Publish or Perish: The Impact of ChatGPT on Future Academics

Mafarhanatul Akmal Ahmad Kamal
Academy of Language Studies, Universiti Teknologi MARA
40450 Shah Alam, Selangor Darul Ehsan, Malaysia
Corresponding Author: mafarhanatulakmal@uitm.edu.my

Mohd Fadhli Shah Khaidzir
Pusat Pengajian Citra Universiti, Universiti Kebangsaan Malaysia
43600 UKM Bangi, Selangor Darul Ehsan, Malaysia

Received: 01/14/2024   Accepted: 04/18/2024  Published: 04/25/2024

Abstract
The emergence of several free artificial intelligences capable of helping with writing tools without hiring research assistants has the potential to significantly benefit academics in meeting the performance requirements set by their institutions. Applications for writing such as Quillbot, Grammarly, and ChatGPT are among the current ones that help to improve one’s language proficiency. Since these writing assistance and real-time grammar suggestions are still considered new and emerging, there is a need to outline a conceptual framework for a prospective study that draws upon relevant literature focused on exploring the potential of ChatGPT, a renowned artificial intelligence system. Concerns remain as to whether academicians have conducted thorough analyses of the effects of utilising ChatGPT in the production of research articles. Thus, this article presents an overview of the need to utilise ChatGPT and assesses its influence on producing quality scholarly writings by summarising recent journal papers, with a specific emphasis on ChatGPT academics, artificial intelligence, technology, ChatGPT, scholarly articles that has been refined to include a limited relevant article. The summary indicates that the application of ChatGPT reduces the language barrier or knowledge gaps among academicians. However, the excessive usage and dependence of the tool hamper the learning progress. This will lead to the incompetence of individuals in situations where technological glitches, system errors, or outdated information may occur. Future research recommends further extensive research on ChatGPT to be conducted on its actual utilisation within the academic community for a more thorough examination.

Keywords: academics, artificial intelligence, technology, ChatGPT, scholarly articles

Cite as: Mafarhanatul Akmal Ahmad Kamal & Mohd Fadhli Shah Khaidzir (2024). Publish or Perish: The Impact of ChatGPT on Future Academics. Arab World English Journal (AWEJ) Special Issue on ChatGPT, April 2024: 319-330. DOI: https://dx.doi.org/10.24093/awej/ChatGPT.22
Introduction

Living in a contemporary era defined by significant advancements, where access to information and resources is readily available, may be a double-edged sword. Numerous technological innovations have emerged as instrumental tools that facilitate the simplification of daily life. Artificial Intelligence has made it possible for people to not only handle their personal and daily lives well, but also get help with their work and schoolwork. Artificial Intelligence, for example, can help academics write and check their scholarly papers without having to hire or pay experts in the field. These advantages are attributed to Artificial Intelligence (AI). AI, stands for Artificial Intelligence, is the process of recreating human intelligence in computer programming. This allows computers to acquire knowledge and develop cognitive abilities similar to humans (Jansen, 2022; Suleimenov, 2020). These computers possess the capability to process information, engage in reasoning, make decisions, and solve problems in a manner that emulates the cognitive capacities of humans. This AI comprises a diverse array of strategies and technologies allowing machines or robots to execute activities that conventionally and traditionally require the capability of intelligence of humans.

The progression of technology has resulted in the improvement of various elements of human life. The emergence of technological advancements has meaningfully simplified multiple aspects of human life, exemplified by the introduction of cleaning robots, communication gadgets, and other similar innovations. In addition, individuals now have the opportunity to receive assistance in the realm of writing, specifically in the context of academic writing that necessitates a formal style of expression owing to the presence of chatbots. A chatbot is a computer software, intelligence program, or mechanical being that can converse with humans, exhibiting realistic speech, emotions, movement, and body gestures (Dehn & Van Mulken, 2000; Kwon et al., 2023). Pereira and Barcina (2019) stated that chatbots can be used through both spoken and written platforms. Siri by Apple, Amazon Lex and Alexa by Amazon, Meena and Google Assistant by Google are among the voice chatbots designed to interact with users through spoken language. On the other hand, text-integrated chatbots are typically incorporated into instant messaging systems like Telegram, WhatsApp, Slack, and Facebook Messenger, allowing users to communicate with AI chatbots through written messages.

Meanwhile, a writing chatbot refers to a particular kind of chatbot that has been developed to aid users in multiple facets of writing. Users can ask a writing chatbot to help them compose sentences or even an entire text on a specific topic. Not only that, but they can also seek assistance from these writing chatbots to improve their sentence structure and their grammar to provide clear and effective writing. Moreover, in academic settings, a writing chatbot is considered beneficial for enhancing both students’ and educators’ teaching and learning processes. It assists by analysing text, providing suggestions on grammar and sentence structure, and constructing educational materials for teaching and learning purposes. This makes the process more accessible, and the writing outcome will be more effective. Furthermore, a writing chatbot can serve as a viable substitute for human proofreaders when writing academic papers. Its primary function is to aid in the production of writing products by ensuring their coherence and error-free nature, thereby enhancing the quality of work. Raheem et al. (2023) emphasised that the presence of writing chatbots like Quillbot, Grammarly, and ChatGPT can enhance one's language proficiency by providing writing assistance and real-time grammar suggestions. While going through the process of refinement and tuning their language as accommodated by these writing chatbots, users will be able to learn and acquire new input on any particular topic that they are struggling with. Aside from these advantages, researchers have found that chatbots foster a collaborative environment which enables students to participate in discussions, enhancing their critical thinking and communication skills. In summary, the integration of chatbots into the academic writing process can significantly enhance both the quality and quantity of students’ writing.
from that, with the interaction with users, chatbots may be able to provide ideas, from crafting marketing content to writing blog posts and product descriptions, which will be helpful to accommodate users’ needs, whether in their academic or personal situations.

Thus far, it is worth noting that the writing chatbots provide many advantages to the writers, regardless of their level of expertise. Also, those bilinguals or multilinguals who need to use a language other than their mother tongue could feel at ease, as they may not be struggling much as they can get assistance from the chatbots in their writing. Other than that, as writing chatbots are now able to provide translations of languages, this could reduce the language barriers that they are experiencing while at the same time eliminating language anxiety in their communication process. According to Javaid et al. (2023), users' confidence in their language learning and writing abilities may increase as a result of the comments and suggestions offered by ChatGPT. Not only for formal writing, but these users may also benefit from the writing chatbots when they are experiencing writer's block or looking for inspiration for creative writing such as story writing or poetry. Users may use the writing chatbot to produce effective resumes and cover letters, along with other writing essentials. Noting that ChatGPT offers a variety of benefits in aiding the users’ writing abilities to the extent that they can enhance their writing skills, there is no doubt that it is necessary to be implemented in producing quality written works. Hence, it is critical to explore the effects of integrating ChatGPT from the standpoint of academics, who should have reasonable control over their writing, particularly as they are required to write academic research papers.

One emerging trend in the field of writing technology is the rise of highly effective chatbots, specifically ChatGPT. This powerful chatbot utilises the authority of the GPT (Generative Pre-trained Transformer) model, which can mimic human dialogue in generating text as the users’ request. Dai et al. (2023) stated that ChatGPT has an extensive database coming from publicly available information, hence supporting their claim that this writing chatbot offers impressive and diverse knowledge that helps provide insightful responses to many topics and queries from their users. Not only that, Abdullah et al. (2022) asserted that ChatGPT is a groundbreaking innovation of the GPT-3.5 model that is designed to perform well in the field of chatbot technology. Using an extensive collection of online data, including conversations and training, ChatGPT can provide and generate logical and contextually appropriate responses based on the prompts conversationally given by the users. This can be seen from its impressive ability to provide natural English language understanding and composition that assist in the interactive conversation between the chatbot and its users. Loeppky (2023) argued that ChatGPT differs from other information retrieval systems in its ability to engage in interactive text-based communication with users, which is somehow similar to how humans respond. The simplicity of its system makes it easier for the users to communicate with the chatbot by just sending or inquiring about information and getting tailored and informative responses in a specific context, which makes the uses of ChatGPT varied and versatile, from content creation to language development.

ChatGPT provides a diverse range of advantages, not only for students but also for academics, owing to its exceptional characteristics. Academics bear the burden of writing and producing scholarly publications to uphold their reputation and stay relevant in their respective disciplines. Academics must fulfil this task not only to meet their responsibilities but also to further their career and establish connections with other scholars. Hence, the incorporation of ChatGPT is deemed a valuable support system for academics, assisting in content creation, document structuring, and proofreading. Salvagno et al. (2023) asserted that academic workload can be significantly reduced as ChatGPT helps in various ways, from finding, summarising, and writing
academic papers to generating emails and creating lesson plans. Nevertheless, a significant worry arises regarding the extent to which these academics themselves authored the papers, given that ChatGPT can aid in the production of their academic papers. Park (2023) urges the ability of ChatGPT to summarise and produce writing similar to that written by human researchers to the extent of hardly being recognised, thereby allowing situations where people can successfully pass medical written examinations. Consequently, the technology of ChatGPT provides appealing solutions for academics to write and produce sound and quality research papers in a short period. However, the algorithms of ChatGPT are trained to provide information and predictions based on publicly available data (Haleem et al., 2022) from a specific timeframe, thereby limiting their ability to learn and deliver current and real-time knowledge (Zhou et al., 2023). The potential for misinformation or outdated knowledge may happen, as its ability has not yet exceeded human intelligence.

Not only that, ChatGPT could not yet interpret and solve complex data analyses, make ethical decisions, and produce critical analysis, which is crucial in writing academic papers. It is also a concern that the integration of ChatGPT in writing scholarly papers could potentially harm the integrity of the papers and the academics due to its inability to credit the authors of the information sources. Consideration of using ChatGPT in the writing process of academic papers and its bearing on the capacity of researchers to produce high-quality and worthy scholarly articles should be given attention, as it may impact the academics’ integrity. Therefore, it is crucial to explore the significance of employing ChatGPT in academic publications and its impact on the quality of scholarly articles produced by academics. The main objective of this paper is to provide an overview of the need for utilising ChatGPT and to assess its influence on the quality of scholarly writing. This is in line with the attempt to question the importance and relevance of using assisting tools such as ChatGPT in academics. The outcome of this prospective research may serve as a foundation for subsequent inquiries in this area, given that this subject matter remains relatively new and has not yet been comprehensively explored on the impact of research article writing among academics. It will also provide empirical evidence regarding whether the use of ChatGPT helps or hinders the creative and critical thinking of researchers in producing scholarly articles.

This conceptual paper holds significance as it aims to examine the current use of AI, particularly ChatGPT, in the writing of scholarly publications. In present academia, there is a growing expectation for scholars to prioritise their teaching and learning responsibilities. Nevertheless, it is imperative for academics, particularly those affiliated with research universities (RUs), to actively engage in publishing their work and garnering citations. This is crucial to enhance their professional standing and contribute to their individual key performance indicators. This study suggests investigating the effects of employing ChatGPT in the academic domain, specifically examining if its usage facilitates a tendency to prioritise quantity over quality in publishing endeavours. This is due to the convenience of obtaining comprehensive information by just providing prompts to ChatGPT. Given the conceptual nature of this paper, it is important to note that no empirical data has been obtained. Consequently, the evaluation and inferences presented in this paper rely exclusively on readings and reviews of literature from multiple disciplines. This approach is essential to achieve a comprehensive conceptual grasp of the subject matter. However, it should be noted that the current state of research on this topic is still scarce and there is a lack of comprehensive exploration in the existing literature. Thus, it highlights the objective of this study is to establish the necessary contextual framework for the future use of this topic. In presenting an overview on this topic, this paper utilises keyword searches to find recent
journal papers, with a specific emphasis on ChatGPT that has been refined to include a limited relevant article. The keywords used are academic scholarly articles, artificial intelligence, artificial intelligence writing tool, chatbot, ChatGPT, writing tool, and writing chatbot.

**Literature Review**

In addition, considering the other perspective, AI has been extensively integrated into the way people write using machines commonly known as computers. These devices provide numerous writing tools to support writers, both students and academic researchers. Despite all the advantages of using chatbots in all other domains, the main issue at stake is the usage of chatbot technology in academic settings. Academic writing is made easier with the assistance of chatbots, as these chatbots provide users with indispensable assistance in many aspects of academic writing, such as assisting them with writing tasks, correcting errors in writing, and explaining grammatical errors. The use of chatbots built for writing purposes has proven to be a helpful tool for language learners in the domain of language acquisition (Kessler, 2018, as cited in Kohnke, 2022). These chatbots provide a variety of services, such as writing exercises, ideas for extending one's vocabulary, and constructive feedback on written projects. To understand user input and create appropriate responses, chatbots usually use natural language processing and machine learning approaches. These tools have the potential to help people save time, improve their writing skills, and raise the overall quality of written documents. For example, Grammarly is a chatbot that assists users with grammar and style evaluations. Furthermore, chatbots embedded within word processing software, such as Microsoft Word, provide users with spelling and grammar tips. Furthermore, chatbots can be useful for creative writers, especially when they are experiencing writer's block. They can ask chatbots for assistance in artistically expressing their ideas in composing poems, and stories, or for inspiration.

From the standpoint of students engaged in their academic writing for their degree project, the utilisation of a chatbot assistant can enhance their writing proficiency by offering valuable feedback on grammar errors and furnishing them with examples of reports from other institutions (Pereira & Barcina, 2019). This facilitates language acquisition among students by providing them with exposure to proper language usage throughout writing activities, enabling them to gradually develop proficiency in the language. In their study, Imran and Almussharaf (2023) reveal that implementing ChatGPT has been well-received in academic writing, particularly in the fields of science, technology, and education. This can be seen in their findings of which the students, as users of ChatGPT, unanimously agreed that its sophisticated AI generative capabilities provide satisfactory responses to their inquiries. This promising approach holds great potential for enhancing engagement and fluency in writing. However, at the same time, there is a strong need to revisit and update the training, policy, and assessments among teachers and students from time to time to upload and maintain the level of integrity and originality of the academic aspects. Having said that, users need to understand that although ChatGPT is indeed beneficial in delivering, facilitating and guiding both learners and instructors, however, relying solely on its responses may not be prudent, as ChatGPT is susceptible to technical glitches and lacks timely updates to keep up with the rapidly evolving technology.

However, AlAfnan et al. (2023) affirm that the use of ChatGPT is beneficial for the students as it generates accurate responses rather than requiring the students to search for all related information especially if the task reaches the deadline for submission. Using ChatGPT to generate ideas for their assignments can provide a significant advantage for students, but it is detrimental
when the students commit dishonesty and plagiarism by taking the exact responses as their own. According to García-Peñalvo (2023), there is an issue with this as well because there are open sources of information that anyone may access and copy from without giving due credit to the sources or critically analysing the content that has been selected from them. George Pallivathukal et al. (2024) state that students may commit academic dishonesty when using ChatGPT, stating that “There is an apprehension that students might submit essays that do not authentically represent their work, thus contravening ethical standards within educational institutions” (p. 13). As such, this situation could be given advantage for the students, but the educators will face difficulties in monitoring and grading such submissions. The possibility of academic dishonesty or plagiarism among students who submit their assessments relying solely on ChatGPT undermines the fundamental goals of higher education, which are to empower and educate students, and may ultimately result in the devaluation of academic credentials (Cotton et al., 2024). Nevertheless, Sullivan et al. (2023) believe that rather than focusing on the rising stigma of academic integrity and dishonesty circling the use of ChatGPT in providing students with advanced tools for their academic pursuit, the stakeholders should seek ways to overcome such issues by constructing more personalised and contextualised tasks for the specific subjects. This approach would prepare the students with skills necessary for real-world challenges rather than limiting them to advanced technology, thereby enhancing their future employability prospects.

At this rate point, it is evident that ChatGPT is deemed beneficial to the students pursuing their academic endeavours. However, despite the concerns of educators regarding the potential impact of ChatGPT on students’ honesty and integrity, the use of ChatGPT facilitates educators’ access to extensive and current resources within their respective fields, which has sparked both excitement and concern among scholars. ChatGPT is an invaluable resource for generating ideas, creating content, making recommendations, and even composing codes, articles, poetry, and lyrics, which improves the writing process without the need for programmers, poets, journalists, academics, and authors (Fitria, 2023; Park, 2023). The rapid provision of information across several subjects might be particularly advantageous for academics aiming to investigate diverse viewpoints and collect initial thoughts. Ensuring a harmonious integration of ChatGPT to enhance efficiency while upholding the expected intellectual rigour and innovation in academics becomes paramount. Nevertheless, several scholars express concerns regarding the possible risks of over-dependence on the technology, since it could undermine the authenticity and depth of the research. Perhaps even to the point where ChatGPT is used to write or produce entire academic articles. This could cause some complications in addressing and acknowledging the authors of that particular paper. According to legal principles, it is impossible to acknowledge nonhuman entities as authors, hence precluding them from being eligible for copyright protection, even if they employ pseudonyms (Lee, 2023). This statement asserts that the attribution of authorship or writer status is only applicable to human beings in the context of any written work.

Furthermore, the study also revealed that chatbots, or ChatGPT in this context, fail to satisfy the authorship requirements set forth by the International Committee of Medical Journal Editors (ICMJE). Moreover, the study brought to light the unsettling fact that even Chatbots, specifically ChatGPT, fall short of meeting the authorship guidelines established by the International Committee of Medical Journal Editors (ICMJE). Specifically, they are incapable of providing conclusive confirmation regarding revisions made to scholarly articles and cannot be held responsible for every facet of the work, including ensuring that inquiries pertaining to the work’s integrity or accuracy are thoroughly examined and resolved (Zielinski et al., 2023).
However, considering the advancement in AI over the years, they can write the whole text. This becomes evident when examining the publication of "The Policeman's Beard Is Half Constructed," a collection of poetry and short stories credited to a computer in 1984. From the standpoint of academic writing, Vincent (2019) vouched for the first research book written by AI published by Springer Nature entitled ‘Lithium-Ion Batteries: A Machine-Generated Summary of Current Research’. This research book is a compilation of summaries of thousands of research papers on lithium-ion batteries into specific chapters with hyperlinks to the original source of the document for further reading. He further asserted that while this book is beneficial to academics of that field for its content, it still lacks coherence and structure as compared to human writing.

In this case, as the whole book is written by AI, Lee (2023) contended that possessing authorship of a written work is morally wrong if it was not authored by a human being. Thus, it is now accepted that the credit for this book should go to Beta Writer, an algorithm created through a partnership between Springer Nature and Goethe University. Despite progress towards the era of technological advancement, the ongoing development of this practice would result in an increased number of books or scholarly articles written by AI in which the authenticity and the breadth of the research would be difficult to determine. While ChatGPT can extract an enormous amount of information from an existing database to generate new academic articles, Iskender (2023) contended that its output may be of acceptable quality but lack originality, given that it is incapable of outperforming the human intellect in terms of processing and composing such articles. On the contrary, Iskender (2023) posits that it is undeniable that the use of ChatGPT might lessen the academicians' workload by extracting information rather than devoting their time exclusively to writing, given their other academic responsibilities.

**Practical Implementation**

AI has been widely used in many fields over the past decades, including entertainment, automobile, healthcare, and education, to name a few. In the education field, AI has transformed teaching and learning activities to serve better experiences while meeting the needs of students. From constructing the lessons, and providing the materials, to grading the students’ works can be eased with the integration of AI, thereby improving the learning environment and experiences for both students and educators. Montenegro-Rueda et al. (2023) assert that ChatGPT, an AI system that has been the subject of recent controversy, possesses the capacity to provide timely and personalised responses. This system can meet the specific needs of every student, provide immediate feedback, and improve understanding of difficult topics. According to Tlili et al. (2023), ChatGPT increases the chances of academic success for both students and teachers by offering easily understandable language for discussing complex subjects.

Nevertheless, there is a lack of research examining the use of ChatGPT for scholarly academic writing, specifically focusing on its necessity and its impact on academics' ability to produce high-quality academic articles. According to a study done by Al-Mughairi and Bhaskar (2024), factors affecting the utilisation of ChatGPT among higher education teachers include time efficiency, personalised teaching and learning materials, and professional development as they can keep abreast with their technical skills to ensure their overall teaching effectiveness. In addition, the teachers expressed worries about the reliability and accuracy of information obtained by ChatGPT, privacy and data security, as well as overdependence on ChatGPT which may potentially impair their thinking abilities and overshadow their responsibilities as educators. However, even though the study focused on higher education teachers, the main issue was not on
the production of scholarly articles among scholars. On the other hand, Chukwuere (2024) affirms that the integration of ChatGPT in academic research writing enhances the efficiency, quality, and productivity of scholarly articles as it provides diverse information pools in short periods and helps in writing skills by offering writing assistance, including appropriate vocabulary, grammar, and sentence structure suggestions. However, rather than focusing on the productivity of scholarly articles, researchers should ensure the authenticity and acknowledge the source of information to avoid plagiarism risks, ensuring the accuracy, integrity, and clarity of their academic articles (Silva et al., 2024). It is crucial to avoid plagiarism, as suggested by Chukwuere (2024), “Even while ChatGPT may be a great resource for study in academia, it is important to consider the possibility of plagiarism” (p. 42).

Thus far, it is evident that the research on the utilisation of ChatGPT among educators mostly centres on its integration into the process of teaching and learning. There is little emphasis placed on integrating ChatGPT into the production of scholarly publications. And even when there is some focus, it is primarily on discussing the advantages and disadvantages of its use. There is not much focus on the viewpoints of educators or researchers, their wants and needs, and the effects of utilising it on quality, productivity, and performance. Hence, the implications of this proposed study are multifaceted, but it serves as a foundation for further research into its implications of incorporating AI, specifically ChatGPT, in the writing of scholarly papers within the academic community. The increasing integration of ChatGPT among a broader range of users, be they students or educators, is leading to its widespread adoption in the educational landscape. Halaweh (2023) asserts that this technology has the potential to become omnipresent, much like mobile phones are now. Thus, it is crucial to consider learning, adapting, and utilising ChatGPT in producing scholarly articles, as it helps in the quality and quantity of scholarly articles among educators. It is imperative to acknowledge that the aforementioned technological progress can facilitate the process of writing distinguished and high-calibre academic research papers. However, it is crucial to recognise that it may also give rise to concerns pertaining to authenticity, ethical considerations, and the cognitive capacity of academics. Therefore, it is crucial to do more investigation into the feasibility of utilising ChatGPT, the analysis of demands, its real usefulness in academic writing, and its effect on the quality of scholarly papers produced by academics.

Conclusion

The integration of AI assistance in daily life has become significant, including in the academic landscape, as their use in teaching and learning processes eases and reduces the burden and responsibilities of both academics and students. However, as one needs to consider that the abundance of technology may also affect or leave consequences on the quality of work, academics should be aware that using AI, ChatGPT in particular, would also need some considerations. Although using ChatGPT may reduce the language barriers or knowledge gaps between students and educators, excessive usage may hamper learning progress because they are too dependent on technology. Eventually, dependency on technology could also lead to the incompetence of people when it comes to technological glitches, system errors, or outdated information.

Not only that, with the dependency on ChatGPT as the preferred AI to be used as writing tools, the academics might misplace essential elements of scholarly paper such as ethical considerations and human intelligence, in analysing critical insight on certain issues. It is worth noting that ChatGPT can imitate the way people think and write scholarly articles for academics, but it cannot surpass human intelligence. Issues of discrediting the original source or lacking
critical evaluation on the subject matter may be one of the critical considerations in utilising ChatGPT. Not only that, but it is also crucial for academics whose native language is not English to exercise caution, as they might not recognise language errors in scholarly articles that are aided by the ChatGPT. However, as this review paper merely explores the application and potential challenges of AI, with a specific focus on ChatGPT, in the context of scholarly article writing, it is advisable to conduct extensive research on its actual utilisation within the academic community. This ensures that the goals and needs of academics to utilise ChatGPT will be thoroughly examined, together with any other factors such as practical implementation or problems that need to be taken into account.

Funding
This research is not funded.

Acknowledgements
Not applicable.

Conflicts of Interest
The authors declare no conflict of interest.

Authenticity
This manuscript is an original work.

About the Authors
Mafarhanatul Akmal Ahmad Kamal is a lecturer at the Academy of Language Studies at Universiti Teknologi MARA (UiTM) Shah Alam, Malaysia. She is currently pursuing her doctorate in English Language Studies specialising in Applied Linguistics and her research interests include Applied linguistics, English Language Studies, psycholinguistics, bilingualism, and eye tracking. ORCiD ID: https://orcid.org/0000-0001-9216-478X

Mohd Fadhli Shah Khaidzir is a senior lecturer at the School of Liberal Studies, (CITRA UKM), Universiti Kebangsaan Malaysia (UKM). He obtained his PhD from the School of Language Studies and Linguistics, Faculty of Social Sciences and Humanities, Universiti Kebangsaan Malaysia. His area of expertise includes Psychogeography, Sense of Place and Literature. ORCiD IDL https://orcid.org/0000-0001-7873-7000

References


of Research in Innovative Teaching & Learning. https://doi.org/10.1108/jrit-09-2023-0129


