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Mentoring G-SPACE thesis and dissertation writers via smart technologies and artificial intelligence in a blended setting during COVID-19 catastrophe

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Abstract. *Recently, the impact of smart technologies and artificial intelligence as mechanisms for blended instruction in higher education institutions around the world has been of great interest. A cross-sectional design was used for this study. At a defined time, assumptions concerning the efficiency of a localized application of integrated smart technology and AI-mediated thesis and dissertation assessment during COVID-19 disaster came into play. The completed thesis and dissertation reports obtained by e-mail during March 2020 were first evaluated using the AI-tool to assess if the manuscript is ready for submission or requires minor or major revision. I have demonstrated how academic research mentors can contextualize and introduce a new e-mentoring approach. The AI-enhanced tool was highly effective in addition to being able to process initial evaluation in an average of 8 minutes per submission, with its special features and accurate enough to determine the accuracy of the language and references of a scientific study. Nonetheless, follow-up work can include plagiarism identification, abstract intelligence, journal scope checker and paper submission's technical compliance.*

Keywords: *Graduate education, mentoring, academic writing, smart technologies, artificial intelligence (AI), blended instruction, COVID-19, higher educational institution, Philippines*

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INTRODUCTION

Timing and the global environment in which this novel coronavirus emerged have also helped to spread globally (Bouey, 2020). Current students face major impacts on several fronts as COVID-19 (Coronavirus) causes closures and other disruptions at institutions across the nationwide (De Vera, 2020). First, their protection from the disease is the most important concern, and campuses will take whatever steps are required to ensure the immediate health of students, employees, faculty and the wider campus community. At the same time, our current students are vital to their degree and postgraduate education. We want to ensure that they meet their educational goals to the greatest extent possible, and social distancing is an action taken to minimize contact with other individuals; aimed at reducing disease transmission and pressure on health services (European Centre for Disease Prevention and Control (2020). There are significant changes to make, such as heading into the mixed groups, to move our assistance to them, and there is a need to deploy available distance learning, e-learning, and other alternative modes of delivery

instead of residential learning if they have the resources to do so (De Vera, 2020), and all higher education institutions must contact the Higher Learning Commission to notify them about the institution's intent to provide temporary online offerings (Neill & Secretary, 2020).

In times of crisis, more and better communication is needed with the use of email, text, and social media to maintain relationships with our students (Strobl et al., 2019), in addition to the contact we have through their online learning experiences (Silva, 2017). Being conscious of the importance of the research projects, performances, etc. of our students, they put a lot of work into these academic requirements and may not be able to present or perform as they had hoped. It is our wish that their potential discouragement is more proactive. Therefore, it may be necessary to explore a task force for students towards many alternatives and options. So, there is a need to manage effectively.

Although there has been a huge proliferation of online mentoring websites and resources across a wide range of careers, this trend has been discussed by very few academic papers to date (Ensher, Heun, & Blanchard, 2003). Due to several advantages, an e-system is gaining increasing popularity in the academic community and most often it appears to be used for web-instruction (Phobun & Vicheanpanya, 2010). Previous literature on this academic support has stressed that artificial intelligence (AI) is a term used to describe a machine or a computer program (Fedock, 2017) that uses characteristics of human thinking to undertake a task (Nieto, 2018). Moreover, email has been with us now for a long time and is being increasingly adopted as a major communication tool in UK Higher Education and at the same time, new communication technology, in particular the mobile communication technologies, will facilitate student-instructor interactions and increase learning performance (Rau, 2008). However, as the use of emails grows, the impact on communication patterns needs to be determined. These computing applications such as internet search engines, social media technology can be infused with AI (Miller & Deggs, 2012). Yet the AI is still in the early stages of development among schools (Strobl et al., 2019). This means that educators need to develop a basic knowledge of learning about and with AI to empower students to thrive in an AI world (Travaglioni, Piscitelli, & Petrillo, 2020), which requires educators to understand the economic and social changes that the technology will bring along, as well as its potential educational uses and ethical considerations (Fedock, 2017). Advances in Internet and multimedia technologies have positively influenced the efficient use of machine translation of e-learning environments (Komeili, Hendavalan, & Rahimi, 2011). That means there is no doubt about the potential use of ICT (Information and Communication Technology) as a tool that supports and improves the formal writing skills of students in the higher education context (Frydrychova, 2011). While e-learning systems with adaptive functions have been developed to solve these flexibility problems by changing the presentation of materials to suit each user, they do not meet all adaptive related theory and application requirements (Beldagli & Adiguzel, 2010).

While we are very much convinced that teaching and learning have to be carried out efficiently and effectively in an e-learning environment, the previous studies have failed to describe the processes leading to the contextualization of internet-based software to facilitate efficient delivery of instruction, and not even single research has been carried out in the area, specifically to advising thesis and dissertation writers in the graduate and postgraduate levels. A challenging problem that arises in this domain is the localized integration of the available and free AI-mediated platform for e-mentoring.

This paper endorses not many things, but timely mechanisms to consider across key areas related to the impact of COVID-19 on thesis and dissertation writers, and even those in the current stage of academic requirements completion. The purpose of this paper is to rectify this knowledge gap by (a) introducing a new e-mentoring strategy, (b) assessing the effectiveness of the initial report control through an AI-mediated tool, thereby identifying new opportunities and challenges and (c) giving researchers and practical specialists implications in streamlining the on-line mentoring process as a key element in hybrid learning.

METHODOLOGY

The investigator used a descriptive cross-section design of the research. According to Bueno (2017), the cross-sectional design involved the collection of data to respond to assumptions about the status of the AI-thesis and dissertation assessment, through actual implementation and observation at a specified time. Bueno (2017) further argued that this type of study revealed important distinctions. It described and interpreted specific conditions or opinions that were held, including the processes that took place or the trends developed during the time of the study. It concentrated mostly on the present, although it also considered events of the past and factors related to current circumstances. The demonstration of a new strategy of e-mentoring was based on the literature reviews. The completed thesis and dissertation reports received via e-mail from the graduate and postgraduate students in March 2020 were subjected to initial assessment using the AI-mediated tool. The assessment of the reports was carried out immediately after the download. The students concerned were not informed of their voluntary participation in the study because the thesis and the dissertation reports received during the time of the study were the subjects of assessment. They were, however, assured with the confidentiality of the results of the assessment, which were immediately emailed or sent back via messenger for immediate action and manuscript improvement. We also opted not to reveal the AI-enhanced platform available online to protect its confidentiality. The report reflects a detailed manuscript assessment of standard requirements for submission. The report was therefore intended only as a tool to improve the manuscript and did not guarantee that any journal will publish. The scores were clustered as ready to submit (71-100); require minor reviews (31-70) and require major reviews (1-30).
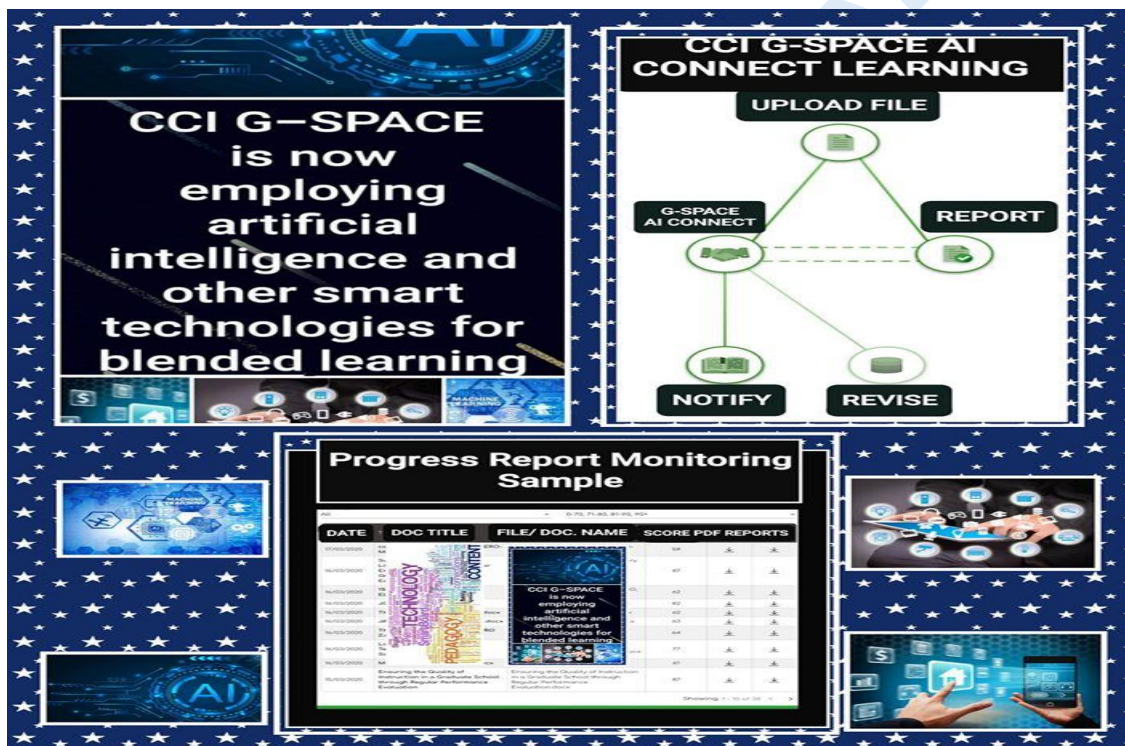
RESULTS AND DISCUSSION

A new e-mentoring approach. The G-SPACE ARTIFICIAL INTELLIGENCE network (AI) CONNECT is a groundbreaking AI project that promotes state-of-the-art effort through a global process of power publishing and technology. A website is both an analytical resource and a market that aims at bringing multidisciplinary scientists and journals together across disciplines and increasing the quality of scientific publishing. This may be difficult for thesis and dissertation authors to find the best place for publication or to ensure the shortest time possible. On the other side of the spectrum, screening of manuscripts can be extremely challenging, because it is difficult to keep up-to-date on the relevant content available for publication. The platform responds to these challenges by breaking down the barriers of conventional publishing processes and providing flexibility over both article and manuscript selection to writers and journals. It aims to revolutionize

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traditional publishing processes by offering authors and journals control and speeding up the selection and publishing process. Manuscripts of acceptable reporting standards can be identified, and researchers can present their work to multiple journals at once, eventually choosing the one platform they would like to publish. It thus facilitates a steady stream of content acquisition, which saves time and prioritizes quality for journals and publishers alike. In addition, the report serves as a proxy for hygiene reporting by manuscript. Among a number of other critical editorial requirements, it tests manuscripts for readability, completeness and compliance.

Figure 1

*The CCI G-SPACE AI connect learning platform**

**Adopted from https://web.facebook.com/photo.php?fbid=2122880267857422&set=gm.2770304746397451&type=3&theater&ifg=1*

To bring the G-SPACE ARTIFICIAL INTELLIGENCE (AI) Link in perspective, the question is "How does it work for our thesis and dissertation writers?" This becomes a portal for our writers to quickly apply and review academic requirements (e-module completed, term paper, action study, thesis and dissertation) as reflected in Figure 1:

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IMRaD Journal, *a peer-reviewed and refereed online journal aimed to circulate institutional and scholarly articles, faculty and student researches, and other scientific works.*

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(1) Just send the manuscript (with the file name: SURNAME_PaperTitle_2020) to xyz123456789102020@gmail.com

(2) We will facilitate the uploading of the document to our secured G-SPACE AI CONNECT learning environment to get an instant report on the submission-readiness of your academic requirement.

(3) An initial assessment score of higher than 70 denotes that the paper is now ready for finalization.

(4) The writer receives a private notification within ten (10) minutes to view their score along with a detailed report highlighting areas where the submission needs some more work before finalization (Please see, "assessing academic and scientific writing") via email and messenger.

(5) Then, just follow the individualized explicit instructions enclosed in the report.

The private notice received by the writer says, "*Hello TH & DI Writers! Now you can review your score along with a comprehensive report that outlines areas where your manuscript needs some further preparation before it can be submitted. If your score makes you sad, don't worry! To improve your manuscript just follow the pointers given in the report. Hope you find your score useful and report it helpful. Good luck on your study journey! Best regards.*" Figure 1 also shows the sample progress report. In order to keep track of the need for improvement, a detailed report highlights area where submission needs some more work before completion (see https://web.facebook.com/cci.gradschool/posts/528113121424196, "assessing academic and scientific writing"), the following are included:

(1) ***Language Quality.*** When a manuscript contains language and grammar errors, it may distract the attention of peer reviewers from the content and the style of the text, making it difficult for them to understand the intended purpose of the author. The evaluation was based on accordance with grammar rules, the use of non-native constructions, the choice of the word, the manner of writing and proper orthographical use. (Abad-garcía, 2019; Burdine, Maymone, & Vashi, 2019; Ghanem, Mouloudi, & Mourchid, 2015; Horbach & Hal, 2019; Singh et al., 2014).

(2) ***The relevance of References.*** It is important to properly reference the other works used for the study; references cited are to be published recently. As the speed of scientific progress varies from one area to another, however, each source must be assessed individually. It is important to make sure that new sources (under age 10 years, by date of publication) are cited when available unless seminal work is cited which may be fairly old, but still valid. Many outdated sources can be in the manuscript. Unless these basic or creative studies have little further work on the same topic (Bennett, Behrendt, & Boothby, 2011; Eaton, 2017; Heckler, Forde, & Bryan, 2016; Ives et al., 2016; Mckeever, 2004; Ocholla & Ocholla, 2016; Patrzek, Sattler, Veen, & Grunschel, 2014; Rowell, 2001).

(3) ***Self-Citations Check.*** Citation of one's work is unavoidable, especially in the context of previous research in a new article. However, a large number of self-titles in the manuscript are discouraged. This practice may represent excessive self-promotion or impartiality, which is frowned upon in scientific research, and must therefore be avoided as far as possible (Abusafia, Roslan, & Yusoff, 2018; Dias & Bastos, 2014b; Drlík, Munk, & Skalka, 2011; Shamim, 2012; Sindhu & Idicula, 2016).

(4) ***Table and Figure Citations.*** Tables and figures help writers concisely explain comprehensive results, dynamic relationships, patterns, and trends. The text should list any visual item included in the manuscript. Chances are that tables or figures will not be printed unless they are listed in the text (Dias & Bastos, 2014b; Sarlauskiene & Stabingis, 2014).

(5) ***Inclusive Language.*** Authors must be mindful of how language use can marginalize, demean, and exclude social groups such as women, sexual minorities, racial groups, individuals with physical or psychosocial disabilities, etc., and therefore refrain from using such non-inclusive words. The determination of whether the language used is inclusive or includes any terms that are considered unacceptable, insulting, racist, sexist etc. (Bokosmaty et al., 2017; Chew, Ding, & Rowell, 2015; Childers & Bruton, 2015; Ehrich, Howard, & Tognolini, 2015; Harji, Ismail, Chetty, & Letchumanan, 2017; Hu & Sun, 2017; Kamau, 2015; Madaan, 2017; Rathore, Waqas, Zia, Mavrinac, & Farooq, 2015; Thompson, Bagby, Sulak, Sheets, & Trepinski, 2017).

(6) ***Structure Completeness.*** In general, research papers adopt a structured framework where knowledge is presented. It helps readers to quickly locate the information they need by looking up under the section in question. The layout varies according to different types of paper, style guides, journal specifications, etc. Hence, ensuring that a manuscript is structured logically and correctly with all the appropriate sections present is important. In addition, the submission criteria are reviewed for particular specifications and structural completeness is assured (Devos, Boudrenghien, Linden, & Azzi, 2017; Doygun & Gulec, 2012).

(7) ***Declaration of Conflicts of Interest.*** All writers should report all financial and personal relationships with individuals or organizations in their manuscripts, as these may be viewed as having an undue effect on their work and impeding accountability. The statements help the editorial board determine any actual or potential conflicts of interest and prejudices, thereby promoting a fair assessment of the manuscript. It should also be listed if no disclosure is to be made (Eret & Gokmenoglu, 2010).

(8) ***Ethical Use of Images.*** If a document includes photographs of human subjects, it is important to protect the subjects ' privacy by preserving the confidentiality and masking any identifying features. Failure to do so could also contribute to manuscript rejection (Camara, Eng-ziskin, Wimberley, Dabbour, & Lee, n.d.; Eret & Gokmenoglu, 2010; Thomas, 2017). Thus, check the images and ensure that the guidelines for submitting data are followed (Kuruvila et al., 2017).

(9) ***Corresponding Author Details.*** The publishing process may include several transactions between the editorial board of journals and the authors. It is the duty of the subsequent author to take over these transactions and promote the smoother printing. Therefore, it is important to provide full details of correspondence. The details of the correspondence also facilitate communication with readers and fellow investigators.

(10) ***Ethical Declaration.*** Ethical declarations are an important part of the manuscript submission process. If human subjects are involved in the study, the author should state whether written informed consent was obtained. Likewise, should sufficient information be given when the document contains case reports / case series. The investigators should decide in the case of animal subjects that the investigation procedures adhere to the principles of good practice in science (Agricola, Prins, Schaaf, & Tartwijk, 2018). Failure to do so is seen as a violation of ethics and can impede acceptance. Consequently, the writers must ensure that they review the format

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requirements, the inclusions, and situation of these declarations (Camara et al., n.d.; Eret & Gokmenoglu, 2010).

The efficiency of checking the initial research reports. The efficiency of the platform for reviewing the preliminary research reports we received via email was calculated in terms of the time (5 to 10 minutes per manuscript) and the actual score [ready to submit (71-100); needs minor revisions (31-70) and requires extensive revisions (1-30)] reflected in the report (see Figure 2. Private notification / certification sample).

Table 1 indicates the number of manuscripts checked during the "Enhanced Community Quarantine in March 2020" due to the disastrous COVID-19 within the first three days. There were 59 manuscripts that were subjected to the AI-mediated network, including three in the process of revising the thesis or dissertation. As seen, 12 or 20.34 percent of manuscripts were now "able to send" with scores ranging from 71 to 100; while 47 or 79.66 percent of manuscripts were assessed with a score ranging from 31 to 70 which denotes "requires minor revisions" Therefore, no manuscript was evaluated within 1 to 30 scores range. The data showed that most of the manuscripts with minor revisions were ready for submission. Upon uploading and reviewing the manuscripts, a private notification was sent back to the author within an average of ten (10) minutes to show the score along with a thorough report outlining areas where the submission requires some more work before completion. As such it meant powerful AI-mediated platform.

Table 1

The number of manuscripts checked within the first three days during the "Enhanced Community Quarantine in March 2020" (N=59)

| Range of Score	Interpretation	Frequency	%
71-100	Ready to submit	12	20.34
31-70	Requires minor revisions	47	79.66
1-30	Requires major revisions	-	-
	Total	**59**	**100**

The overall score was based on "language quality" of 60 percent (60/60), because the platform can identify errors from the manuscript's total number of characters, words and sentences. This means that if a manuscript includes language and grammar errors, it may divert the attention of peer reviewers from the content of the paper to the writing style and make it difficult for them to interpret the intended intent of the author, thereby hindering evaluation and acceptance. Assessment of the standard of language of the manuscript adhered to grammar rules, usage of non-native constructions, use of vocabulary, writing style, and use of appropriate spellings. In addition, the application can also identify a specific feature of the bias-free language used in the text. It reminded every author of the significance and to be mindful of how language use can marginalize, demean, and exclude social groups such as women, sexual minorities, ethnic groups, persons with physical or psychosocial disabilities, etc., and therefore refrain from using such non-

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inclusive language. Thus, an evaluation of whether the vocabulary of the text is inclusive, or whether it includes any terms derogatory, racial, sexual, etc. that are considered objectionable and thus useful for proper rephrasing.

Figure 2

Sample of private notification/ certification*
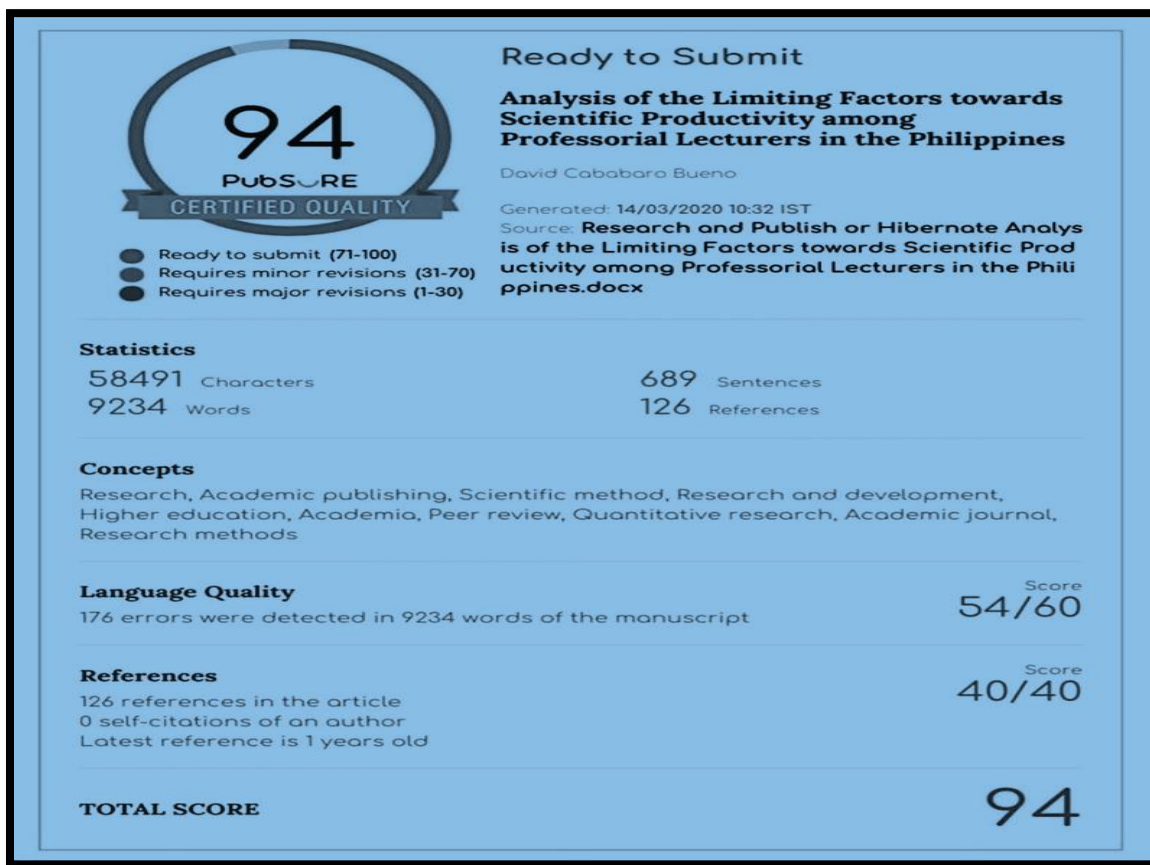
(Source: https://web.facebook.com/cci.gradschool/posts/528113121424196, "assessing academic and scientific writing")

Another criterion for scoring was the consistency of references, where the database could identify the number of references in the submission, the number of an author's self-quotations, as well as the recency of the cited references. The comparison rating corresponded to 40 percent (40/40) of the total ranking. It is necessary to properly reference other works used to build upon

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the study; it is recommended that references cited be published more recently. However, because the speed of scientific progress varies across disciplines, each source needs to be assessed on a case-by-case basis. If you quote seminal work that may be very old but still applicable, it is important to ensure that, where appropriate, recent sources (less than 10 years old, by date of publication) are cited. The manuscript may contain some obsolete references. Since these are groundbreaking or ground-breaking studies with little follow-up work on the same topic, the author should check if these can be replaced with more timely, recent sources. The platform can detect self-citations, too. It is predictable to quote one's work, particularly when building upon previous research in a new article. However, it is discouraged to include a significant number of self-citations in a manuscript. Such activity can reflect undue self-promotion or impartiality that has been frowned upon in scientific study and must therefore be avoided as far as possible.

It is a well-known fact that while many researchers submit papers for publication, most of them are rejected even before the review, since the papers may not be ready for publication. With G-SPACE AI CONNECT writers will save time and find high content, ready-to-submit papers for their manuscript. It appears that the framework tests many main factors to determine the readiness for submission of the study manuscript. Having an AI-enabled evaluation minimized the likelihood of desk rejections with a report outlining possible areas of improvement before sending the manuscript. Manuscripts that score high on all metrics will receive a certificate (Fig.2), which will check that the thesis is ready for submission to journal editors. During the manuscript submission process the score certificate can also be shared with readers. This certificate shows the manuscript evaluation based on main criteria which most journals are screening for during the submission and review process. Therefore, the AI-based technology recognizes areas of manuscript development, raising the probability that it will be published in a potential chosen journal. Nevertheless, the certificate / report is intended primarily as a resource for enhancing manuscripts and does not guarantee publication in any journal. Another drawback is that the platform cannot identify similarity issues or plagiarism and does not have readability score (Bokosmaty et al., 2017; Camara, Eng-ziskin, Wimberley, Dabbour, & Lee, n.d.; Chew et al., 2015; Dagienė, 2014; Dias & Bastos, 2014a, 2014b; Eret & Gokmenoglu, 2010; Ghanem et al., 2015; Gómez, Salazar, & Vargas, 2013; Ives et al., 2016; Patrzek et al., 2014; Sarlauskiene & Stabingis, 2014; Thomas, 2017).

Implications for researchers and practitioners to mentor online. These results go beyond previous reports, which show that a new e-mentoring strategy can be contextualized and implemented locally to initially evaluate the thesis and dissertation outputs of graduate and postgraduate students prior to final submission. In addition, the results demonstrate the effectiveness of the assessment by means of an AI-mediated tool, specifically on the quality of the language used and the relevance of the references included in the manuscripts. This can be considered a positive dimension as additional opportunities to be introduced into the e-mentoring cycle and hybrid learning due to additional application features capable of detecting bias-free expression, self-quotations, completeness of a publishable research paper, proper table, figure and picture reference, conflict of interest and other ethical issues in academic res At the same time, this could also be a challenging task for prospective mentors of scientific writing. As mentors, we can help remote students through this initiative, especially during a crisis. It is also helpful for school administration to manage a seamless transition to online and blended learning, and to provide

timely virtual academic support through online mentoring and artificial intelligence (AI) driven writing activities. However, features such as plagiarism, which should also be detected (Camara et al., n.d.), abstract intelligence, journal scope and technical compliance are not covered and are therefore considered to be a limitation for future research. Further investigation of plagiarism and other technical issues in scientific writing is therefore necessary for a new approach.

CONCLUSIONS AND FUTURE RESEARCH

I have shown that a recent e-mentoring approach has been contextualized and applied explicitly in graduate school for professional advancement and continuing education. The AI-enhanced method was highly effective so that the initial evaluation could be completed in an average of 10 minutes per submission. Furthermore, it is accurate to assess the quality of the language and the references of the scholarly study. However, the unique features of the platform that present a new challenge for mentors, requiring more professional training in order to effectively apply the hybrid approach. We conclude that apart from exploring the benefits of AI-mediated e-mentoring students, follow-up work will look for additional features of plagiarism identification, abstract intelligence certification, journal scope review and technical enforcement are not covered in this report, and therefore considered to be the limitation for future research.

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