Artificial Intelligence tools to enhance scholarly communication: An exploration based on a systematic review

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Artificial Intelligence in Scholarly Communication

Artificial Intelligence (AI) is commonly believed to be any deliberate use of innovative computer aids to enhance the performance of operations and tasks typically associated with intelligent beings (Razack et al., 2021).

Further, these AI tools can boost the performance of human beings in nearly every sphere ranging from Fuzzy Logic to Accounting to Medicine (Pannu, 2015).

Next, Scholarly Communication is a complex process that involves several stakeholders such as "institutions, personal and professional values, incentives, technologies, and resources (Schuster, 1989).

From conceptualizing to the completion of a scientific paper several stages are involved in the process of scholarly communication, and AI tools can help at almost every phase.
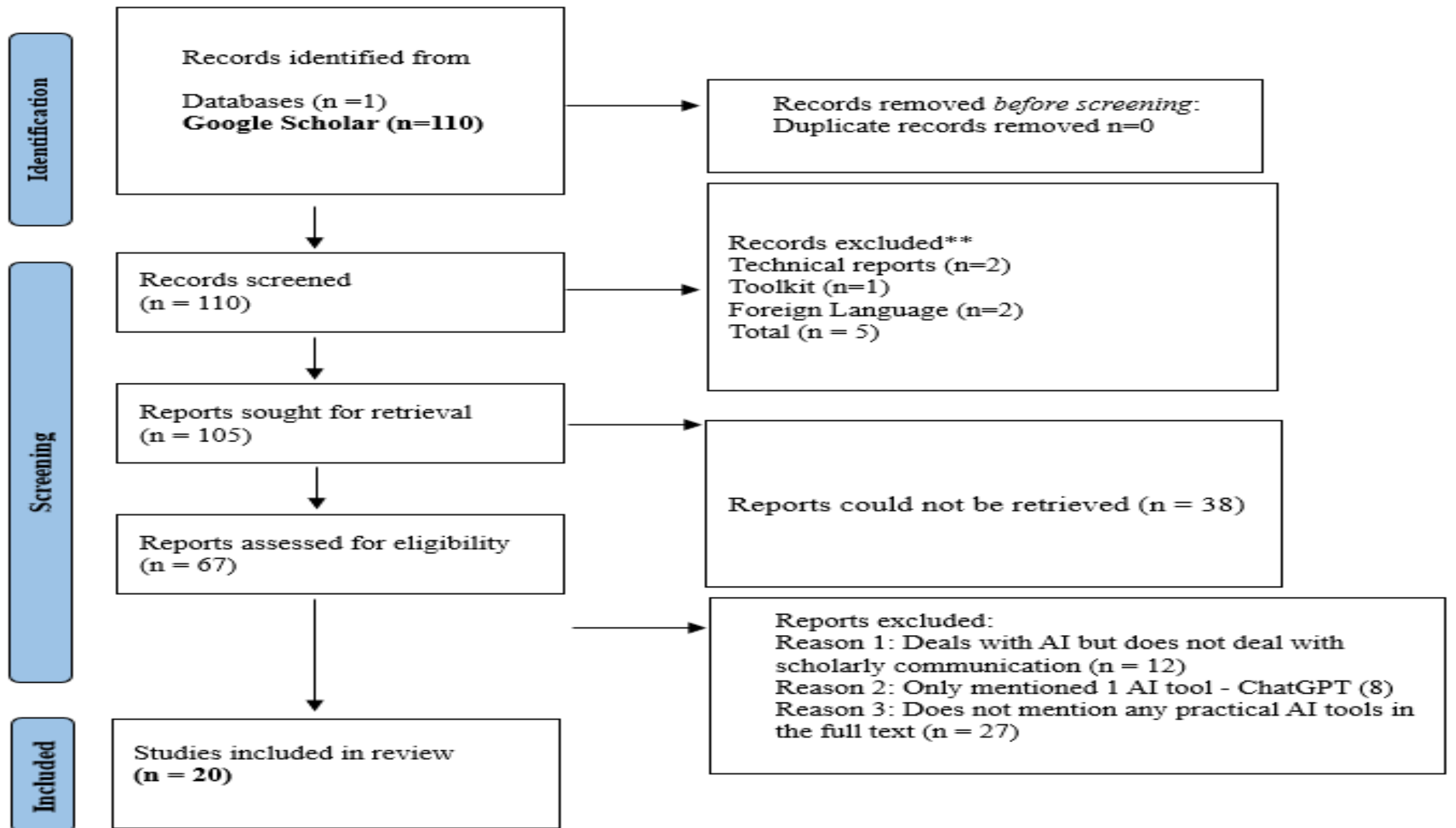
Objectives:

- The objectives of the study are to

1. Investigate the availability of AI tools that can leverage the process of Scholarly Communication based on literature review.

2. To categorize the AI tools found from the study based on their purpose of use.

3. To discuss the dichotomous views associated with the use of AI tools in scholarly communication.

Methodology:

- To fulfil the objectives **the systematic literature review** method is utilized

- **2.1 Search Strategy Used:** The advanced search option on Google Scholar was utilized to retrieve relevant documents.

- The following search strategy {"with all of the words" = Artificial Intelligence, "with the exact phrase "= scholarly communication, "where my words occur" = anywhere in the article, Return articles dated between =2020 onwards, excluding citation} returned 113 results

- The PRISMA method of systematic selection of literature was applied.

- The 20 most relevant articles were included in the review after the vigorous screening process.

Identification

Records identified from
Databases (n =1)
Google Scholar (n=110)

Records removed *before screening*:
Duplicate records removed n=0

Screening

Records screened
(n = 110)

Records excluded**
Technical reports (n=2)
Toolkit (n=1)
Foreign Language (n=2)
Total (n = 5)

Reports sought for retrieval
(n = 105)

Reports could not be retrieved (n = 38)

Reports assessed for eligibility
(n = 67)

Reports excluded:
Reason 1: Deals with AI but does not deal with scholarly communication (n = 12)
Reason 2: Only mentioned 1 AI tool - ChatGPT (8)
Reason 3: Does not mention any practical AI tools in the full text (n = 27)

Included

Studies included in review
(n = 20)

Figure– PRISMA 2020 flow diagram

Results

Sl. No.	Title	Journal / Proceedings Name	Method used	No. of AI Tools found	No. of Authors/ paper
1	Artificial intelligence-assisted tools for redefining the communication landscape of the scholarly world	Science Editing	Review	85	5
2	The importance of transparency	Journal of Nursing Scholarship	Systematic Review	4	6
3	Scholarly Communication and Machine-Generated Text	Journal of Information and Knowledge	Experimental research/ AI text detection	17	2
4	ARTIFICIAL INTELLIGENCE - BASED UTILITY TOOLS FOR RESEARCH COMMUNICATION	Proceedings of the National Conference on Revamping Libraries In the Modern Era	WEB SURVEY	5	2
5	Artificial intelligence to support publishing and peer review	Association of Learned and Professional Society Publishers	Review	10	2
6	Development of an Assessment Scale for Measurement of Usability and User Experience Characteristics of Bing Chat Conversational AI	Future Internet	Review	6	3
7	Generative AI in Writing Research Papers	Preprints	Systematic Review using PRISMA	5	2
8	Ethical Dilemmas in Using AI for Academic Writing and an Example Framework for Peer Review in Nephrology Academia	Nephrology Academia	Narrative Review	4	6
9	ChatGPT and a New Academic Reality	Journal of the Association for Information Science and Technology.	Review	1	6
10	The ethics of disclosing the use of artificial intelligence tools in writing scholarly manuscripts	Research Ethics	Review	3	3

Sl.No.	Title	Journal / Proceedings Name	Method used	No. of AI Tools found	No. of Authors/ paper
11	**The case for generative AI in scholarly practice**	**SSRN Electronic Journal**	**Review**	**3**	**1**
12	AI Emergence in Education	Jl. of Interactive Learning Research	Comparative Content Analysis (CCA)	2	1
13	Real or Fake Text?	Proceedings of the 37th AAAI Conference on Artificial Intelligence,	Experimental research/ AI text detection	2	
14	AI vs. Human - Differentiation Analysis of Scientific Content Generation	Available at arXiv (Source journal not found)	Experimental research/ AI text detection	5	7
15	Artificial intelligence in scholarly communications	Information Services & Use	Case study	5	1
16	An Empirical Study of AI-Generated Text Detection Tools	Advances in Machine Learning & Artificial Intelligence	Experimental research/ AI text detection	7	1
17	Guidelines for the Use of Generative AI in Research Paper Writing	CEUR Workshop Proceedings	Review	4	2
18	OPERAS SIG on Tools for Open Scholarly Communication	OPERAS White Paper SIG Tools	Web Survey	31	13
19	From human writing to artificial intelligence-generated text	Biology of Sport	Review	2	4
20	Using artificial intelligence in academic writing and research	Computer Methods and Programs in Biomedicine Update	Systematic Review using PRISMA	17	2

Table 2

Sl.No.	Purpose of use	The tools found
1	**Literature search and review**	1.RobotSearch, 2.Iris, 3.Scite, 4.Clara, 5.META, 6.Scholaecy, 7.Omnity, 8.COVIDScholar, 9. Dimensions, 10.Yewno, 11.Sparrho, 12.Source Data, 13.Semantic Scholar, 14.ELIZA, 15..Humata.AI, 16.Elicit, 17.18.PubMed, 19..Web of Science, 20..JSTOR, 21. WorldCat, 22.Google Scholar,23. Zotero 24.Mendeley and 25.EndNote
2	**Writing and Editing**	1.SciNote, 2.Trinka, 3.Grammarly, 4.PerfectIt, 5.AI Writer, 6.ProWritingAid, 7.Writer, 8.WordAi, 9.LightKey, 10.SMARTEdit, 11.AuthorOne, 12.Trinka, 13.ChatGPT, 14.Bard(Gemini), 15.BERT, 16.RoBERTa, 17.Typeset IO, 18.Bing Chat, 19..**Bard**, 20.DALL-E, 21.Midjourney, 22.Stable Diffusion, 23.Claude AI, 24.Scholarly and 25.Elicit, 26.Deepl
3	**References/Citati on**	1.Sciwheel, 2.scite.ai, 3.Wizdom.ai, 4.Mendeley, 5.CoCites, 6.Connected Papers, 7.EndNote, 8.RefWorks, 9.Zotero,10. PaperPile, 11.Citation Gecko, 12.SciRef, 13.CiteULike, 14.JabRef, 15.Citavi, 16.Recite, 17.Bibsonomy, 18.FidusWriter, 19.recite.
4	**Review and workflow**	1.Aira.ai, 2.AuthorONE, 3.PubSURE Report, 4.StatCheck, 5.SmartEdit, 6.StatReviewer, 7.UNSILO Recommend, 8.UNSILO Classify, 9.Editorial Manager, 10.Pentelope.ai, 11.UNSILO Evaluate, 12.ScholarOne, 13.ripetaReview, 14.Pubstrat,
5	**Plagiarism check**	1.Copyleaks, 2.Plagiarism Remover, 3.Plagiarized.ai, 4.DupliChecker, 5.PlagTracker, 6.Plagiarisma, 7.Grammarly, 8.Plagiarism Checker X, 9.PlagScn, 10.PaperRater, 11.iThenticate, 12GPT-2, 13.Content at Scale, 14.Writer.com, 15.Sapling.ai, 16.Turnitin, 17.Ouriginal-Urkund,18.Turnitin and 19.Copyscape.
6	**Journal selection**	1.Publication Recommender, 2. EndNote 20 Manuscript Matcher, 3.FindMy Journal, 4.OA Journal Finder, 5.Springer Journal Suggestor, 6.Edanz Journal Selector, 7.Journal/Author Name Estimator, 8.Elseevier JournalFinder, 9.LetPub, 10.Cofactor Journal Selector, 11.Journal Guide. 12.perplexity, 13. coherence, 14.Semantic similarity.
7	**Manuscript structure checking**	1.Writing robots,2.Dream writer, 3.LghtKey, 4.WordAi, 5.After the Deadline, 6.PerfectTense, 7.Writer, 8.AI Writter, 9.Grammarly, 10.PerfectIt, 11.ProWritingAid. 12.Trinka. 13.AuthorONE. 14.Penelope.ai, 15.UNSILO
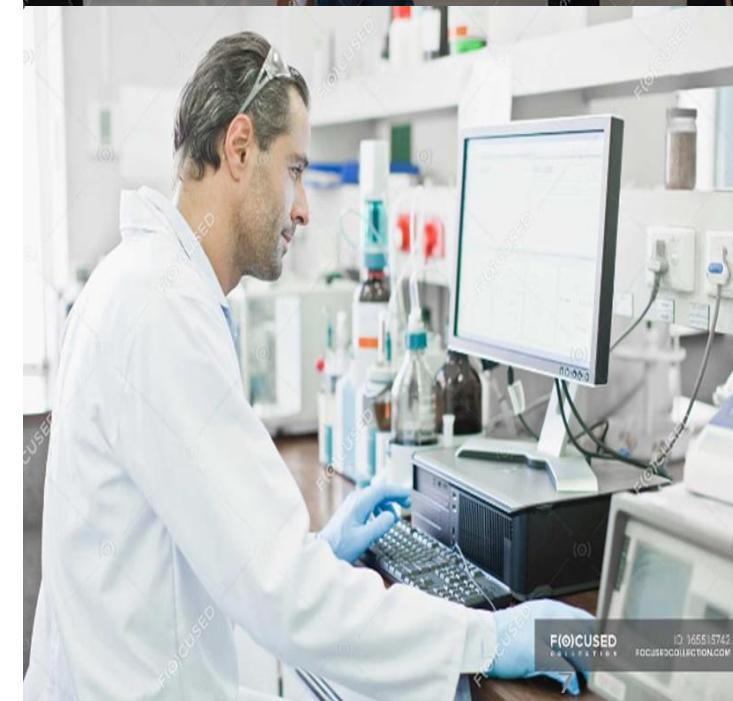
Findings

- 12 out of the 20 studies are review-based studies which include traditional review, systematic review, and narrative review.

- Four studies are done along the lines of AI text detection by using some kind of quasi-experiments.

- 16 out of 20 articles were co-authored, showing the dominance of co-authored papers in this research area.

- An average of 11 AI tools/techniques were found per paper.

- we categorized the AI tools and techniques into 17 different categories.

- The maximum number of tools were found under the 7 categories mentioned in Table 2 out of the 17 categories. Maximum tools were found for Writing and Editing followed by Literature search and review.

Dichotomous Views on AI in Scholarly Communication

Leveraging AI

1

Researchers like Razack et al. (2021), Berg (2023), Gabriel (2020), and Rulfi & Spada (2023) advocate for the use of AI to enhance scholarly communication.

Concerns about AI

2

Researchers like Santra and Majhi (2023), Tang et al. (2023), and Jain & Jain (2023) express concerns about the challenges associated with AI-generated content.

Interesting Insights from the systematic review

(Hosseini et al., 2023) came up with an interesting insight that the use of a Large Language Model (LLM)-based text should not be banned in academia as it further encourages the "undisclosed use of LLMs". They suggested that rather the researchers should reveal the use of LLMs in the introduction or methods section; in-text citations and references should be provided to recognize their used AI tools; "record and submit their relevant interactions with LLMs as supplementary material or appendices.

The fact that the systematic review showed researchers (Ma et al., 022) have built AI tools particularly to detect AI-written text is a sign that AI-written text ethically risks the process of scholarly communication ethically.

ChatGPT seems to be a promising AI tool. However, its misuse may lead to grave issues specifically around education and public safety

The researchers must keep in mind the ethical issues related to the use of these AI tools in scholarly communication.

Libraries in collaboration with academic departments may conduct awareness activities related to **the ethical use of AI tools among students and researchers**.

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