

---

## **Insight The MOOC Readiness in Sports Studies using Bibliometric Analysis**

Noridah Abu Bakar, Rozita Abdul Latif<sup>\*</sup>, Rezian-Na Muhammed Kassim,  
Mohamad Rahizam Abdul Rahim, Mohad Anizu Mohd Nor

Faculty of Sports Science & Recreation, Universiti Teknologi MARA, MALAYSIA

**Published online:** 23 September 2022

**To cite this article (APA):** Abu Bakar, N., Abdul Latif, R., Muhammed Kassim, R.-N., Abdul Rahim, M. R., & Mohd Nor, M. A. (2022). Insight The MOOC Readiness in Sports Studies using Bibliometric Analysis. *Jurnal Sains Sukan & Pendidikan Jasmani*, 11(2), 17-26. <https://doi.org/10.37134/jsspj.vol11.2.2.2022>

**To link to this article:** <https://doi.org/10.37134/jsspj.vol11.2.2.2022>

### **ABSTRACT**

Despite its reputation and global acceptance, MOOC is confronted with some points of criticism regarding the shortcomings of its content, such as scarcity of clarity, unstructured, poor design, and issue of student retention. This study aims to understand the readiness for Massive Open Online Course (MOOC) in sports-related studies in Malaysia as sports education is distinctive and is essential to enhance the sustainability of national health development, apart from being the heart of the sports industry. The Scopus database has been chosen as a primary data source, and VOSViewer software has been employed for the bibliometric analysis method to quantitatively and visually evaluate the data. A decade of data from 2011 to 2021 has been analysed. The distribution of authorship, countries' co-authorship and keywords were generated in the form of a network map. Results show that the publications related to MOOC and online learning has increased 100 percent over the last ten years compared to the previous decade. However, there has been a gap in the research on MOOC related to sports education as there is minimal result in the ongoing study. Findings proposed that more research on MOOC readiness is required to understand the MOOC course development and acceptance in sports-related to compensate for the needs of the students from this field of education, especially from the student-athlete group.

**Keywords:** Bibliometric, MOOC, Online Learning, Readiness, Sports Studies

### **INTRODUCTION**

Massive Open Online Courses or well known as MOOCs, is a learning innovation where access to the courses offered is open and online. The MOOC range of courses is huge and may cover hundreds of thousands of students at a time. The courses carried out are also not tied to time, where every student can access education anywhere at the same and location differences (Al-Rahmi et al., 2018; Al-Shami et al., 2018; Buyut et al., 2019)

The Ministry of Higher Education launched the first four Malaysia MOOCs in 2014. This introduction is significant as it marks the first foray by Malaysian public universities into MOOC. Subsequently, the ministry introduced guidelines for developing quality and international standard MOOCs, particularly in the niche areas where Higher Education Providers (HEPs) will be able to achieve global recognition. The MOOC initiative in Malaysia is prominently highlighted in the Malaysian Education Blueprint 2015-2025 (Higher Education); Shift 9: Globalised Online Learning (GOL). GOL aims to improve the quality of course delivery, reduce the delivery cost, bring Malaysian expertise to the world, enhance the branding and visibility of Malaysian HEPs, and promote lifelong learning among Malaysians (Kumar & Al-Samarraie, 2018; Nordin et al., 2015).

When e-learning suddenly becomes mandatory and all the learning moves to distance learning mode during a pandemic, MOOC courses become no longer an additional method but part of an

important requirement. However, MOOC course availability is still in infancy in sports-related studies, and no clear direction can be seen. Some challenges are hidden and unsolved yet. Looking back to the basics, before embarking on the MOOC methodology, it is important that the institution gauge the readiness level among its students, faculty, and institutions to avoid any issues after the implementation. Hence, any risk of failure and inefficiency can be controlled and eliminated.

Previous research identified risks for online learning as the lack of readiness, unexpected overload on all stakeholders, and increased risks of security breaches which could lead to a damaged reputation and reduced enrolment (Shersad & Salam, 2020). Furthermore, the sudden online shift of examinations, lack of practical skills, poor attendance due to excessive Internet traffic, lack of student engagement, the uncertainty of regulations, and increasing cybercrimes can harm the credibility and validity of the learning are another challenge of online learning implementation and this is no excuse to MOOC learning method (Anthonysamy et al., 2019; Refat et al., 2019; Yoke et al., 2019).

These requirements and risks have opened up new challenges in the MOOC course development. Therefore, this paper aims to provide an insight into the previous studies on MOOC and online learning readiness using a bibliometric analysis method. The outcome of this study will lead to a better understanding and current gap regarding research on MOOC and online learning readiness as it is one of the critical successful MOOC implementations.

## METHODOLOGY

### Research Design

The research methodology begins with the data retrieval from the Scopus database to use the bibliometric methods, which helps to identify the development trends or future research orientation. An illustration of the research design is shown in Fig. 1. The bibliometric method focused on the analysis of the publication output including title, abstracts, keywords, authors, sources, affiliation and cited references.

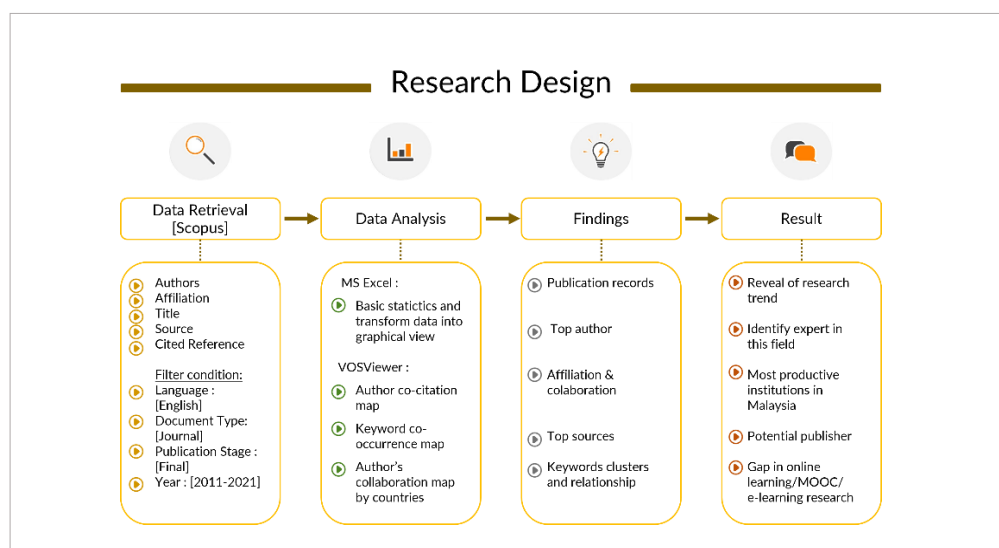


Figure 1. Research Design

The distribution of the year of publication, authors, keywords, institutes, and countries can be visualized with various bibliometric analysis tools available. For this study, MS Excel software and a free bibliometric tool from the University of Leiden, namely VOSViewer were selected for their ease of use, attractiveness and usability options that are available.

The MS Excel software creates a graphical view of the tabular data, while the VOSViewer focuses on the distribution and association between the bibliographic data. The data analysis was

conducted using VOSViewer produced author co-citation map, keyword co-occurrence map author's collaboration map by countries.

Supported functions of VOSViewer in the bibliometric study are the creation of maps based on network data and the ability to visualize and explore the map. It is available in the form of web-based applications and desktop-based. There are zoom and scroll functions that make working with larger maps easier and enable detailed exploration of the elements. The VOSViewer can provide three visualization types, including overlay visualization, network visualization and density visualization.

The analysis results include a range of publication dates, a rank as a top author or top expert in this research area, country affiliation and collaboration among authors, and the relationship between keywords and their clusters were determined by the software based on the defined relationship. Last but not least, all findings illuminate the gap identification in this research area and provide attention to further studies.

### **Parameter Design**

The data for the present study were collected from the Scopus indexing database in November 2021. In particular, only the published article was retrieved from the online documents indexed by Scopus. The data retrieval strategies were defined as follows:

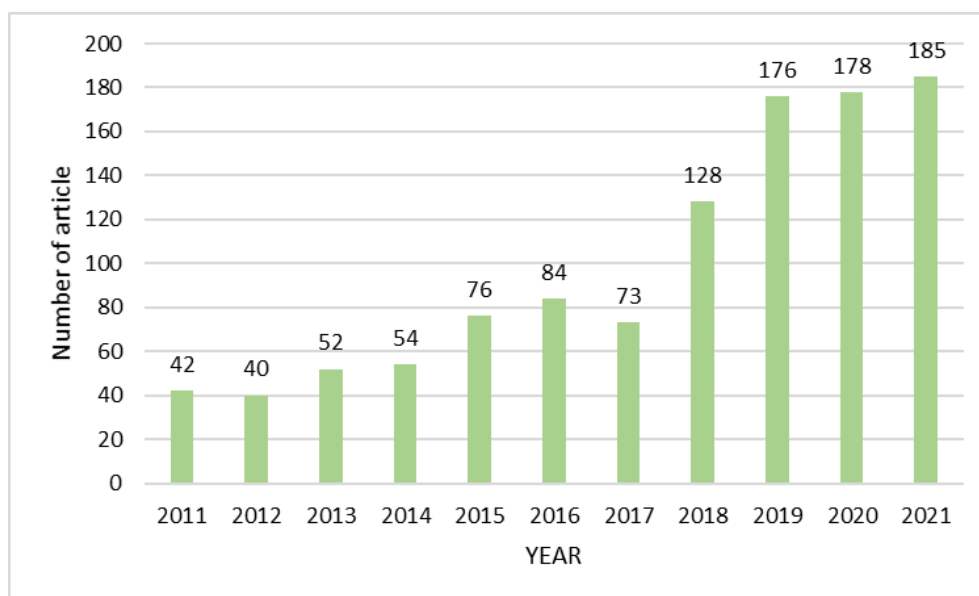
Topic	: “online learning” ; “online education” OR e-learning OR e-education OR MOOC OR “massive open online”
Term source	: Title, Abstract and Keyword
Timespan	: 2011-2021 (10 years period). Years per slice was set to 1.
Language	: English
Publication Type	: Article
Publication Stage	: Final
Country	: Malaysia
Search String	: TITLE-ABS-KEY ( "online learning" OR "online education" OR e-learning OR e-education OR MOOC OR "massive open online" OR elearning ) AND ( LIMIT-TO ( PUBYEAR , 2021 ) OR LIMIT-TO ( PUBYEAR , 2020 ) OR LIMIT-TO ( PUBYEAR , 2019 ) OR LIMIT-TO ( PUBYEAR , 2018 ) OR LIMIT-TO ( PUBYEAR , 2017 ) OR LIMIT-TO ( PUBYEAR , 2016 ) OR LIMIT-TO ( PUBYEAR , 2015 ) OR LIMIT-TO ( PUBYEAR , 2014 ) OR LIMIT-TO ( PUBYEAR , 2013 ) OR LIMIT-TO ( PUBYEAR , 2012 ) OR LIMIT-TO ( PUBYEAR , 2011 ) ) AND ( LIMIT-TO ( PUBSTAGE , "final" ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) ) AND ( LIMIT-TO ( AFFILCOUNTRY , "Malaysia" ) )

The search retrieved one thousand eighty-eight documents by November 2021, and all documents that meet the research scope were then downloaded for further analysis.

## **RESULT AND DISCUSSION**

### Publication Year

From 2011 to the current year, 1088 documents have been published. It was found that the first article to meet the filter criteria was in the year 2000 and only 99 articles were published in the first ten years (years 2000-2010) as the first article was in the year 2000. The dramatic change in the following ten years, when the number increased tenfold, to more than a thousand articles, 1088 were published as in November 2021. The annual research performance is shown in Fig. 2. The result has shown that the interest and importance of online learning in Malaysia have increased over the past decade. The number of articles in the selected range starts at 42 in 2011. It fell slightly to 40 in 2012, but then continued to increase until 84 in 2016. There was a slight decrease again in 2017, but just for one year and rose 55 additional documents to a number of 176 articles in 2019 and then 178 in the following year. According to the latest search, 185 are already in print for 2021 and it is expected that the remaining two months will continue to grow until the end of the year.



**Figure. 2** Number or document by year

The study on readiness related to online learning or MOOC was found in 82 articles out of 1088. It contributes 7% to the total research. Annually, there is research published related to readiness. The trend is generally growing up from 2 articles in both 2011 and 2012 to 6 articles in 2013. It was a slight decrease in 2014 that has only 1 article, but then it started to rise again and the highest number of an article within the past decade is this year, where 23 papers have been published so far.

For the first five years, minimal studies have focused on readiness in MOOCs. Several studies attempt to understand the readiness for online learning for continuing professional education (Chong et al., 2011), distance learner students (Ismail et al., 2012), school children (Abualrob & Daniel, 2013; Hashim et al., 2013; Jabor et al., 2013; Tahir et al., 2015) and a majority of the are focusing on the higher education (Al-Furaydi, 2013; Al-Khasawneh et al., 2013; Balakrishnan, 2014; Ling et al., 2011; Mohamad et al., 2013; Mohamad et al., 2015; Ross, 2012). Research during this period has highlighted challenges and concerns such as up-to-date hardware and software, infrastructure maintenance, optimizing the usage of tools in the system, lack of reliability of the software, lack of time, overcoming the resistance to organizational change, continuous commitment, support staff and learners, aligning of the standard of the online courses offered among universities and convert online learning materials to be accessible by other mobile technologies. Studies in higher education also highlighted the approach of blended learning, a requirement of effective planning and required skills as an online learner. To

alleviate some of the emergent issues identified in the research, a User-Learner Centred Design model was developed by Ross (2012).

The recent five years (years 2016-2021) show that 9 out of 69 research on the readiness-related article has coverage of MOOC. A study by Mee et al. (2016) focused on MOOC instructor readiness has yielded that Internet connection affected learners' engagement in online learning besides the quality and usability of MOOC content itself. If MOOC is not adequately prepared, the student would prefer to meet their lecturers and friends in a physical lecture class compared to on a web-based (Fesol & Salam, 2016). In addition, some studies also focus on the motivational factors (Buyut et al., 2019; Daud et al., 2019) in understanding readiness. The result shows that students have a high level of enthusiasm and no barriers to using MOOCs as a new learning platform. However, this finding needs further investigation since MOOC development and acceptance in terms of self-directed learning are still concealed. This is supported by Thiagraj et al. (2021) that most of the students were not sure of their own readiness to take on self-directed learning in the m-learning platform during the pre-reflective stage to measure their own learning capabilities.

### Authorship

Only some of the authors are working together in this area of research, while most of the other researchers are working separately. The academic collaboration among authors in the selected research area is shown in Fig. 3. Since most of them work with a small group, the network mapping has generated 24 clusters that meet the threshold of 5 articles. This shows that the link between authors in this area of study is not strong. The total number of authors is 2,871, with 33 authors connected and the remaining studies isolated. However, 337 authors are connected via citation.

The most prolific list of the top 10 authors was determined along with their frequency of publication. These authors are Tasir, Z. (15), Al-Samarraie, H. (13), Embi, M.A. (13), Al-Rahmi, W.M. (10), Atan, N.A. (10), Lim, C.P. (9), Othman, M. S. (9), Salam, S. (9), Tawafak, R.M. (9) and Yunus, M. M. (9). These top 10 authors are deemed experts in this field. They are eligible to be referred for experts' views in future research in the area of online learning and MOOC.

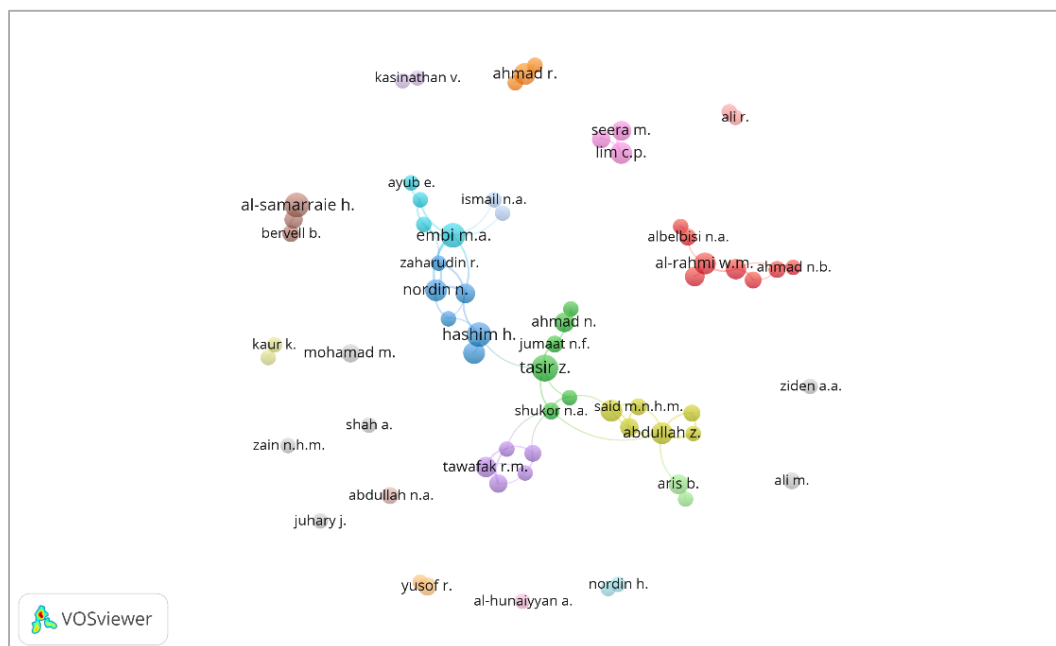


Figure 3. Analysis of co-authorship

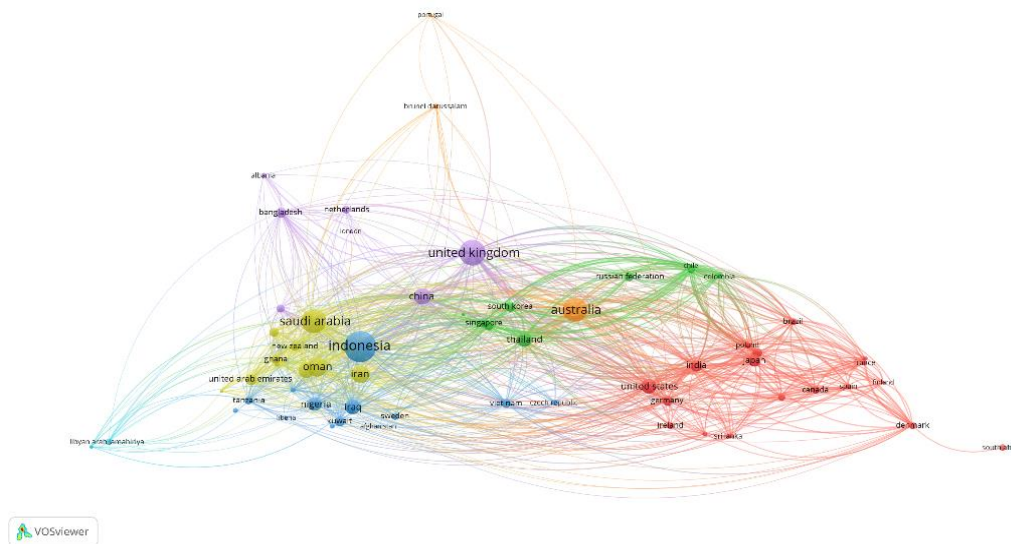




13	Japan	11
14	India	10
15	United Arab Emirates	10

**Affiliation Countries**

All the affiliation has Malaysia as the selection criterion only includes documents that relate to local authors. Analysis of affiliation countries was carried out to identify the other countries that are collaborating in this research area. There were 15 countries associated with authors from Malaysia, with more than ten documents published within a decade. Led by authors from Indonesia, followed by the United Kingdom, Australia Saudi Arabia, Oman, Iran, China, Pakistan, Iraq, United States, Thailand, Nigeria, Japan, India, and the United Arab Emirates. Collaborations include the role of lead author and co-author. The network map identified 7 clusters shown in Fig. 5, and the number of documents for the top 15 countries is tabulated in Table 1.



**Figure 5.** Network map of countries by co-authorship excluding Malaysia

**Top Sources**

Twenty (20) journals have published more than ten documents on this scope of the study. These top 20 journals and numbers of articles published include International Journal Of Emerging Technologies in Learning (43), Journal of Theoretical and Applied Information Technology (31), IEEE Access (28), International Journal of Interactive Mobile Technologies (28), International Journal of Advanced Trends in Computer Science and Engineering (21), Advanced Science Letters (20), Journal of Advanced Research In Dynamical and Control Systems (19), Education and Information Technologies (18), International Journal of Engineering and Technology UAE (17), International Journal of Recent Technology And Engineering (15), International Journal of Advanced Computer Science And Applications (14), Universal Journal of Educational Research (14), Asian Journal of University Education (13), Turkish Online Journal of Educational Technology (13), Indonesian Journal of Electrical Engineering And Computer Science (12), International Journal of Innovation Creativity And Change (12), International Journal on Advanced Science Engineering and Information Technology (12), Computers And Education (11), Pertanika Journal of Social Science and Humanities (11), and Turkish Online Journal of Distance Education (11).

In summary, the country of origin and number of the journal for the top 20 sources listed above are Malaysia (2), Indonesia (2), USA (5), UK (3), India (3), Turkey (2), United Arab Emirates (1),

Germany (1) and Pakistan (1). The common publication sources can be a potential future publication in this research area. However, it is advisable to check the journal's status in Scopus before submitting it for publication, as at the time this study was carried out, six journals were already discontinued by Scopus in 2020, and three were discontinued even earlier in 2019 and 2017. Hence, only the remaining nine journals of this top 20 are still indexed.

## **LIMITATION**

The selection criteria used in this study are limited to only articles in the final publication category and consist of at least one author/co-author from Malaysia. As the study seeks to understand the local MOOC studies indexed by Scopus over the past decade, the results of this work might not generalize to all MOOC research. Therefore, future studies should validate our results in various databases such as the Web of Science and could consider more publication types and include other countries. In conclusion, further research is recommended to determine whether the result of this study is enough to validate the need for MOOC studies in sports-related online education. Therefore, the researcher could add another criterion to the filtering options as more publications related to this area of study are available in conference proceedings and others to allow a more comprehensive understanding of the study in MOOC readiness and challenges.

## **CONCLUSION AND RECOMMENDATIONS**

Research in MOOC, especially MOOC readiness, is not very prominent in the indexed journal listed by the Scopus database. There are a large number of keywords and many have a strong connection. However, the relationship between the authors is still weak and many still work in isolation. The authority should take more initiative to link the authors together to cherish the area of study and produce more ideas and better contributions to the body of knowledge. Nevertheless, the affiliation between institutions and countries is not yet strong. There is still room for improvement to expand the networking towards the direction of knowledge curation and knowledge transfer between different geographical and educational areas. More initiative should be made by the authority to link the authors together to cherish the area of study and produce more ideas and better contributions to the body of knowledge.

Bibliometric methods effectively identify core themes and their networked relationship in journals including authorship, country of affiliation and keyword co-occurrence. The analysis helps to identify the research gap, evaluate important research contributions and propose further research directions. This bibliometric method reveals that although online learning and MOOCs are one of the primary research interests in the SCOPUS database, understanding MOOC readiness, particularly in sport-related studies, has received limited attention so far.

Based on the above analysis and discussion, future studies should (1) expand a broader document selection criterion; (2) conduct a study of MOOC issues in sports-related education, and (3) should explore more firsthand on the readiness of students, faculty and institutions for MOOC implementation towards improving the satisfaction, effectiveness and MOOC user retention.

## **ACKNOWLEDGMENTS**

We would like to thank you to Research Unit, Faculty of Sports Science & Recreation, Universiti Teknologi MARA for funding this research project.



## REFERENCES

- Abualrob, M. M. A., & Daniel, E. G. S. (2013). The Delphi Technique in Identifying Learning Objectives for the Development of Science, Technology and Society Modules for Palestinian Ninth Grade Science Curriculum. *International Journal of Science Education*, 35(15), 2538–2558. <https://doi.org/10.1080/09500693.2011.610381>
- Al-Furaydi, A. A. (2013). Measuring E-learning readiness among EFL teachers in intermediate public schools in Saudi Arabia. *English Language Teaching*, 6(7), 110–121. <https://doi.org/10.5539/elt.v6n7p110>
- Al-Khasawneh, A., Khasawneh, M., Bsoul, M., Idwan, S., & Turan, A. H. (2013). Models for using internet technology to support flexible e-learning. *International Journal of Management in Education*, 7(1–2), 61–70. <https://doi.org/10.1504/IJMIE.2013.050814>
- Al-Rahmi, W., Aldraiweesh, A., Yahaya, N., & Kamin, Y. B. (2018). Massive open online courses (MOOCs): Systematic literature review in Malaysian higher education. *International Journal of Engineering and Technology(UAE)*, 7(4), 2197–2202. <https://doi.org/10.14419/ijet.v7i4.15156>
- Al-Shami, S. A., Sedik, S., Rashid, N., & Hussin, H. (2018). The barriers that influence the use of Moocs. Case study from university Teknikal Malaysia Melaka (Utem). *Journal of Advanced Research in Dynamical and Control Systems*, 10(6 Special), 310–321.
- Anthonyssamy, L., Choo, K. A., & Hin, H. S. (2019). Development and validation of an instrument to measure the effects of self-regulated learning strategies on online learning performance. *Journal of Advanced Research in Dynamical and Control Systems*, 11(10 Special), 1093–1099. <https://doi.org/10.5373/JARDCS/V11SP10/20192910>
- Balakrishnan, V. (2014). Using social networks to enhance teaching and learning experiences in higher learning institutions. *Innovations in Education and Teaching International*, 51(6), 595–606. <https://doi.org/10.1080/14703297.2013.863735>
- Buyut, V. C., Abdullah, S., Abdullah, R., & Atan, R. (2019). Motivational factors influencing the use of massive open online courses (Moocs) for continuing professional development: A systematic literature review. *International Journal of Advanced Science and Technology*, 28(2), 286–293.
- Chong, M. C., Sellick, K., Francis, K., & Abdullah, K. L. (2011). What influences Malaysian nurses to participate in continuing professional education activities? *Asian Nursing Research*, 5(1), 38–47. [https://doi.org/10.1016/S1976-1317\(11\)60012-1](https://doi.org/10.1016/S1976-1317(11)60012-1)
- Daud, M. Y., Rahman, M. J. A., & Zulkifli, F. N. (2019). Online learning: Readiness for using MOOCs by postgraduate students. *International Journal of Innovation, Creativity and Change*, 7(11), 181–196.
- Fesol, S. F. A., & Salam, S. (2016). Towards MOOC for technical courses: A blended learning empirical analysis. *International Journal on Advanced Science, Engineering and Information Technology*, 6(6), 1141–1147. <https://doi.org/10.18517/ijaseit.6.6.1299>
- Hashim, A. S., Ahmad, W. F. W., Jaafar, A., & Md Nordin, S. (2013). A Proposed mobile school system for requirements of secondary schools in Malaysia. *Journal of Software*, 8(12), 3229–3237. <https://doi.org/10.4304/jsw.8.12.3229-3237>
- Ismail, I., Ali, A. S. M., & Azman, N. (2012). Discomfort in E-Learning: Does it impact learners? *International Journal of Emerging Technologies in Learning*, 7(2), 39–42. <https://doi.org/10.3991/ijet.v7i2.1717>
- Jabor, M. K., Sale, M. I., Deba, A. A., Musta'mal, A. H., & Sadiq, A. (2013). Responsibility of school's leaders in tackling the E-learning barriers in technical and vocational education higher institutions. *Journal on Efficiency and Responsibility in Education and Science*, 6(3), 134–142. <https://doi.org/10.7160/eriesj.2013.060301>
- Kumar, J. A., & Al-Samarraie, H. (2018). MOOCs in the Malaysian higher education institutions: The instructors' perspectives. *Librarian*, 59(3), 163–177. <https://doi.org/10.1080/02763877.2018.1458688>
- Ling, S.-E., Rahman, S., Ariffin, S. R. B., Leong, L. K., & Mohd Hamzah, M. (2011). Perspectives on blended learning in Malaysian institute of higher education: Needs, readiness and future challenges. *World Applied Sciences Journal*, 14(SPL ISS 2), 51–57.
- Mee, C. K., Mei Sui, L. K., Jano, Z., & Husin, H. (2016). The readiness of the administrators and undergraduates in using Massive Open Online Course (MOOC) in the Mandarin subject. *Social Sciences (Pakistan)*, 11(12), 3017–3023. <https://doi.org/10.3923/sscience.2016.3017.3023>
- Mohamad, M., Omar, A., Hussin, S., Amir, Z., & Idris, F. (2013). Evaluating the effectiveness of e-learning in language classrooms. *Social Sciences (Pakistan)*, 8(2), 148–152. <https://doi.org/10.3923/sscience.2013.106.152>
- Mohamad, S. N. A., Embi, M. A., & Nordin, N. M. (2015). Are students ready to adopt E-Portfolio? Social science and humanities context. *Asian Social Science*, 11(13), 269–275. <https://doi.org/10.5539/ass.v11n13p269>
- Nordin, N., Embi, M. A., & Norman, H. (2015). Malaysia MOOCs: The way forward. *MOOCs and Educational*

*Challenges around Asia and Europe*, 39(5), 88–102.

- Refat, N., Rahman, M. A., Asyhari, A. T., Kurniawan, I. F., Bhuiyan, M. Z. A., & Kassim, H. (2019). Interactive learning experience-driven smart communications networks for cognitive load management in grammar learning context. *IEEE* 7, 64545–64557. <https://doi.org/10.1109/ACCESS.2019.2915174>
- Ross, V. (2012). From transformative outcome based education to blended learning. *Futures*, 44(2), 148–157. <https://doi.org/10.1016/j.futures.2011.09.007>
- Shersad, F., & Salam, S. (2020). Managing Risks of E-learning During COVID-19. *International Journal of Innovation and Research in Educational Sciences*, 7(4), 2349–5219.
- Tahir, L. M., Ali, M. F., Said, M. N. H. M., & Zakaria, M. A. Z. M. (2015). ICT literacy and readiness in using computers among headteachers in their tertiary learning experiences and school management tasks. *International Journal of Emerging Technologies in Learning*, 10(2), 63–69. <https://doi.org/10.3991/ijet.v10i1.4405>
- Thiagraj, M., Abdul Karim, A. M., & Veloo, A. (2021). Using Reflective Practices To Explore Postgraduate Students Self-Directed Learning Readiness In Mobile Learning Platform And Task-Centered Activity. *Turkish Online Journal of Distance Education*, 22(2), 192–205. <https://doi.org/10.17718/tojde.906853>
- Yoke, S. K., Ahmad, S. A., Yunos, R. M., Amin, J. M., Sulaiman, N., & Majid, F. A. (2019). Educator's Readiness for 21st Century Education. *ARPJ Journal of Engineering and Applied Sciences*, 14(Special Is), 10687–10692. <https://doi.org/10.36478/JEASCI.2019.10687.10692>

✉ Rozita Abdul Latif

Faculty of Sports Science & Recreation,  
Universiti Teknologi MARA, MALAYSIA

Email: [rozita.abdlatif@uitm.edu.my](mailto:rozita.abdlatif@uitm.edu.my)