



Emergence of the metaverse and ChatGPT in journal publishing after the COVID-19 pandemic

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The “COVID” President, from 2020 to 2022

As soon as I took office as president of the Korean Council of Science Editors (KCSE) on January 17, 2020, the COVID-19 pandemic began. Therefore, most workshops and seminars held by the KCSE were operated online. The training programs designed were all executed without any difficulties. There were four workshops in 2020, 11 in 2021, and nine in 2022. The editors and staff of the KCSE’s member institutes participated in these events more actively than before the COVID-19 pandemic, and the number of participants increased. Even before the pandemic, scholarly journal publishing had already been digitalized and implemented online through manuscript management systems (e-submission systems); therefore, the pandemic did not cause operational problems. The number of submissions during the first year of the COVID-19 pandemic soared, especially in the medical field [1] and on the topic of COVID-19 itself.

Many scientific articles have helped medical professionals care for persons infected with COVID-19. Therefore, scientific journals received a very high level of recognition as a valuable resource for society as a whole during this critical pandemic. I am delighted to see that scientific, technological, and medical journals in Korea have played a pivotal role in combating COVID-19, and I am proud to have served as the president of the organization of those journal editors for 3 years. I applaud our members for their devotion to journal publishing as editor-publishers [2]. As I complete my term as president, I would like to emphasize two emerging trends in journal publishing: the metaverse and artificial intelligence. Regarding the latter topic, I wish to discuss ChatGPT and some issues related to its use in scholarly publishing.

Adoption of the Metaverse for Editors’ Meetings and as a Journal Platform

With the increasing frequency of online meetings and events, the metaverse has become an emerging topic. At my university, Hallym University in Korea, professors received training on how to use the metaverse for educational applications, which can be categorized into four types: augmented reality, lifelogging, mirror worlds, and virtual reality [3]. As an example of how the metaverse has been used in a professional context, the European Association of Science Editors

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opened its annual meeting and conference in the metaverse—specifically, GatherTown—a virtual conference venue. I was able to participate in the conference with my avatar. Although it was challenging to attend all sessions at the conference due to time zone differences, it was possible to understand the presentations. A strength of the metaverse is that it makes it possible to attend a meeting in any region and have discussions with other attendees, since they are nearby in a certain virtual space. Attendees can find others by navigating through space in the metaverse. For the KCSE's annual meetings and conferences, the metaverse was not adopted due to difficulties explaining it to editors. However, it would be worthwhile to try this new event format soon because most editors are now familiar with the online meeting format.

In the virtual world, a simulation outcome can be displayed in real time as if a three-dimensional object exists in front of us. If viewers can view the object from any angle, they will have a better and more comprehensive understanding of the content. If the three-dimensional structure is essential for readers to understand the content, journal publication in the metaverse is a suitable alternative [4].

Emergence of ChatGPT—an Artificial Intelligence Chatbot

New trends in journal publishing and editing include artificial intelligence platforms or programs. Various artificial intelligence-assisted tools for scholarly journals have already existed for some time, assisting in information retrieval, writing and editing, citation management, review, plagiarism checks, and journal selection [5]. A recent striking tool is ChatGPT—an artificial intelligence (AI) chatbot—operated by OpenAI since November 30, 2022 [6]. ChatGPT answers questions in a conversational style. How can ChatGPT be used for journal publishing and editing? It cannot provide appropriate answers for information retrieval, citation management, peer review, and plagiarism checks. However, it will be helpful in writing, editing, journal selection, and references recommendation. Its answers to specific queries are somewhat reasonable, so that authors can use ChatGPT for descriptions in the Introduction section, which includes the definition of relevant terms and the conceptual background. Paraphrasing is also possible, and the quality is acceptable. ChatGPT's translation ability is good, although it is not perfect or top-tier level. Non-native English speakers can benefit from ChatGPT, although other popular translation tools also exist, including Papago (<https://papago.naver.com>) and Google Translate (<https://translate.google.com>). English proofreading is also possible, and ChatGPT can be helpful in this regard. When I asked ChatGPT for English proofreading, the results were 10 times better than the origi-

nal manuscript, as evaluated by the Grammarly premium version (Grammarly Inc) (Suppls. 1, 2, and Fig. 1). A professional English editor stated that “It can certainly help fix mechanical grammar problems and make some texts sound more natural in English, but it does not do a good job of detecting when things do not make sense or when there are problems in a logical flow. One also has to be very careful to prevent it from paraphrasing too aggressively, because ChatGPT is excellent at creating new texts that sometimes omit important details. For example, it could do a very good job of summarizing a 250-word abstract into a single paragraph, but that is not always what is needed or appropriate” (Andrew Dombrowski, PhD, Compecs Inc, email communication, January 27, 2023). Although the manuscript was first proofread using ChatGPT, it was finally published after further proofreading by professional native English speakers [7].

ChatGPT can suggest an appropriate journal for submission when the main text is included in the inquiry. It can also recommend core reference articles or data for writing an article or conducting research on a specific field or topic; thus, it can help researchers save time in searching the literature or identifying sources of data, although its answers are not perfect.

Would editor training be another potential field where ChatGPT can be used? Since many society journal editors are not full-time editors, but voluntary editor-publishers, novice editors are faced with the need to learn many terms in journal publishing. If they have difficulty understanding those new terms, inquiring with ChatGPT may be constructive if ChatGPT can provide precise and reasonably accurate answers. To assess its ability to do so, I queried ChatGPT on 58 terms related to digital standards from January 19 to 21, 2023 (Suppl. 3). The answers given by ChatGPT are listed in Suppl. 4. Out of ChatGPT's 58 responses, 42 (72.4%) were reasonable and helpful for editors. However, 16 answers (27.6%) remained that were insufficient or incorrect (Suppl. 3). Therefore, it is not possible to recommend that novice editor-publishers get help from ChatGPT for terms related to the digital standards of journal publishing. In Suppl. 4, 16 inappropriate answers are marked in red text with strikethrough.

Similarly, unreasonable or incorrect answers were also found in ChatGPT's knowledge and ability to interpret questions on a parasitology examination in a medical college [7], where ChatGPT answered 48 out of 79 items (60.8%) correctly. Even among the 48 correct answers, seven explanations (14.6%) required revision. Thus, ChatGPT's answers are not very acceptable for knowledge specific to a certain field. Therefore, if authors consider citing ChatGPT's answers in their manuscripts, they should meticulously check the veracity of the answers.

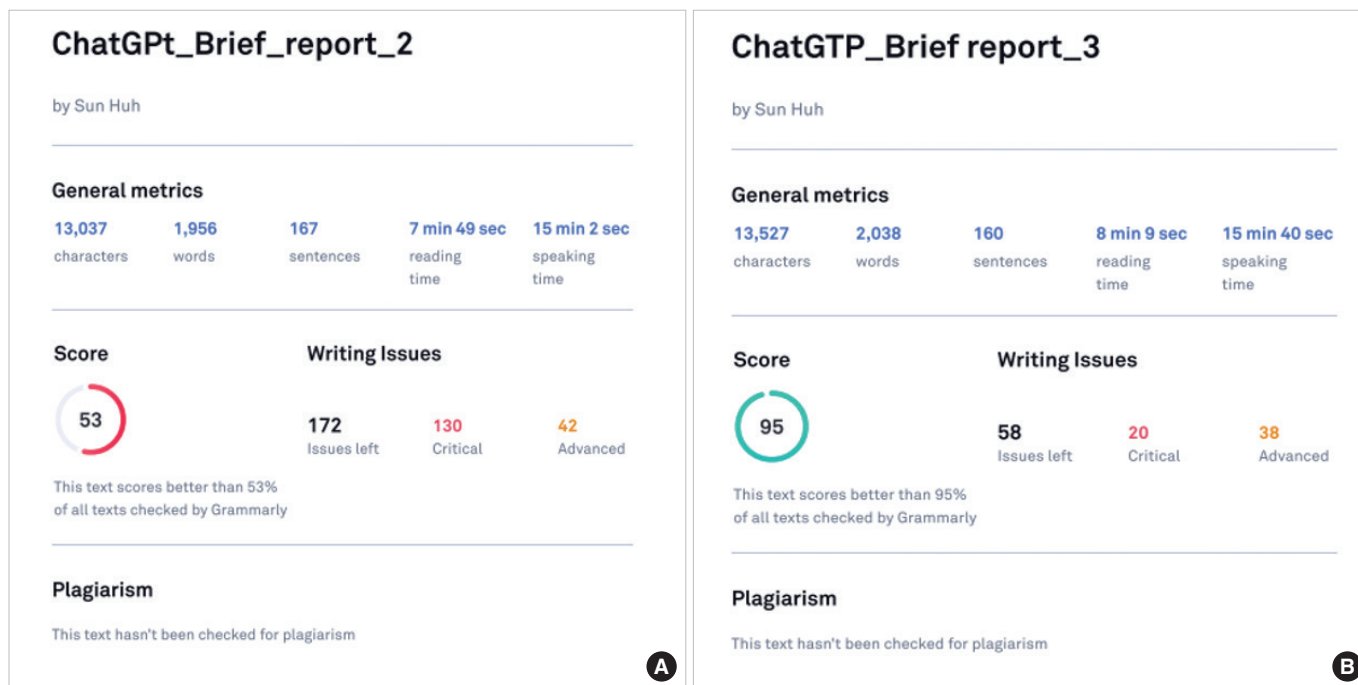


Fig. 1. Grammarly scores before and after English proofreading of the manuscript by ChatGPT. ChatGPT_brief_report_2 (A) is the result of before proofreading by ChatGPT (B).

Is ChatGPT Eligible to Serve as an Author?

Some publishers or editors do not allow ChatGPT as an author or co-author [8], citing as a reason the fact that ChatGPT could not fulfill the authorship criteria because it could not take legal responsibility. There is a debate on ChatGPT’s authorship eligibility. I currently do not consider ChatGPT eligible to be an author, primarily because “an AI chatbot cannot be an author of a copyrighted work, and the text automatically generated by an AI chatbot cannot be a copyrighted work” [9].

A newer and more powerful AI systems may emerge in the near future. If that is the case, the scientific community will need to carefully consider any new technologies that appear.

How to Cite ChatGPT’s Answer in an Article?

Besides authorship, content generated as a response by ChatGPT can be cited in the text. An important problem, however, is that there is no consistent answer to the same inquiry according to the version or time change; furthermore, there is no archiving site for ChatGPT’s answers. Therefore, it is recommended to list the answer as a supplement to enable readers to check the work done by ChatGPT as follows:

Suppl. 1. Answer of ChatGPT (2023 Jan 9 ver.) to the inquiry, “What is the definition of an editor-publisher?” (cited 2023 Jan 19, 8:30 PM [Seoul time])

Appreciation to KCSE Board Members and Editors, and Staff of the Member Institutes

Despite the difficulties of the COVID-19 pandemic, which has changed our lives and routines over the past 3 years, I am pleased to have completed my duties as the fourth president of KCSE and hand over my responsibilities to Professor Kihong Kim of Ajou University. It is also a source of great pride that Professor Kihong Kim has participated in Crossref as a board member and raised international recognition of KCSE [10]. Fortunately, over the past 3 years, current account surpluses have improved the organization’s fiscal status. I would like to finish my retirement address by expressing profound gratitude to the board members and editors of all member organizations who have shared moments of joy and pain for the past 3 years.

Conflict of Interest

Sun Huh was the president of the Korean Council of Science Editors from January 17, 2020 to January 13, 2023, but had no role in the decision to publish this article. No other potential conflict of interest relevant to this article was reported.

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Supplementary Material

Supplementary files are available from the Harvard Dataverse at <https://doi.org/10.7910/DVN/LBB7QS>.

Suppl. 1. Manuscript before English proofreading by ChatGPT.

Suppl. 2. Manuscript after English proofreading by ChatGPT.

Suppl. 3. Fifty-eight terms on digital standards of journal publishing (queried via ChatGPT) and the acceptability of its answers.

Suppl. 4. Answer of ChatGPT (2023 Jan 9 ver.) to 58 topics on digital standards of journal publishing (cited January 19, 2023, 8:30 PM–January 21, 2023, 21:00 PM [Seoul time]).

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