

Chapter # 36

UNDERSTANDING THE LEARNING SPACE: A BIBLIOMETRIC ANALYSIS ON BLENDED LEARNING IN HIGHER EDUCATION

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ABSTRACT

Learning in higher education was predominantly the traditional face-to-face type of learning. Blended learning has been adopted as the relevant approach to teaching and learning, based on the lesson learned during the COVID-19 period. The concept “learning space” refers to a full range of spaces in which learning occurs, from real to virtual learning, and from the classroom to chat rooms. Blended learning necessitates an understanding of the learning space and design, pedagogy and curriculum, and their relation to the learning space. The learning space is critical for the realisation of learning outcomes. Online learning cannot replicate everything of value in the face-to-face experience of learning. The reflection on the blended learning approach is guided by the conceptualisation of learning as acquisition, learning as participation, and learning as knowledge creation. This study reflects on trends in blended learning (between 2013 and 2024), as aided by an extensive literature review. A qualitative methodology was employed, and data was analysed using the bibliometric analysis. This chapter discusses the effects of blended learning on students. This study is significant as it helps improve lecturers’ implementation of blended learning, which would translate into developing essential online and face-to-face learning pedagogy, as institutions of higher learning globally have adopted blended learning.

Keywords: bibliometric analysis, blended learning, learning space, higher education.

1. INTRODUCTION

Technological advancement has largely contributed to the introduction and implementation of blended learning across the globe. Harper, McCormick, and Marron (2024) have reported significant changes in higher education institutions across the globe, especially on the academic landscape, due to the COVID-19 pandemic. Accordingly, Harper et al. (2024) have highlighted that the most significant change in this regard, has been the abrupt shift from traditional classroom teaching and learning to online learning, as the lockdown restrictions compelled higher education institutions to shut their campuses.

With a shift from face-to-face learning, remote or online/digital learning became an integral part of tertiary/higher education (He, Edwards, & Schwarte, 2024). Generally, in almost all the countries, this shift was attributed to the COVID-19 pandemic.

The effectiveness of the traditional classroom teaching and blended learning is influenced by several factors. According to Ait Daoud, Namir, and Talbi (2024), the term “blended learning” is used more frequently in today’s education cycles. Accordingly, Ait Daoud et al. (2024) maintain that blended learning is not a new term, many organisations throughout the world have, for many years, implemented and explored blended learning. Similarly, Mohamed (2024) states that blended learning has undergone some notable shift in its application over time.

Furthermore, Chilton, Hanks, and Watson (2023) point out that much has been learned about higher education institutions and how they could best provide blended learning environments, especially during crises like COVID-19, as well as during “normal” times. However, the scholars (Chilton et al., 2023) assert that access to technology, and the ability to use it, are crucial for the success of online/remote learning.

Castro (2019) and Hermita, Alim, Putra, Mahartika, and Sulistiyo (2023) define blended learning as a mode of learning that combines in-person teaching with online learning. These scholars also argue that the aim of designing blended learning is to improve the efficacy of traditional classroom teaching and learning. Ultimately, Mahmood, Sharif, and Aleem (2024) postulate that blended learning is an innovative and more efficient way of learning, as it transcends the boundaries of space and time, and broadens possibilities. Furthermore, blended learning is seen as an emerging and crucial mode that offers additional activities for the reinforcement of learning.

The scholar (Mohamed, 2024) also notes that the role of teachers in blended learning goes beyond being knowledge providers: it extends to advisors, moderators, learning guides, and facilitators. This notion is supported by Du et al. (2022), who postulate that blended learning is a student-centred model, where teachers play a guiding and supporting role of assisting students to use the existing knowledge reserved to learn, comprehend, and internalise new knowledge. According to Mohamed (2024), the shift noted here acknowledges the significance to foster active and engaging learning environments.

This chapter is divided into seven sections. The first section provides background to the concept of blended learning. The second section presents the aims and objectives of the study, while the third section outlines the methodology and data collection strategies. The fourth section presents the results of the data analysis and the overall findings. The last section presents the discussion, limitations of the study, make suggestions for future research, and draws the conclusion.

2. BACKGROUND

Due to the outbreak of the COVID-19 pandemic, teaching and learning activities were shifted to online learning. However, because of the urgency of this ‘transition’, time was not enough to plan and prepare for this change. Hence, some scholars refer to this remote teaching and learning as Emergence Remote Teaching (ERT). Blended learning promotes both face-to face and online teaching and learning. Eventually, this means adopting a new learning space in higher education. Online teaching and learning called for innovation and the creation of relevant learning spaces. This brought different challenges to lecturers or teachers. Different higher education institutions used different Learning Management Systems (LMSs), based on their preferences. Nonetheless, the effective usage of all these in teaching and learning depends on the teacher’s or lecturer’s creativity and willingness to learn to make teaching effective and productive for students’ achievement or benefit. A vast body of literature suggests that the learning space in higher education is under-researched and un-theorised. This bibliometric analysis, therefore, explores trends in blended learning as a unique learning space. In other words, this study describes the most common practices on blended learning in higher education based on the data that was obtained from Scopus and analysed using VOSviewer. Important to note is that, the study also identified the gaps in blended learning, which could be subjects for future research.

2.1. Research Aims and Objectives

The study aimed to answer the main question:

What are the major trends in implementing blended learning in Higher Education?

The main objectives of the study were:

1. to map out the research focus on blended learning in higher education in the last 10 years.; and
2. to identify global trends in scientific research on blended learning in Higher Education.

3. METHODOLOGY AND DATA COLLECTION

A bibliometric analysis was conducted to explore the implementation of blended learning in higher education institutions mainly to identify trends in blended learning. To achieve this, the researcher critically reviewed co-occurring keywords. Data was retrieved from the Scopus database. Scopus is one of the databases that researchers broadly rely on when conducting bibliometric analyses in the academic literature (Farooq, 2023).

The search was restricted to article title, abstract, and keywords, using the Boolean “OR” - “AND”. Therefore, the researcher used the search string “blended learning” AND “higher education institutions” OR “universities”. This search produced 5 062 documents.

The search was refined to focus on the years 2013 to 2024 and included subject such as social sciences and arts and humanities, and the type of document was limited to article, and the language restricted to English only. This final search yielded 1 594 documents. The data retrieved from Scopus was analysed using VOSviewer. According to Di Matteo, Nardi, Grego, and Guidi (2018), VOSviewer is the Visualisation of Similarities software.

4. BIBLIOMETRIC ANALYSIS AND RESULTS

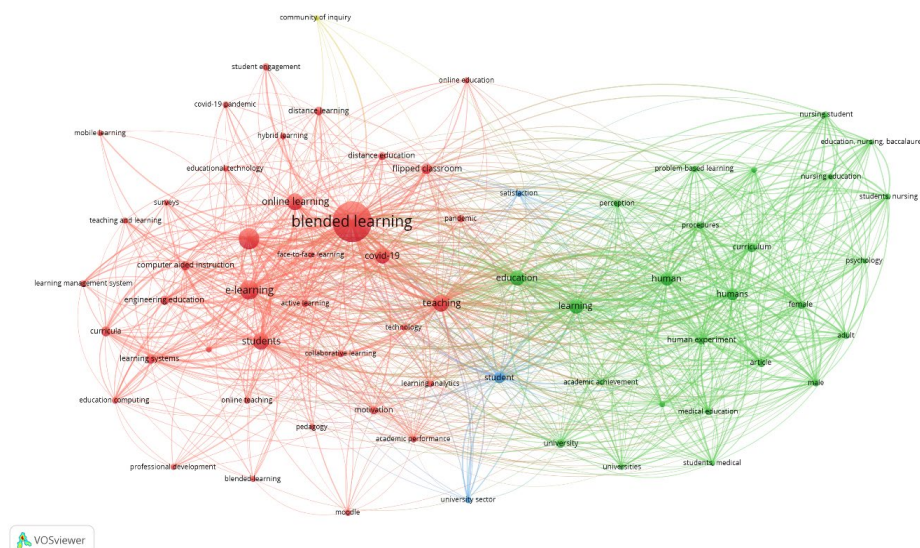
4.1. Keyword Co-Occurrence

The objective was to map out the research focus on blended learning in higher education in the last 10 years. According to Qing, Chun, Ock, Dagestani, and Ma (2022), keyword co-occurrence could explain the research hotspots in the field over a specific time. These keywords would enable the identification of the important themes in blended learning in higher education and observations around the trending concepts in blended learning.

For this study, the minimum number of keyword occurrence was set at 20, this is because blended learning is not a new phenomenon in higher education, as researchers have argued. Of the 4 924 keywords, 67 met the threshold. The list of the co-occurring keywords is presented in the four themes that the researcher has developed and analysed.

Co-occurrence in this study refers to the frequency with which a particular keyword appears with other keywords. The results indicate that blended learning had a strong link of 1 989, and had 945 occurrences. Similarly, teaching as a keyword had a strong link of 1 015, with 161 occurrences. Another important keyword was education, which also had a strong link of 844, with 139 occurrences. The 67 co-occurring keywords are displayed in Figure 1 below.

Figure 1.
Network Visualisation of co-occurring keywords.



4.2. Cluster 1: Blended Learning as a Learning Space

The first cluster consisted of 38 items. However, for this study the researcher had to focus specifically on some keywords to align the study to the main research question. Some of these important keywords are: academic performance, active learning, collaborative learning, flipped classroom, learning analytics, motivation, pedagogy, professional development, and student engagement. The researcher needs to point out that the discussion of the co-occurring keywords was also guided by the emphasis of the literature on blended learning regarding these keywords.

The co-occurring keyword “collaborative learning” emphasises the importance of collaboration during teaching and learning. However, the type of collaboration emphasised is immaterial, this could be student-student collaborations, or student-teacher collaboration. Interestingly, Guo (2024) postulates that the significance of collaborative learning is emphasised, hence, the role of this collaborative learning is considered crucial to knowledge construction.

The appearance of the keyword “COVID-19 pandemic” in the first cluster is/was expected, since most HEIs shifted to online learning, and later, blended learning, following the COVID-19 pandemic. Chilton et al. (2023) have highlighted that the impact of COVID-19 on higher education has acted as a global experiment in remote learning; hence scientific findings must inform the implementation of blended learning in HEIs. On the other hand, Harper et al. (2024) state that the impact of the COVID-19 pandemic contributed to increased mental health challenges, stress and other external factors among students, these might have also influenced academic outcomes during this time.

The appearance of the co-occurring keyword “pedagogy” reveals the importance of the process of teaching and learning, irrespective of the mode of delivery. Hence, Anderson (2020) argues that the term “pedadgogy” does not refer to the mere deployment of the methods and learning techniques. The scholar (Anderson, 2020) further postulates that

effective pedagogy equips students for life through the development of their personal, intellectual and social resources. The scholar is of the view that good pedagogic practice encourages student engagement with highly considered forms of ideas, knowledge, ways of thinking and forms of discourse, and practices relevant to every individual's context.

Another important co-occurring keyword was “flipped classroom”. It is noteworthy that Danker (2015) explains that the flipped classroom enables the redesign of large lectures into active-learning classes, made of small groups. Danker (2015) also highlights that active learning in small groups facilitates student engagement, where they could participate, develop higher-order thinking skills, and receive feedback. Interestingly, Danker (2015) also found that the flipped classroom approach promotes individualised learning. According to the scholar, the flipped classroom fosters an environment that increases the interaction between teachers and students, and enables student engagement through practice and application.

Research on blended learning seems to have covered learning analytics, and outlined the significant role of “learning analytics” in the blended learning mode. Accordingly, Siemens (2013) defines learning analytics as the “collection, analysis, measurement and reporting of data about students and their context, simply for the purposes of comprehending and optimising learning as well as the environment in which it occurs”.

On the other hand, Wang, Wu, Chen, and Li (2017) argue that learning analytics could aid the recommendation of personalised learning resources and the construction of individualised learning models; thus, fostering a more accurate approach to personalised learning. Furthermore, this process promotes self-adaptive learning that caters for the unique needs of each student as it also enhances the entire learning experience and outcomes.

Another trend is student engagement. In this regard, Yang and Ghislandi (2023) maintain that student engagement is a qualified proxy for quality learning and teaching. This is confirmed by Mohamed (2024), who argues that combining face-to-face learning with a blended learning framework has revealed an increase in student engagement as well as collaboration with instructors and peers. Accordingly, Mohamed (2024) argues that blended learning facilitates the creation of an interactive and dynamic learning space, hence, fostering active engagement among students, resulting in enhanced academic achievement.

Wang et al. (2017) sum up the argument made in cluster 1. The scholars argue that education is no longer something that is imposed externally on students, or just forced onto beings, rather it must emanate from students themselves.

4.3. Cluster 2: Academic Achievement and Problem-Based Learning

This cluster contained 25 items. The keyword “academic achievement” occurred in both clusters 1 and 2; although in the first cluster it was captured as “academic performance”. Therefore, the importance of students achievement in blended learning cannot be over-emphasised. As Mahmood et al. (2024) reveal that, numerous studies have recently explored the impact of the incorporation of blended learning on student academic performance. Furthermore, the study conducted by Mahmood et al. (2024) revealed that a blended learning approach, with some targeted effort, enhances students performance. Moreover, the scholars argue that this was influenced by the enabling opportunities that students had been afforded, such as collaboration facilities through online mediums, and better interaction, which contribute to increased learning.

Regarding “curriculum” as one of the significant concepts in teaching and learning, ElSayad (2024) maintains that in a blended learning set up students are presented with a portion of curriculum, using online delivery, which affords them some autonomy over the location, schedule direction, or speed of their learning process. Consequently, students

become more responsible and independent, and are in charge of their remote learning. This means that, in blended learning it is always facilitators or lecturers who have the task of deciding how they will teach the different components of the curriculum. Ultimately, blended learning, according to Guo (2024), is an effective way for instructors to carefully design teaching before the lessons, organise classroom activities during the lesson, and test the effectiveness of learning after the lesson.

Problem-based learning, affords students an opportunity to become active constructors of knowledge. According to Guo (2024), in a blended learning set up the teacher assumes the role of a helper, guide, organiser, and facilitator of meaning construction and, therefore, plays a mediating role during the learning process. The argument around “problem-based learning” also comes to the fore as “problem-based learning” was one of the key co-occurring keywords in cluster 2. Generally, problem-based learning is considered one of the most important elements of high-order thinking, and it develops students’ critical thinking. Students who are engaged in problem-based learning more often display the skills and the ability to make decisions. The appearance of the keyword “problem-based learning” confirms Mahmood et al.’s (2024) assertion, who supported previous studies that a blended learning approach promotes higher-order thinking better than traditional teaching practices.

4.4. Cluster 3: Student Satisfaction

This cluster has three items only, namely “satisfaction”, “student”, and “university sector”. Student satisfaction with the teaching and learning process is critical, since it might contribute to student attitude to learning, which could impact academic achievement. In their study, He et al. (2024) found that teacher support facilitates student course engagement, and consequently, student satisfaction.

Some of the important factors that contribute to student satisfaction in teaching and learning are feedback and academic performance. As Wang et al. (2017) argue, using LMS in blended learning allows for more timely and equitable feedback. The scholars are also of the view that improved feedback mechanism fosters student motivation as they feel acknowledged and more engaged in the learning process.

The study conducted by Chilton et al. (2023) revealed that students appreciate remote learning in other context, but that this should be complementing and should not necessarily supersede face-to-face mode of delivery. Ultimately, Chilton et al. (2023) warn that HEIs and teachers should be dynamic and flexible in their interactions with students and acknowledge that this is not a one-size-fits-all model.

4.5. Cluster 4: Community of Inquiry

“Community of inquiry” was the only co-occurring keyword that was displayed under the last cluster. This study confirms Castro’s (2019) findings, wherein most of the trends that were identified from a pedagogical perspective consisted of models, frameworks, as well as practices at individual and group level; for instance, student-centred approaches, active learning, flipped classrooms, peer collaborative learning, and communities of inquiry. However, most of these trends fall under the second cluster as discussed above.

Progressively, Teane (2024) states that cognitive presence as part of the theory of a community of inquiry refers to the extent to which individuals could construct and confirm meaning through sustained discourse and reflection, this speaks to what is referred as knowledge construction. Accordingly, Castro (2019) notes that the core elements of communities of inquiry under practices at group level include among other things, social, teaching, and cognitive presence. This confirms an assertion by Yang and Ghislandi (2023),

who clarified that the community of inquiry framework argues that teaching presence, cognitive presence, and social presence are necessary for an enriched online learning experience.

Similarly, Pei, Poortman, Schildkamp, and Benes (2024) maintain that good social relationships do not ensure academic success, and note that cognitive presence covers the learning aspect. On the other hand, teaching presence is considered the facilitation, instruction, and direction of students' cognitive and social presence to ensure educationally and personally meaningful learning outcomes. Last, social presence focuses on students' ability to project themselves emotionally and socially for the development of inter-personal relationships in a more trustworthy environment.

5. DISCUSSION

Pei et al. (2024) maintain that for two decades, blended learning has been considered one of the fastest-growing trends in higher education. Part of the victories that we can celebrate in the implementation of blended learning is that it discourages the one-way transmission of knowledge from lecturers to students if thorough planning for this mode of delivery is done in advance. It is noteworthy that blended learning, if implemented correctly, would promote student-centred learning, through problem-solving learning, engagement, collaboration, and active learning, hence also enhancing student motivation and satisfaction with teaching and learning, and academic achievement. Notably, in blended learning students for instance, construct knowledge, based on their experience and as they interact with peers and content. This confirms Mahmood et al.'s (2024) findings that problem solving, engagement, and active learning are pivotal in the blended learning approach, wherein students are interpreting and exploring information, instead of passively receiving it. Hence, Mahomed (2024) has recommended that educational institutions should utilise blended learning to further improve student participation and engagement in learning.

Above all, blended learning presents itself as a different learning space. Moreover, the pedagogy, teaching, and learning unfold in a manner that would ensure that everything is student-centred. As Wang et al. (2017) contend, in a blended learning environment students are responsible for actively constructing and engaging in different cognitive activities. This means that they are actively engaged in discussing, creating, thinking, reflecting, collaborating, and investigating.

It is important to note that “curriculum”, “teaching and learning”, and “perception” as co-occurring keywords also suggest that lecturers should plan to implement a blended learning delivery mode, based on their knowledge of their students' different learning experiences, as blended learning allows for a personalised learning experience. This finding supports the results of a study conducted by Ait Daoud et al. (2024) that suggested that lecturers should consider the different learning styles of their students when designing and delivering blended learning courses.

The introduction of a new learning and teaching mode of delivery suggests the use of various technologies – information and communication technologies (ICTs) in HEIs. The appearance of the co-occurring keyword “professional development” suggests that there is generally, a need for in-service or upskilling, or the re-skilling of professionals in the teaching and learning field. Ayob, Daleure, Solovieva, Minhas, and White (2023) acknowledged the findings of some studies that, the lecturers' challenges were among others, the lack of pedagogical and technical skills for conducting the program, the increased workload, time devotion and the difficulty in finding the right blend between online learning and face-to-face. This confirms the findings of a study conducted by Teane (2024) that the

acquisition of technological literacy enables teachers and students to engage in online modes of delivery. On the other hand, Pei et al. (2024) warn that instructors must use these communication technologies with caution in blended learning.

The most important advantages of blended learning is that it allows for student flexibility, students can access course materials anywhere, and at any time (Mahomed, 2024). One great benefit of technology-mediated learning is that it affords individuals extended opportunities to acquire the skills and the rich knowledge, hence, it creates a more dynamic and inclusive educational environment. Similarly, Onah, Pang, and Sinclair (2022) note increasing students' autonomy, students' control of the study environment and their studies, and flexibility as some of the advantages of blended learning. Importantly, Bakeer's (2018) findings reveal that there were high levels of satisfaction with blended learning and significant self-reported improvements in the usage of English skills as well as groupwork self-efficacy. This is also confirmed by Suleiman (2018) who noted that studies revealed that blended learning contributed more to students' attitude towards the geography course and positively correlated to students' critical thinking skills. However, Anthony et al. (2019) indicated that students' experiences in relation to technology plays an important role in the satisfaction and acceptance of blended learning. They maintain that the supportive factors consist of self-motivation, engagement time and experience of the students

Besides the great advantages that blended learning presents in teaching and learning, like promoting active learning and student-engagement, it also has some disadvantages. Teane's (2024) study revealed that a lack of resources; like the shortage of data projectors, computers, and other gadgets make the use of online mechanisms challenging. Additionally, access to data and the internet was also a challenge (Teane, 2024). Notably, Wang et al. (2017) found that there is a great demand for information technology skills from both teachers and educational administrators. The findings in this regard are in line with Teane's (2024) findings, the scholar suggests that teachers at higher education institutions must be the first to receive training in online skills.

Interestingly, Teane (2024) maintains that according to Fullan's theory of change, lecturers who adopt the blended learning approach become agents of change. However, Onah et al. (2022) warn that higher education institutions should not expect students to be equally effective in a particular new mode of learning. The scholars further argue that support is required to ensure students' adjustment and the development of their practice of self-regulation for learning.

6. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

This study has limitations. The researcher limited the search scope because of the heavily reliance on a single database (Scopus). Furthermore, the study was limited to articles published between 2013 and 2024. In addition, only publications in the English language were considered. Therefore, the necessity of conducting periodic bibliometric analysis on blended learning in higher education, cannot be overemphasised. This process might lay a good foundation for empirical research on blended learning in higher education. The researcher is of the view that further qualitative data on students' perceptions of blended learning would ensure valuable contributions to scientific research. As students can play an important role in contributing towards the creation of different teaching models that could be effectively applied in blended learning. It is this kind of research that contributes to relevant interventions towards stakeholders' professional development.

It is recommended that, studies be conducted that would focus on lecturers' and students' views on blended learning in different disciplines, as Apandi and Raman (2020) argue that there are few studies on university lecturers' views on the implementation of blended learning (BL). Furthermore, there is a need for management's continuous support on ICT usage to both lecturers and students, as studies reveal that more support should be provided to lecturers and students, and this influence their perception towards the adoption of blended learning

7. CONCLUSION

To answer the research question, the researcher analysed the data obtained using VOSviewer. Hence, the researcher could identify a large set of the existing trends on blended learning delivery, based on the different or multi-disciplinary research evidence. Lecturers could contribute positively towards students' learning experiences and enhance their academic achievement if they implement the appropriate blended learning approaches. Furthermore, blended learning should be treated as a future mode of teaching and learning. Meaning that, as teachers or lecturers, or any other stakeholder in education, we should not wait for pandemics such as COVID-19 to then transition into other learning spaces. In higher education, blended learning should be used for the realisation of the main aims of education in the 21st century.

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