THE EFFECTIVENESS OF ONLINE SUPERVISION FOR POSTGRADUATE STUDENTS: A SYSTEMATIC LITERATURE REVIEW

Farah Shafilla Mohamad Kasim[1], Bahbibi Rahmatullah[1*], Hussin Khan Rahmatullah Khan[2], Ahmad Nurzid Rosli[1], Noor Hidayah Che Lah[1], Achmad Nizar Hidayanto[3], Ásrún Matthíasdóttir[4]

[1]Faculty of Computing & Meta-Technology, Universiti Pendidikan Sultan Idris, 35900 Tanjung Malim, Perak, Malaysia.
[2]Faculty of Hotel & Tourism Management, Universiti Teknologi MARA, 13500 Pulau Pinang, Malaysia.
[3]Faculty of Computer Science, Universitas Indonesia, Depok, Indonesia.
[4]School of Social Science, Reykjavik University, Iceland.
(Corresponding Author: bahbibi@meta.upsi.edu.my)

Abstract

The adoption of the most recent information and communication technology has led to changes in supervision methods, with online supervisory processes replacing face-to-face approaches. A systematic literature review (SLR) was used to explore the effectiveness of online supervision for postgraduate students. The PRISMA statement (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) recommendations were followed during the process to predict its systematic nature. After carefully and in-depth examining the full texts of the articles, 10 relevant papers were chosen and included in the review out of a total of 130 articles that were identified. The themes in each article were found using an inductive thematic approach. Six themes have been classified: tools for mentoring; communication, interaction or relation; the role of the supervisor; satisfaction; performance; and motivation or support. This study has a significant impact on the tools that can be used in the online supervision process.

Keywords: Effectiveness; graduate student; online supervision; postgraduate; supervisor

Abstrak

Perkembangan teknologi maklumat dan komunikasi dewasa ini telah membawa perubahan dalam proses penyeliaa di mana proses penyeliaan secara bersemuka digantikan dengan penyeliaan secara dalam talian. Kajian literatur sistematik (SLR) digunakan untuk meneroka keberkesanan penyeliaan dalam talian bagi pelajar pengajian siswazah. Cadangan dari garis panduan PRISMA (*Preferred Reporting Items for Systematic Reviews and Meta-Analysis*) digunakan semasa proses untuk menghasilkan sifat sistematiknya. Selepas keseluruhan teks artikel disemak secara teliti dan mendalam, 10 artikel yang relevan telah dipilih dan dimasukkan ke dalam ulasan daripada keseluruhan 130 artikel yang dikenal pasti. Tema dalam setiap artikel dikenalpasti dengan menggunakan pendekatan tematik induktif. Enam tema telah diklasifikasikan: alat untuk bimbingan; komunikasi, interaksi atau perhubungan; peranan penyelia; kepuasan; prestasi; dan motivasi atau sokongan. Kajian ini dapat memberi impak signifikan terhadap alat yang boleh digunakan dalam proses penyeliaan dalam talian.

Kata kunci: Keberkesanan; pelajar siswazah; penyeliaan dalam talian; pasca siswazah; penyelia

1.0 INTRODUCTION

By 2010, more than 60 percent of college and university students would take their programs online (der Werf & Sabatier, 2009). From 2002 to 2009, there was an increase in the number of students enrolling in distance education programs, and this trend is expected to continue Supervision is one of the main learning processes for postgraduate students. Teachers and supervisors need to adjust to and embrace the changes that the university has made to the online learning, teaching, and supervision processes (Maor & Currie, 2017). Due to the growing number of students each year, the supervision method has changed in recent years.

In the supervisory process, communication between the student and the supervisor is the most important thing (Fenge, 2012) It is a collaborative activity between students and supervisors, where the efficiency of supervision depends greatly on the quality of the interaction between them (Cohen & Laufer, 1999). The best practices in the supervision process typically include a combination of various factors, such as supervisor skills and commitment, student abilities and commitment, the availability of clear policies or guidelines at the university level to address problems, and support systems provided by the university (Lee, 2012). The effectiveness of the supervisory process can be improved if students and supervisors properly consider these four factors.

The incorporation of the latest information and communication technology has brought about transformations in the approaches to teaching and learning (Abdul Ghafar et al. 2023; Muchlas et al. 2023; Roslin et al. 2022; Ahmad Shahrizal et al. 2022; Mohamad et al. 2022). This encompasses the use of online supervision processes to replace traditional face-to-face methods. As a result, information technology integration in education can support supervisors in their monitoring and keeping up with technological advancement. Supervisors and students have started to use social media like Facebook, WhatsApp, and Telegram applications in the supervision process. In this article, we explore the effectiveness of the use of technology in the supervision process.

A systematic literature review (SLR) was used in this study to explore how online platforms are used in the supervisory process. The SLR is guided by the following research questions: What is the current state of knowledge regarding the utilization of online platforms in the supervisory process for postgraduate students and what insights can be gained from a systematic literature review on the use of online platforms in the supervisory process?

2.0 LITERATURE REVIEW

According to Magnussen (2018), monitoring was established in the early 19th century via volunteer activities. In education, supervision is the process of a skilled person (supervisor) helping a less skilled person (student) with knowledge and theory (Itzhaky, 2000). The supervisory process is a crucial professional monitoring process, according to numerous government studies, journals, and publications published internationally (O'Donoghue, 2015). Monitoring and assisting students in their pursuit of research tasks and the production of research reports is the process of supervision. A good supervisor needs to carry out his responsibilities by monitoring students effectively to help students complete their research. Therefore, a supervisor should support, guide, advise, motivate, and offer academic comments to students. The supervisor will have an effective working relationship with the student if they: (1) have goals and plans; (2) are able to communicate effectively; (3) have the expertise and skills in the area of student research; (4) are able to establish good personal and professional relationships; and (5) does not provide overly strict supervision (Zainal Abiddin, 2006)

Supervision processes have changed recently from one-to-one relations to team approaches that will reduce time and offer a panel of supervision that may assist students with a variety of expertise (Green & Bowden, 2012). There have been significant changes in how academicians educate, connect with students and colleagues, conduct research, and manage

doctoral students as a result of the increased usage of virtual spaces through web-based technologies in higher education. Online supervision can create a virtual world that brings a fresh level of complexity to the different configurations of supervision (Park, 2005).

As a result, more and more students are enrolled remotely or outside, away from their instructors. By leveraging web-based tools to build virtual places, remote supervision presents new obstacles as well as the potential for overcoming the constraint of distance. Thus, the traditional way of supervision is being replaced by a need for flexibility, available at any time, and distance learning which is facilitated by software that makes use of basic computer literacy and is usable on any device.

3.0 METHODS

The systematic literature review presented in this article was conducted following the PRISMA statement (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) proposed by Urrútia and Bonfill (2010). The aim is to explore the current state of knowledge regarding the utilization of online platforms in the supervisory process for postgraduate students, in accordance with the research questions.

We only include research that was published in the English language. This study includes research focused on online supervision for postgraduate students from 2006 until 2021. All studies are included, regardless of context, audience, or place.

Figure 1 shows that a total of 130 published papers were found in the search results. 104 articles were eliminated as irrelevant due to the study's narrow focus and inclusion requirements. Most of the articles did not specifically address online supervision for graduate students. After the first step, there was a second step where particular attention was devoted to the methodology, findings, and summary based on our scope. After carefully and in-depth examining the full texts of the articles, 10 relevant papers were chosen.
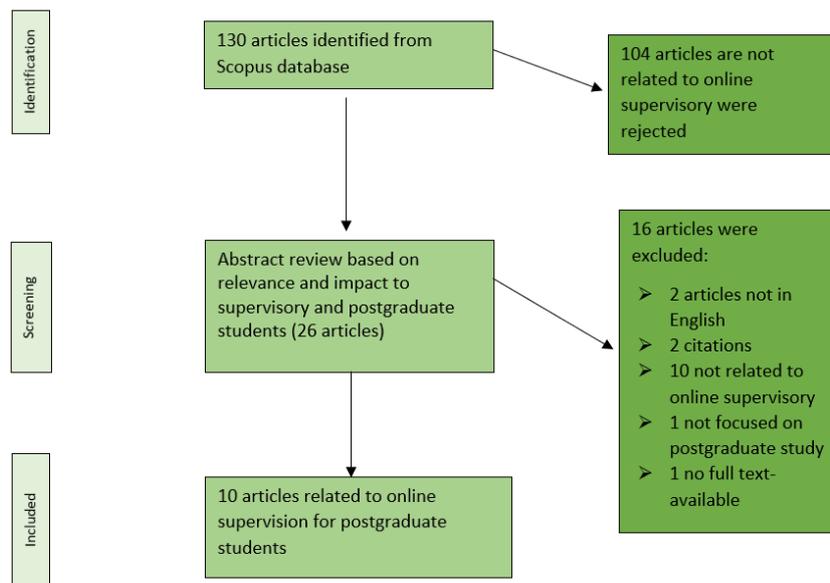
Figure 1. Flowchart of articles selection.

4.0 RESULTS AND DISCUSSION

The distribution of articles is presented according to the author's nationality and year of publication. Figure 2 shows that the articles were written by authors from seven different countries. At n=10, there are two authors from each country namely the United States of America, United Kingdom, and Malaysia, and one author from each country namely Turkey, Spain, China, and Canada.
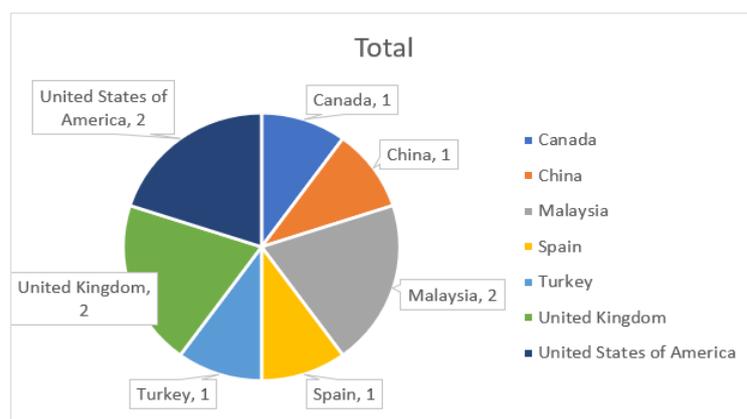

Figure 2. Graphical representation of authors' nationality

Figure 3 shows the number of publications by year in which there are two articles each published in 2007 and 2018, and the rest are one paper for each year (2006, 2014, 2015, 2019, 2020, and 2021).
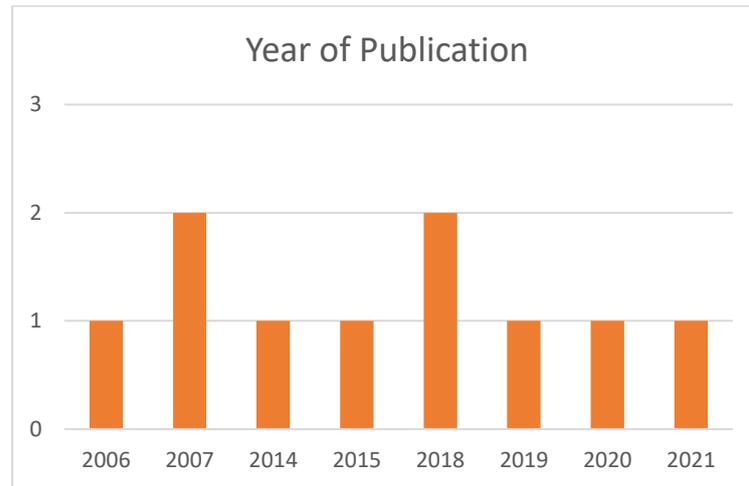
Figure 3. Number of publications by year

A summary of information extracted from each of the selected papers is shown in Table 1.

Table 1. Summary of information extracted from the selected papers

First Author	Country	Year	Methods	Participant	Theme
(Yang et al. 2021)	China	2021	Survey & Interview	29	Tools for mentoring Communication, interaction, or relation
(Rodríguez-Carrio et al. 2020)	Spain	2020	Survey & interview	275	Communication, interaction, or relation
(Jumaat et al. 2019)	Malaysia	2019	Survey	37	Role of supervisor Performance Tools for mentoring Support or motivation
(Khalid, 2018)	Malaysia	2018	Open-ended questions	12	Tools for mentoring Communication, interaction, or relation
(Ongoz, 2018)	Turkey	2018	Interview	44	Tools for mentoring
(Jacobs et al. 2015)	USA	2015	Survey	29	Satisfaction
(Erichsen et al. 2014)	USA	2014	Interview	295	Role of supervisor Satisfaction
(Wisker et al. 2007)	United Kingdom	2007	Interview	33	Communication, interaction, or relation Role of supervisor
(Crossouard, 2007)	United Kingdom	2007	Semi-structured interview	11	Tools for mentoring
(Melrose, 2006)	Canada	2006	Interview	2	Support or motivation

After the process of identifying articles related to online supervision for graduate students, we created a classification of the themes found in those articles. An inductive thematic method was used to identify themes in each article. There are five steps in this process: familiarisation with the literature, theme finding, theme review, theme definition, and theme naming. Through triple exposure to works, the screening, full-text, and quality review processes, familiarisation with the literature was achieved. We compiled the extracted data to gain insights into the themes that emerge about the use of online platforms in the supervisory process. Six themes that were discovered have been classified as (i) tools for mentoring (ii) communication, interaction, or relation (iii) role of supervisor (iv) satisfaction (v) performance (vi) motivation or support.

4.1 Tools for Mentoring

The current study focuses on the preferred ICT tools used by mentors and mentees in situations where technology preferences were left up to them throughout an applied e-supervision program. It looked into which ICT tools participants chose to use, how long they used them within the context of the study, how they utilized them, and what they thought of those tools.

a) Moodle - The Moodle platform and the teaching approach, which has provided structural and interpersonal support, have encouraged students to share their academic ideas and enhance their research projects by incorporating feedback from peers and supervisors (Yang et al. 2021).

b) Trello - Trello is a tool for submitting drafts and using Microsoft Word to track changes and was considered by the students as a legitimate advantage. This demonstrates how technology may be useful when used appropriately to further the goals of its users (Khalid, 2018).

c) Instant messaging and social networking sites - Supervisor used social networking websites to communicate with students, coordinate the team, send files, review files, and provide feedback. Using social networking, the students updated their supervisor on their progress and solicited feedback by sharing goods relevant to each stage of the research. Both supervisor and students added their preferred web links to the social network, fostering conversation and idea sharing. In this way, social media was perceived as a space for constant communication between them (Ongoz, 2018).

d) Facebook - According to Jumaat et al. (2019), Facebook has the power to spark students' interest in learning and serve as a platform for productive education. Researchers used

Facebook as a platform for social networking discussions between instructors and students. Findings from the study showed that Facebook has the ability to encourage students' informal communication and information sharing. They have also demonstrated that students in the study are capable of using Facebook for discussions about their academic work. Additionally, online instructors help students learn through a set of principles and the use of metacognitive scaffolding processes.

e) Forum – According to Crossouard (2007), many students were unfamiliar with the forum because not all of them had used this type of online technology. It was occasionally difficult for peers to respond in the forum about topics that seemed relevant because of the diversity of their professional disciplines.

4.2 Communication, Interaction or Relation

Communication or interaction between students, peers, and supervisors is the main concept in the online supervision process, while face-to-face concepts are more one-to-one (between supervisor and student). Mentoring methods have changed as a result of the usage of information and communication technologies (ICTs), and the idea of electronic mentoring has become more popular. Therefore, students also can share academic content (i.e., they present their research) and exchange feedback with one another via online interactions instead of the traditional way.

According to Yang et al. (2021), there were three different kinds of interaction patterns in the online environment, including posts with no response, posts in a single reply, and posting-reply-follow-up discussions. The majority of interactions (70.8%) took the form of posts in a single reply (X^2 = 115.584; p 0.001). From the study, writers also analysed the interaction behaviour which most of the time was spent providing information or suggesting solutions, which accounted for 29.33%. This was followed by 28.13% for asking questions or clarifying issues, 21.45% for analysing other contributions, 12.67% for comparing or discussing previous contributions, and 8.40% for making a summary or conclusion. The Chi-square goodness-of-fit test result showed a significant difference (x^2 = 128.907; p 0.001), indicating that the main online interaction behaviours were expressing queries or difficulties, offering details or solutions, and leaving comments.

Gender played a role in the supervision of communication. A specialized field known as gendered communication focuses on the distinctions between men's and women's communication styles. A study done by Rodríguez-Carrio et al. (2020) through conducting a survey revealed that women and men are equally interested in starting mentoring relationships

and the size of the 'mentoring gap' is similar. However, it is essential to guarantee mentoring diversity, fair gender representation, and more crucially, to provide flexible mentoring with a wide range of options. In this case, the mentee should be actively involved in defining the mentoring's precise objectives. In a focus group study, the traits of the mentee that were associated with a successful mentoring experience were being proactive and devoted. As a result, mentoring programs should be designed as adaptable frameworks, with mentees acting as the catalyst for the mentoring relationship.

The community of practice refers to the concept of learning within a community and such community is indirectly involved in the supervisory process in addition to the interaction between supervisors and students. A hybrid Community of Practice (CoP) approach was specifically created to encourage student interaction through a community with a common aim and objective and to help students develop their professional and learner identities. Participating in a CoP entails committing to take part in activities that involve sharing and discussion. Khalid (2018) found that despite several of the pupils admitting they were first uncomfortable interacting with other students in their neighbourhood, they were able to adapt to the setting. Every member of the postgraduate students' community must trust one another to have a feeling of belonging, and this trust can only grow when people get to know one another well. Students emphasized how their regular group meetings helped them strengthen their friendships, deepen their relationships, and build trust.

Research and supervision helped create common ideals, and when they graduated, it was clear that both the supervisor-student connection and the rites of passage associated with student group membership had been successful (Wisker et al. 2007). Foreign graduate students who are supervised remotely may feel lonely the most. Their work could be challenging and complicated by cultural differences, a lack of regular interaction, contact gaps, and issues with time management. They can gain from participating in a community of practice that can help them establish common ideals and best practices while keeping up with institutional needs and provisions to avoid unnecessarily being isolated but encouraged in their work.

4.3 Role of Supervisor

Jumaat et al. (2019) agree that online supervision has a significant impact on how active students in the discussion are, particularly when it involves academic material. Additionally, online supervision encourages the students to actively participate in the discussion session.

Their study showed how the primary teaching tactics used by online instructors to support students' learning processes include multiple mechanisms of metacognitive scaffolding.

According to Erichsen et al. (2014), graduate students understand the critical role a research advisor plays in helping them complete their research. They also say that they view their advisor as a "guide on their side" while they work to achieve all of the requirements for graduation and faculty expectations. Although many of the responses provided by the respondents indicate variations on the same concepts, the statistics revealed how the students view the function of their supervisor. It is obvious that the students expect their supervisor to be actively involved in guiding them through the discussion process because 72% of all respondents used the words "to guide" or "provide guidance" to describe the primary role of the advisor, and another 34% used words like "support," "assist," or "help." The supervision role includes educating students and responding to their inquiries, mentoring, advising, encouraging, advocating, creating goals, being responsive, and providing clear communication and expectations. The supervisor's responsibilities are extensive, rigorous, and concentrated in brief, sharp bursts during the development program term, proposal submission, and viva (Wisker et al. 2007).

4.4 Satisfaction

According to Erichsen et al. (2014), the majority of students (63%) said they would select the same advisor if given the choice, indicating that most of them were happy with their existing supervisors. According to the respondents' responses to the open-ended questions, the best and most satisfying qualities of advisors were being approachable, positive, open, and simple to talk to; being responsive, available, and generous with their time; being knowledgeable; being supportive and offering guidance; acting as an advocate and willing to help; caring about them as a person and about their success; providing helpful feedback. Supervisors were also described as listening, exhibiting trust, supporting their students, and having faith in them. However, ten respondents admitted that they did not see any good qualities in their supervisor. From the study, the following were the perceived negative and least satisfying aspects of the supervisory relationship as reported by the participants, listed in descending order: the supervisor's lack of response, communication, or feedback; the distance between the student and the supervisor; the advisor's lack of direction; the lack of connection and/or personal relationship with the supervisor; the supervisor's lack of support; the need for more time.

Students were somewhat satisfied with their supervisors' behaviours, according to Erichsen et al. (2014), based on outcomes related to communication and interaction on scale

items. It demonstrates that there is undoubtedly potential for improvement considering that doctorate student supervision is typically challenging, complicated, and time-consuming. 16.8% of participants said they spoke "rarely," "seldom," "infrequently," or "not often enough" with the supervisor.

In the study conducted by Jacobs et al. (2015), over three-quarters of the participants reported being satisfied or extremely satisfied with both their peer-to-peer and faculty-to-student e-mentoring experiences, reflecting positively on their mentoring encounters. They found that most participants agreed that their mentoring relationships went well and that the frequency and length of their interactions were just perfect. From the study, participants indicated that peer-to-peer and faculty-to-student e-mentoring most frequently supported professional presentations for the Doctor of Occupational Therapy (OTD) program, and these relationships most frequently assisted the doctoral projects.

4.5 Performance

The supervisor frequently helps the students to concentrate on the learning process. Indirectly, this assistance has helped students become more knowledgeable and competent (Jumaat et al. 2019). According to the study, teachers frequently direct their students to justify every task and activity. In this regard, the supervisor frequently gives instructions to students to justify their responses and explain the justification for each work. By being able to expound on each step they took to finish the tasks at hand, students were able to gauge their cognitive ability. These findings are consistent with Staples (2014), who conducted research on student justification in mathematics classes. She discovered that students who can articulate their justifications for all tasks receive higher grades than those who cannot.

4.6 Support or Motivation

According to Jumaat et al. (2019), students gain something from helping their peers, and the instructor will probably encourage this by fostering relationships in Facebook discussions between the participants. Peer relationships serve as a crucial setting for the growth of students' academic achievement and engagement. In this study, the instructor frequently uses Facebook's tagging feature to foster relationships among students. When a student's participation is required, the supervisor will tag their names and ask them to assist their friend in solving a certain problem. In online discussions, supporting peers has also been very important in assisting students' learning.

In the area of support and establishing a trusting relationship, Melrose (2006) found that it was helpful to know the students well, to observe for cues where students themselves initiated project ideas, and to establish ground rules for working together.

5.0 LIMITATIONS AND FUTURE WORKS

The lack of research on the current and, specifically, the future state of online supervision is a significant limitation of this study. The main goal of this systematic review was to gather as many related manuscripts as feasible. This study used the PRISMA approach to select publications for preliminary inclusion, a procedure to assess the quality of papers, and an inductive thematic analysis to examine papers that were included. These procedures directly address subjective restrictions while ensuring the range and depth of the literature. Therefore, the papers that are covered by the search criteria are restricted by the systematic literature review methodology. Although we chose a broad range of phrases, it is possible that we overlooked papers that would have been picked out by other manual and crucial identifying methods.

Future discussions about any problems or difficulties encountered throughout the online supervision process are necessary because this study identifies several themes regarding the effectiveness of online supervision. Furthermore, research studies may concentrate on developing a framework for efficient and effective professional development for supervisors on emerging technologies and how they might be used in online supervision. Future research also may examine the impact of using technologies in supervision.

6.0 CONCLUSION

In conclusion, the systematic literature review undertaken in this study, guided by the PRISMA statement by Urrútia and Bonfill (2010), sheds light on the current landscape of knowledge concerning the utilization of online platforms in the supervisory process for postgraduate students. The synthesis of the selected literature has contributed valuable insights into the effectiveness and implications of online supervision. Due to its advantages, this supervisory method has recently become more popular at universities worldwide. The impacts and direction of online supervision are well established and growing due to its advantages over face-to-face supervision. Online supervision has a significant impact on how well students are active in the discussion and it will be reflected in their thesis writing performance. Online

supervision influences group interaction between students, supervisors, and peers which creates a discussion environment that is beneficial to every member.

The findings reveal a diverse range of perspectives and practices related to online supervision, highlighting both the advantages and challenges associated with its implementation. Several tools and platforms that supervisors and students used in the online supervision process such as Moodle, Trello, Facebook, Instant Messaging, email, and social media networks were discovered. Social media platforms have demonstrated the potential for online monitoring, however, an ineffective implementation might occasionally be hampered by poor student participation. Despite the fact that the current study offered some fascinating insights, there are a few limitations that should be highlighted. The database that is used to retrieve articles is limited to Scopus. Future research could employ dissertations and theses as well as other data sources like the Web of Science and EBSCO to get a broader picture of online supervision. The synthesis of existing research underscores the need for further investigation and exploration in specific areas, such as the impact of various online tools, modes of communication, and the role of mentorship in virtual environments.

7.0 REFERENCES

Abdul Ghafar, N., Rahmatullah, B., Razak, N.A., Abdul Muttallib, F.H., Adnan, M.H.M., & Sarah, L.L. (2023). Systematic literature review on digital courseware usage in Geography subjects for secondary school students. *Journal of ICT in Education*, 10(1), 26-39.

Ahmad Shahrizal, A.Z.S., Rahmatullah, B., Ab Majid, M.H., Mohamad Samuri, S., Hidayanto, A.N., & Yas, Q. (2022). A systematic literature review on the use of podcasts in education among university students. *ASEAN Journal of Teaching & Learning in Higher Education,* 14(1), 222-36.

Allen, I. E., & Seaman, J. (2013). *Changing course: Ten years of tracking online education in the United States*. ED541571. ERIC. https://eric.ed.gov/?id=ED541571

Cohen, B.-Z., & Laufer, H. (1999). The influence of supervision on social workers' perceptions of their professional competence. *The Clinical Supervisor*, 18(2), 39-50. https://doi.org/10.1300/J001v18n02_03

Crossouard, B. (2007). Developing alternative models of doctoral supervision with online formative assessment. *Proceedings of the IADIS International Conference E-Learning,*

EL 2007 - Part of the IADIS Multi Conference on Computer Science and Information Systems, MCCSIS 2007, *1*, 91–98. Lisbon.

der Werf, M. van, & Sabatier, G. (2009). *The college of 2020: Students.* Washington DC: Chronicle Research Services.

Erichsen, E. A., Bolliger, D. U., & Halupa, C. (2014). Student satisfaction with graduate supervision in doctoral programs primarily delivered in distance education settings. *Studies in Higher Education*, *39*(2), 321-338. https://doi.org/10.1080/03075079.2012.709496

Fenge, L.-A. (2012). Enhancing the doctoral journey: the role of group supervision in supporting collaborative learning and creativity. *Studies in Higher Education*, 37(4), 401-414. https://doi.org/10.1080/03075079.2010.520697

Green, P., & Bowden, J. (2012). Completion mindsets and contexts in doctoral supervision. *Quality Assurance in Education*, 20(1), 66-80. https://doi.org/10.1108/09684881211198257

Itzhaky, H. (2000). The secret in supervision: An integral part of the social worker's professional development. *Families in Society: The Journal of Contemporary Social Services*, 81(5), 529-537. https://doi.org/10.1606/1044-3894.1054

Jacobs, K., Doyle, N., & Ryan, C. (2015). The nature, perception, and impact of e-mentoring on post-professional occupational therapy doctoral students. *Occupational Therapy in Health Care*, 29(2), 201-213. https://doi.org/10.3109/07380577.2015.1006752

Jumaat, N. F., Tasir, Z., & Musa, H. (2019). A model to predict students' performance based on instructors' pattern of metacognitive scaffolding through data mining analysis. *Journal of Theoretical and Applied Information Technology*, 97(15), 4138-4147.

Khalid, F. (2018). Building postgraduate students' capacity through a hybrid community of practice approach. *Journal of Advanced Research in Dynamical and Control Systems*, 10(12 Special), 1631-1637.

Lee, A. (2012). *Successful Research Supervision.* London: Routledge. https://doi.org/10.4324/9780203816844

Magnussen, J. (2018). Supervision i Danmark–en kortlægning af erfaringer og praksis. *European Journal of Social Work*, 21(3), 359-373. https://doi.org/10.1080/13691457.2018.1451827

Maor, D., & Currie, J. K. (2017). The use of technology in postgraduate supervision pedagogy in two Australian universities. *International Journal of Educational Technology in Higher Education*, 14(1), 1-15. https://doi.org/10.1186/s41239-017-0046-1

Melrose, S. (2006). Mentoring online graduate students: Partners in scholarship. *Education for Primary Care*, 17(1), 57-62. https://doi.org/10.1080/1475990X.2006.11493511

Mohamad, A.I., Rahmatullah, B., Ibrahim, L.F.M., Saari, E.M., Downing, K.J. (2022). Exploring parents perception of online learning through a systematic literature review. *Borneo International Journal,* 5(1), 8-15.

Muchlas Budiastuti, P., Khairudin, M., Santosa, B., Rahmatullah, B. (2023). The Use of Personal Learning Environment to Support an Online Collaborative Strategy in Vocational Education Pedagogy Course. *International Journal of Interactive Mobile Technologies,* 17(02), 24-41.

O'Donoghue, K. (2015). Issues and challenges facing social work supervision in the twenty-first century. *China Journal of Social Work*, 8(2), 136-149. https://doi.org/10.1080/17525098.2015.1039172

Ongoz, S. (2018). The use of ICT tools in e-mentoring: A case study. *Turkish Online Journal of Distance Education*, 19(4), 76-89. https://doi.org/10.17718/tojde.471655

Park, C. (2005). War of attrition: Patterns of non-completion amongst postgraduate research students. *Higher Education Review,* 38(1), 48-53.

Rodríguez-Carrio, J., Putrik, P., Gwinnut, J., Sepriano, A., Alunno, A., Ramiro, S., Leipe, J., & Nikiphorou, E. (2020). Mentoring for postdoctoral researchers in rheumatology: The Emerging EULAR Network (EMEUNET) post-doc mentoring program. *RMD Open*, 6(1). https://doi.org/10.1136/rmdopen-2019-001139

Roslin, A.R., Rahmatullah, B., Mohamed Zain, N.Z., Purnama, S., & Yas, Q.M. (2022). Online learning for vocational education: Uncovering emerging themes on perceptions and experiences. *Journal of Vocational Education Studies,* 5(1), 1-15.

Staples, M. (2014). S*upporting student justification in middle school mathematics classrooms: teachers' work to create a context for justification*. CRME Publications, 4. https://digitalcommons.lib.uconn.edu/merg_docs/4

Urrútia, G., & Bonfill, X. (2010). Declaración PRISMA: Una propuesta para mejorar la publicación de revisiones sistemáticas y metaanálisis. PRISMA declaration: A proposal

to improve the publication of systematic reviews and meta-analyses. *Medicina Clínica*, 135(11), 507-511. https://doi.org/10.1016/j.medcli.2010.01.015

Wisker, G., Robinson, G., & Shacham, M. (2007). Postgraduate research success: Communities of practice involving cohorts, guardian supervisors and online communities. *Innovations in Education and Teaching International*, 44(3), 301-320. https://doi.org/10.1080/14703290701486720

Yang, W., Huang, R., Li, Y., & Li, H. (2021). Training teacher-researchers through online collective academic supervision: Evidence from a postgraduate teacher education programme. *Journal of Computer Assisted Learning*, 37(4), 1181-1193. https://doi.org/10.1111/jcal.12558

Zainal Abiddin, N. (2006). *Keberkesanan hubungan antara pelajar dan penyelia dalam penyelidikan dan penyediaan projek akademik*. Serdang: Universiti Putra Malaysia Press.