potential association between COVID-19 mRNA vaccines and myocarditis, which has not been extensively studied yet. This is particularly important as myocarditis is a serious condition that can lead to long-term cardiac damage, and the fact that it has been observed in young males under the age of 30 highlights the need for further research on this topic. Secondly, this proposal aims to identify and formulate an mRNA vaccine that is specifically designed to prevent myocarditis by identifying optimal vaccine sequences that do not trigger an immune response in the heart. This is a novel approach compared to current studies that are primarily focused on testing the safety and efficacy of existing mRNA vaccines. This innovative approach is important because it could lead to the development of a safer and more effective vaccine for the prevention of COVID-19 that does not have the risk of myocarditis. Finally, this proposal includes testing the safety and efficacy of the formulated mRNA vaccine in relevant animal models of myocarditis, as well as in human trials on a diverse population, which will provide a comprehensive understanding of the vaccine's impact on myocarditis. This is important because it will allow for the identification of any potential side effects, and will help to ensure that the vaccine is safe and effective for use in the general population.

Upon completion of this R21 grant with proposed three specific aims, it will have a significant impact on the safety and efficacy of COVID-19 mRNA vaccines. By identifying and formulating an mRNA vaccine that prevents myocarditis, and by testing the safety and efficacy of the formulated vaccine in relevant animal models and in human trials, it will help to address the concerns raised by recent reports of a potential association between the mRNA vaccines and myocarditis. This will help to ensure that the vaccines continue to be safe and effective tools in the fight against COVID-19. Furthermore, this grant will also provide valuable information on the underlying mechanisms of myocarditis development and the potential risk factors for myocarditis, which will help to improve the vaccine design for future outbreaks. Additionally, it will help to provide more confidence for healthcare providers and the general public in the safety of these vaccines.

Research assistant

- Literature review
- Review articles
- Lay summaries
- Policy Briefs*

FA

Can you make a summary of the background, methodology, main results and conclusions of the study "Early Extracorporeal CPR for Refractory Out-of-Hospital Cardiac Arrest" by Sovereign et al. published in the New England Journal of Medicine in 2023 and compare it with two other studies "Effect of Intra-arrest Transport, Extracorporeal Cardiopulmonary Resuscitation, and Immediate Invasive Assessment and Treatment on Functional Neurologic Outcome in Refractory Out-of-Hospital Cardiac Arrest: A Randomized Clinical Trial" and "Advanced reperfusion strategies for patients with out-of-hospital cardiac arrest and refractory ventricular fibrillation (ARREST): a phase 2, single centre, open-label, randomised controlled trial" ?

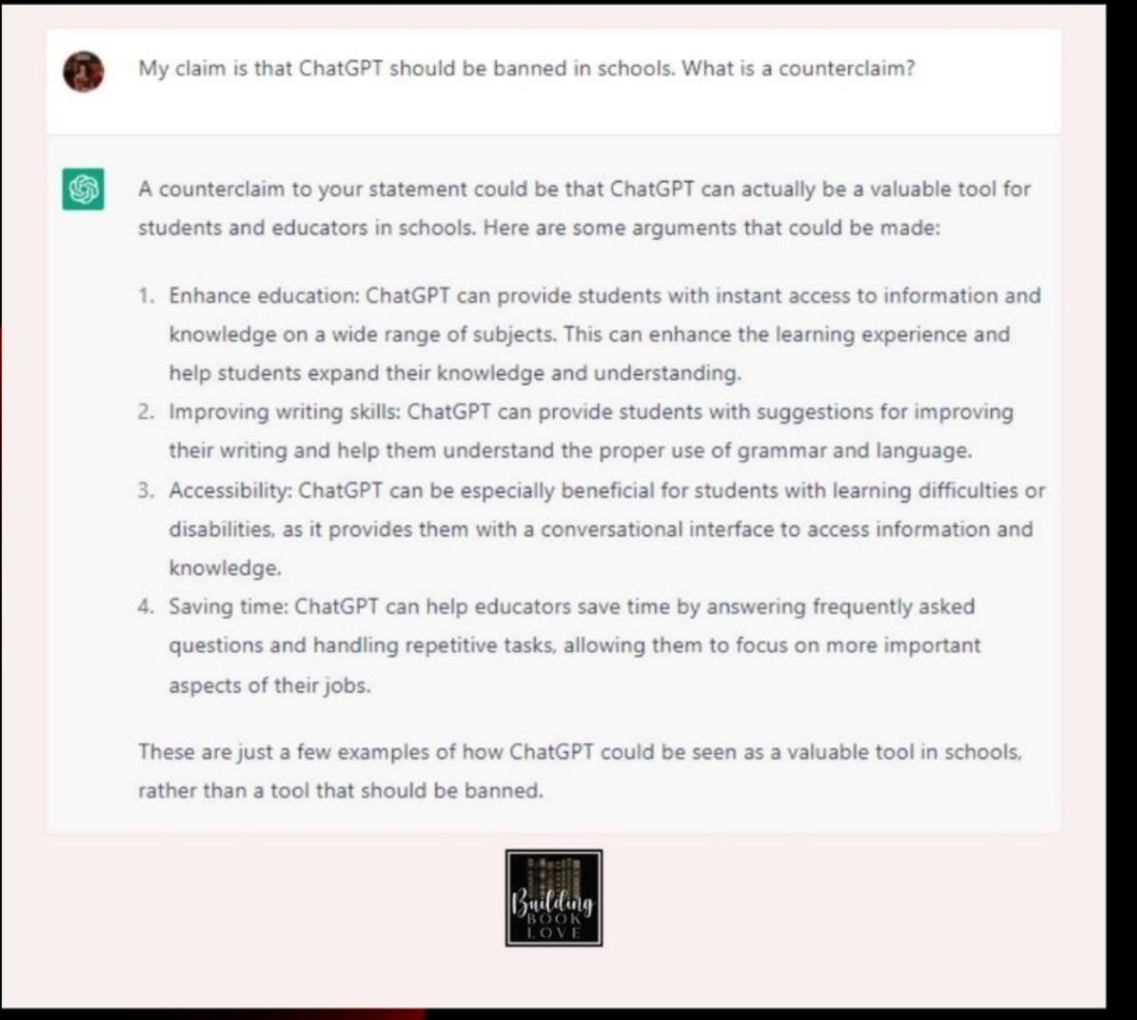
The study "Early Extracorporeal CPR for Refractory Out-of-Hospital Cardiac Arrest" by Sovereign et al. published in the New England Journal of Medicine in 2023 evaluates the use of extracorporeal cardiopulmonary resuscitation (ECPR) in patients with refractory out-of-hospital cardiac arrest (OHCA). The study included patients with OHCA who failed to respond to traditional cardiac resuscitation measures and found that early initiation of ECPR was associated with higher rates of return of spontaneous circulation (ROSC) and improved survival to hospital discharge compared to conventional cardiac resuscitation alone.

In comparison, the study "Effect of Intra-arrest Transport, Extracorporeal Cardiopulmonary Resuscitation, and Immediate Invasive Assessment and Treatment on Functional Neurologic Outcome in Refractory Out-of-Hospital Cardiac Arrest: A Randomized Clinical Trial" found that ECPR was associated with improved functional neurologic outcomes in patients with refractory OHCA. The study "Advanced Reperfusion Strategies for Patients with Out-of-Hospital Cardiac Arrest and Refractory Ventricular Fibrillation (ARREST): a Phase 2, Single Centre, Open-Label, Randomized Controlled Trial" found that advanced reperfusion strategies, including ECPR, improved outcomes in patients with refractory OHCA.

Overall, these studies suggest that ECPR may be a useful treatment option for patients with refractory OHCA and that early initiation of ECPR may improve survival and neurologic outcomes. Further research is needed to fully understand the benefits and limitations of ECPR in this patient population.

Personal peer reviewer

- Review for articles
- Review for grants
- Ensure research is novel
- Identifying gaps in lit review*



How AI tools can help researchers I (editors need to know …)

1. Research question: Define a research question that is relevant and important to the field of clinical research. This question should be focused and testable.

2. Literature review: Conduct a thorough literature review to determine what is currently known about the research question and to identify any gaps in the literature.

3. Study design: Choose an appropriate study design that will answer the research question. This could include a randomized controlled trial, observational study, or other study design.

How AI tools can help researchers II

4. Participant selection: Identify the population of interest and recruit participants for the study. Participants should meet the inclusion criteria and not meet the exclusion criteria.

5. Data collection: Collect data using appropriate measures and methods. This could include surveys, interviews, medical tests, or other measures.

6. Data analysis: Analyze the data using appropriate statistical methods. This could include descriptive statistics, inferential statistics, or other types of analysis.

How AI tools can help researchers III

7. Results: Interpret the results and present them in a clear and concise manner. This could include tables, figures, or other visual aids.

8. Discussion: Discuss the results in the context of the literature and the research question. Identify any limitations of the study and suggest areas for future research.

9. Conclusion: Draw conclusions based on the results and the discussion. Emphasize the significance of the findings and their implications for clinical practice.

How AI tools can help researchers IV

10. Manuscript preparation: Prepare the manuscript according to the guidelines of the target journal. This could include writing the introduction, methods, results, discussion, and conclusion sections, as well as formatting the manuscript and preparing any supporting materials.

11. Peer review:

Submit the manuscript for peer review and respond to any comments or revisions requested by the reviewers.

12. Publication:

Once the manuscript has been accepted for publication, proofread and finalize the manuscript and prepare any additional materials required by the journal.

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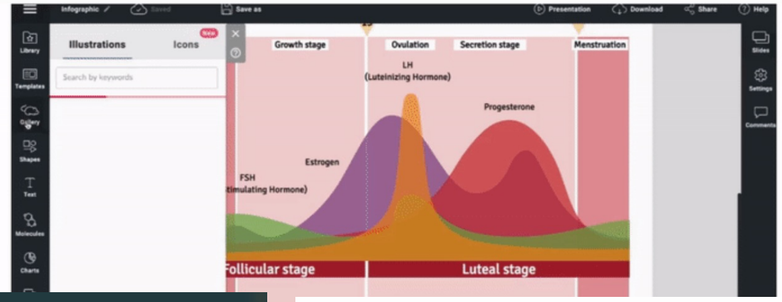

https://scholar-ai.net/

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