Wikipedia for science communication

Dr. Katelyn Mroczek · Wikimedia Australia, 2024

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Harnessing Wikipedia for Science communication and collaboration

Dr Katelyn Mroczek
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The project

- **Science communication is be a key skill in STEM curriculum**
  - Communicating complex topics effectively
- **Wikipedia is a collaborative open access encyclopedia**
  - First point of reference for many people
  - Source of information on many topics for the wider community

An assessment to improve science communication

  - Collaboration
  - Critical thinking



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The Free Encyclopedia



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Introductory session by Belinda Spry from Wikimedia

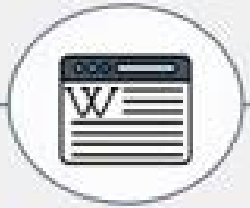
- Belinda and Alice came to an online zoom
- Introduction into Wikipedia
- Used an example to show:
  - Various sections
  - References
  - Lacking details
  - Using independent sources
  - How to make an account
  - How to edit

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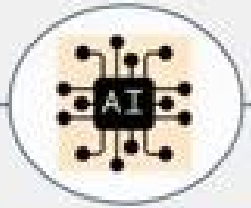
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The Assignment



Wikipedia article evaluation

- Students choose article
- Evaluate using provided rubric
- Provide comments on article by annotating
- Suggestions for improvement



Generate AI article on topic and evaluate

- Each student generated an AI article on the same topic
- Picked one article to evaluate
- Evaluated using provided rubric



Report

- Comparison of AI-generated and Wikipedia articles
- Recommendations for improving the Wikipedia content
- Reflections on the importance of information literacy and science communication



Self and Peer evaluation

- Students assessed their contribution compared with others in their group

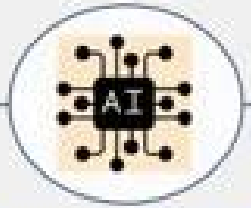


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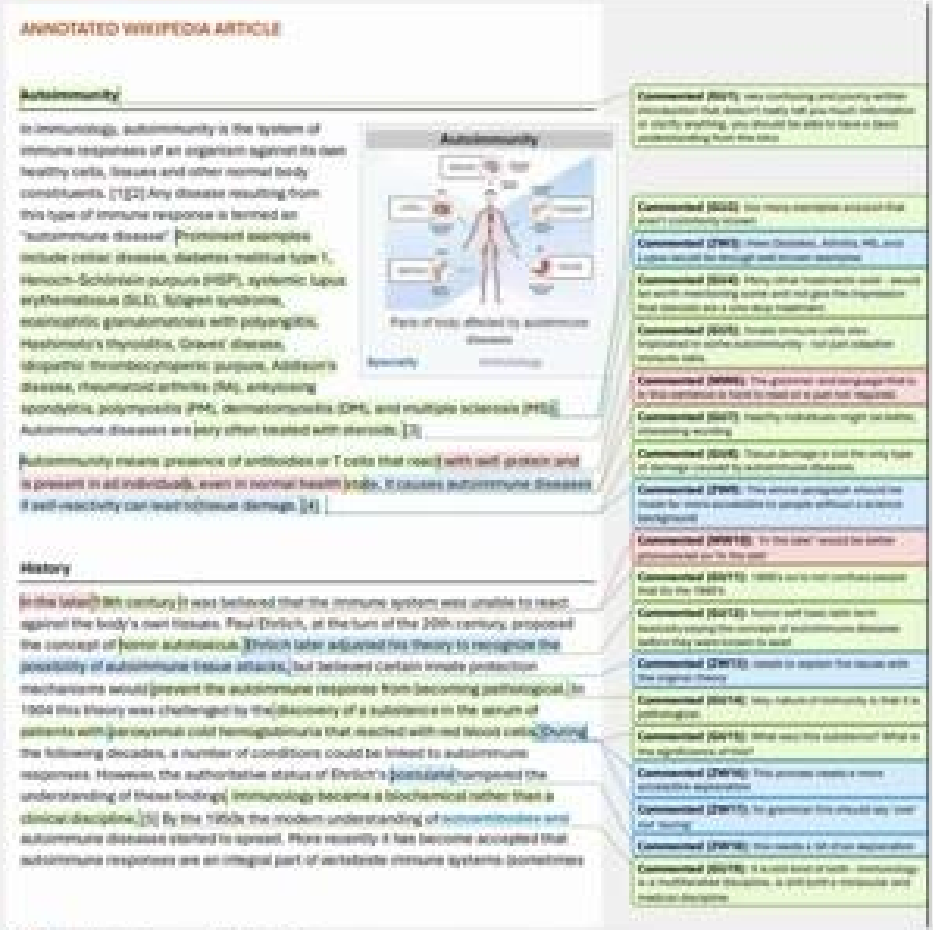
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EXAMPLE

- Students copied their article into Word or similar
- Used track changes to make annotations
- Could see individual contributions



Student survey

- More than half of the students found the assessment useful
- Majority found it different to other assignments
- Half the students learned from their peers





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Number of positive comments about what students thought was useful

7	Understanding Accuracy and Reliability	"Was helpful to see that Wikipedia and AI are lacking important information, as well as checking the references on the wiki article."
6	Fact checking and Bias Awareness	"It was helpful to identify the inaccuracies in Wikipedia articles through the annotations." "Provided an opportunity to fact check and make a well-known website better."
7	Scientific Language and Research Skills	"The assignment was good to gain an understanding of scientific language, and its barriers." "The assignment allowed me to get different perspectives and tips on research in both Wikipedia and AI tools usage."
5	Collaboration and Group Work	"It was a good experience to observe how other people work together and to try and improve on that and give constructive criticism as a group." "The structure of it made it really collaborative and it was a more enjoyable assignment."
5	General Interest and Engagement	"The assignment was good because it was different to usual assessments we have but was still really informative and helped us build knowledge around not only Wikipedia use and editing but on our chosen topic."



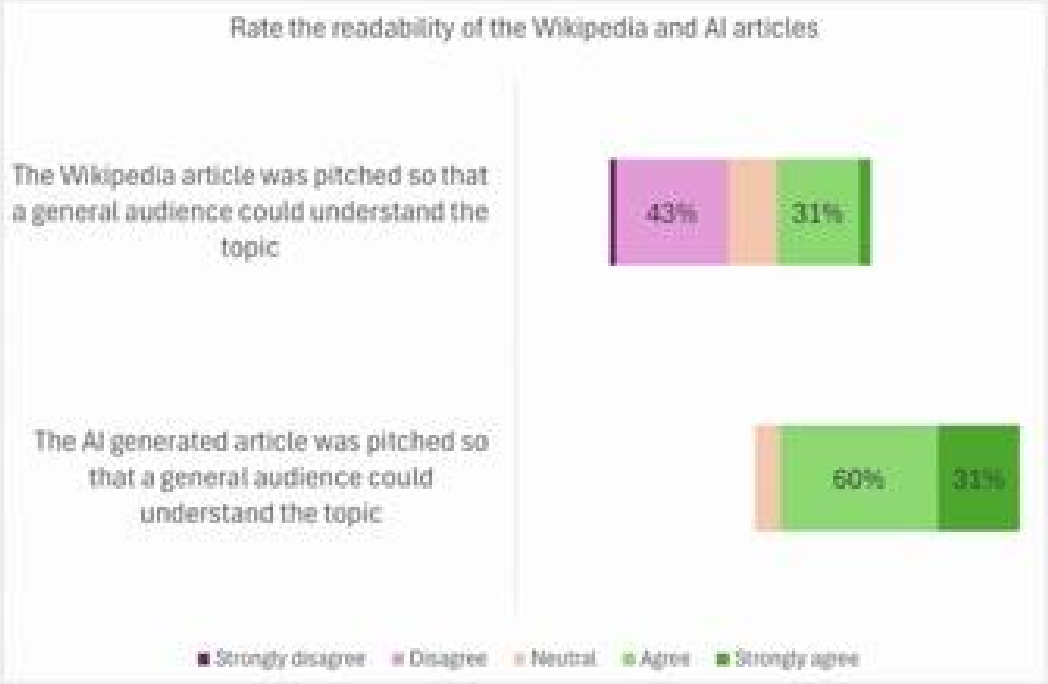
Number of comments from students that didn't find it as useful

5	Relevance to Course Material	"It didn't seem super relevant to bacteriology but it was useful for understanding how Wikipedia works." "I didn't think it assessed anything to do with the subject itself." "It didn't feel relevant to course material."
5	Assessment Format and Execution	"There was a lot to read and it was difficult to comment on the different areas that had to be amended." "Didn't like the format of the assessment."
4	Perceived redundancy	"I think it highlighted the importance of Wikipedia and critical thinking about writing but I don't think it helped much beyond that." "I think it was slightly unnecessary as I feel most students have a good grasp of how to effectively use a Wikipedia article for assessments."
3	Personal Disinterest	"Just was a bit boring personally." "I didn't really care all that much."



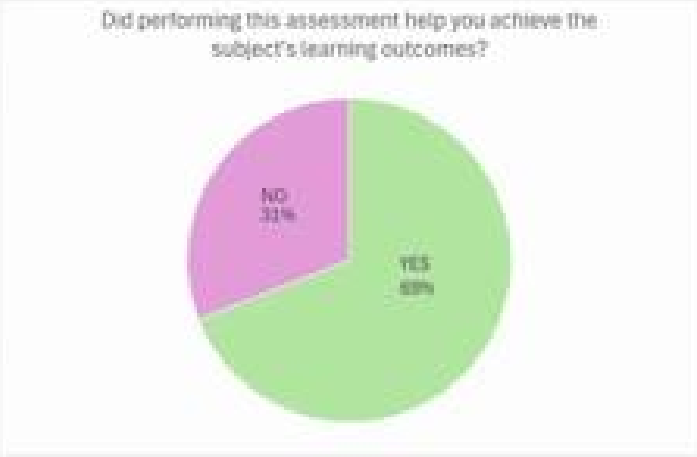
Readability

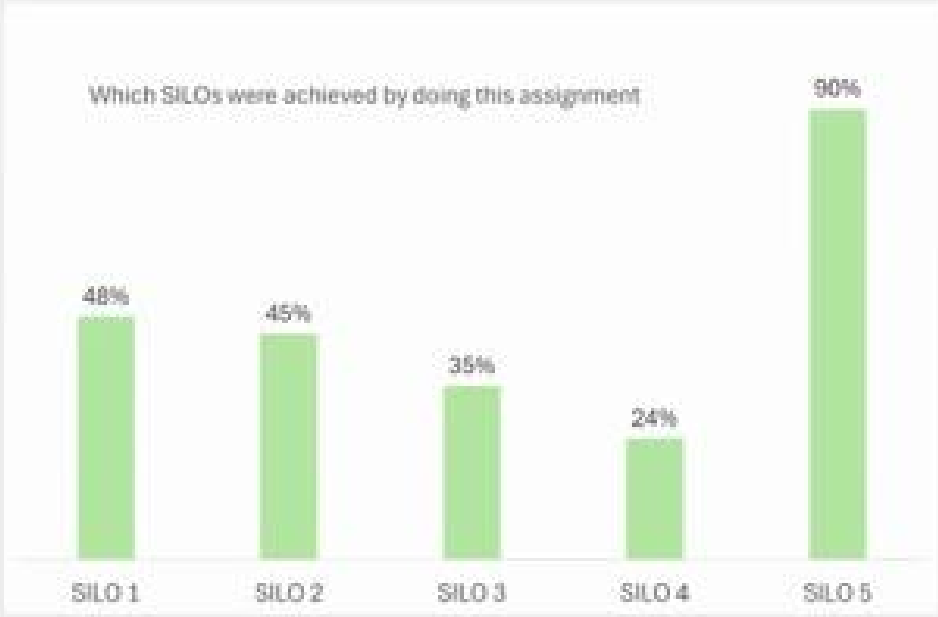
- 45% of students thought the Wikipedia article may be too advanced for the average reader
- 91% of students agreed that the AI generated article was pitched for a general audience



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Did students meet SILO?



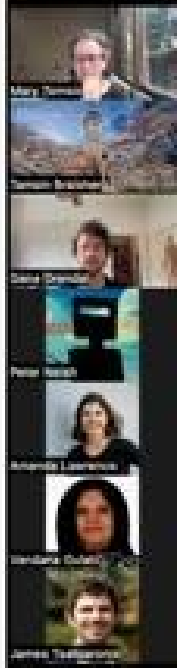


SILO 1	Examine and apply examples of the mechanisms that enable the immune system to be generated and respond to pathogens and how an ineffective immune response can result in disease and chronic infections.
SILO 2	Analyse and provide illustrative examples of molecular mechanisms used by pathogenic bacteria to successfully infect their hosts, avoid immune clearance, induce pathology and cause chronic infection.
SILO 3	Apply the principles of bacterial pathogenesis to analyse and solve real world scenarios.
SILO 4	Demonstrate proficiency in the application of key microbiological and immunological techniques, both in theory and in practical laboratory settings.
SILO 5	Evaluate and critique immunology related articles as part of a team for their suitability in communicating complex topics to a general audience.

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Number of comments about skills learned

8	Research and Editing Skills	"How to annotate effectively and identify different types of issues in the articles. We had different group members identifying different things that maybe other members wouldn't have picked up on which was helpful."
9	Critical Thinking and Analysis	"Critical thinking skills, Attention-to-detail and most importantly communication skills as we need to discuss about the articles as a group and be able to write out our thoughts and suggestions." "Critical thinking about sources of information."
19	Understanding Wikipedia and AI	"Learning about Wikipedia in general and how to evaluate it and edit it, how to evaluate sources and also just general knowledge about our article topic, also collaborative skills." "Comparison and deeper understanding of AI."
12	Communication and Teamwork	"Skills in presenting information about science related topics that are often complex." "Learnt some new teamwork skills and tools. Learnt how to be more critical of online sources." "Communication with my group."



Final Thoughts

- **Annotate feature worked well**
- **Small amount of students disliked the assignment / found it irrelevant**
  - Need to make more of an emphasis on science communication
  - Not just about the subject content - communicating scientific knowledge
- **This was mainly completed online**
  - Next year the workshops will be face to face
- **Didn't specify which AI tool to use**
  - Might be good for all students to use the same (at the time)
- **Peer evaluation is necessary**
  - Most groups worked well but as always there were some issues
- **Would I do it again? Yes**



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Thanks and contact details

- Dr Katelyn Mroczek, Lecturer in Microbiology, La Trobe University
- Dr Thiru Vanniasinkam, Associate Professor and Program Director, Charles Sturt University
- Dr Brian McSharry, Lecturer in Virology, Charles Sturt University
- Belinda Spry and Pru Mitchell from Wikimedia Australia

Questions



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