LITERATURE SYNTHESIS OF BLENDED LEARNING USING THE SCOPUS DATABASE FROM 2020 TO JULY 2024

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Abstract

This paper aims to meticulously analyze and synthesize with 3 objectives the existing body of literature on blended learning management, using empirical data from the Scopus database during 2020 to July 2024. The study employs bibliometric methods, including author collaboration clustering analysis, keyword co-occurrence clustering, and impact factor analysis, to uncover patterns, trends, and emergent themes within blended learning. By leveraging tools like "VOS viewer" and "Microsoft Excel" to examine trends and patterns. The study's findings, based on a systematic review of articles from the Scopus database, indicate a growing interest in technology integration, student engagement, and tailored pedagogical strategies within blended learning environments. Despite an increasing number of publications and a notable presence in high-impact journals, gaps in research were identified, particularly the need for longitudinal studies and exploration of culturally diverse applications. The analysis suggests that future research should focus on the long-term effects of blended learning and the integration of emerging technologies like Artificial Intelligence to enhance educational experiences.

Keywords: Blended Learning Management, Technology Integration, Student Engagement, Research Trends, Scopus Database

Introduction

Blended learning management represents a significant shift in education, combining traditional classroom instruction with online and digital methods to create a more integrated, flexible, and student-centered approach to learning. This teaching strategy has gained prominence because of its potential to improve learning outcomes by combining the best aspects of face-to-face and online learning experiences. The importance of blended learning in education cannot be overstated; it allows for personalized learning paths, caters to different learning styles, and promotes the use of a variety of educational resources and technologies. In the context of higher education, blended learning has been adopted as a means to foster a more engaging and interactive learning environment. It encourages active learning, critical thinking, and the

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application of knowledge in real-world settings (Govender, 2022). The flexibility offered by this approach is particularly beneficial for students who may need to balance their studies with other commitments, as it provides them the opportunity to access course materials and participate in learning activities at their own pace and convenience.

In conclusion, blended learning management is a transformative approach that holds great promise for the future of education. It aligns with the evolving needs of modern learners and the increasing demand for flexible, accessible, and high-quality educational experiences. As such, it is an essential component of contemporary education that warrants continued exploration and development.

Objectives

1. To meticulously analyse and synthesise the existing body of literature pertaining to blended learning management, grounded in empirical data extracted from Scopus databases from 2020 to July 2024.

2. To uncover patterns, trends, and emergent themes within the domain of blended learning, providing a comprehensive overview that encapsulates the evolution of this educational approach.

3. To identify gaps in current research, propose potential areas for future investigation and contribute to the ongoing discourse on optimising the blended learning environments for diverse educational contexts.

Literature Review

An Overview of Blended Learning

Blended learning, often referred to as hybrid learning, is an instructional approach that combines traditional face-to-face classroom teaching with online learning experiences. This blending of instructional modes aims to leverage the advantages of both in-person and online learning to enhance the overall educational experience.

Its origins trace back to the 1840s with Sir Isaac Pitman's correspondence courses, evolving into computer-based training in the 1960s and 1970s with systems like P.L.A.T.O. In the 1980s, Learning Management Systems (LMS) emerged, setting the stage for modern blended learning (Bervell & Umar, 2020). Today, diverse models like the Rotation, Flex, A la carte, and Enriched Virtual models cater to various learning needs, offering personalized and flexible educational experiences.

Blended Learning Management

Blended learning management involves various strategies, challenges, and benefits. It requires a robust theoretical foundation, considering constructs and factors influencing adoption from students, lecturers, and administration. Effective practices include integrating face-to-face activities, resources, assessments, feedback, technology, pedagogy, content, and knowledge. Challenges include resistance to change, the need for technological infrastructure, and faculty professional development. Benefits include enhanced student engagement, improved learning experiences, flexibility, and accessibility

(Bokolo Anthony et al., 2024). Blended learning is now considered the "new normal", with emerging technologies crucial to its evolution, improving access, success, and students' perception of their learning environments.

Previous Studies

Previous studies on blended learning management have shown its effectiveness in improving performance, attitude, and achievement, though it doesn't significantly enhance student engagement in China and the USA (Cao, 2023). Yu et al. (2023) defined blended learning as integrating traditional and distance learning, identifying three definitions: blending instructional modalities, methods, and online with face-to-face approaches.

Yu et al. (2023) explored blended learning adoption in Chinese universities, finding that an integrated model based on the Technology Acceptance Model (TAM) and the Theory of Planned Behavior (TPB) explained a significant portion of adoption variance. Perceived usefulness and learning attitudes positively influenced adoption intention, while perceived ease of use, subjective norms, and perceived behavioral control had little effect. Challenges in blended learning include the need for institutional support for course redesign and planning (Dziuban et al., 2018). Addressing gaps such as technology integration, pedagogy, and adequate support for instructors and students is crucial. While previous studies highlight blended learning's benefits, further research is needed on student engagement, cultural adoption differences, and institutional challenges. The study uses the Scopus database, covering natural sciences, medicine, social sciences, and life sciences, particularly strong in humanities, social sciences, computers, and engineering. These elements ensure the research remains focused, manageable, and relevant.

Methodology

Scope

Based on the topic of the research, the period ranges from 2020 to July 2024.The database used in this study, Scopus, is a unique multidisciplinary navigation database product launched by Elsevier. It is the world's largest peer-reviewed literature abstract and citation index database. Scopus content covers four major categories: natural sciences, medicine, social sciences, and life sciences. Among them, the literature collected in the fields of humanities, social sciences, computers, and engineering is particularly advantageous. Together, these elements form the backbone of a research project, ensuring that it is always focused, easy to manage, and relevant to the research field.

Search

"Article title" is selected in the "Search scope" of the basic search, and the Scopus journals related to "blended AND learning AND management" in Search documents are entered; the time span is from 2020 to July 2024; then "Social Sciences", "Computer Science", "Business, Management, and Accounting", "Psychology", "Decision Sciences", and "Arts and Humanities" are selected in Subject area;

"Article" is selected in Document type. In addition, all options such as Author name, Source title, Publication stage, Keyword, Affiliation, Funding sponsor, Country/territory, Source type, Language, and Open access are selected by default, that is, no more screening.

Record

The "Author(s)", "Author full names", "Document title", "Year", "Source title", "Affiliations", "Citation information", "Bibliographical information", "Abstract & keywords", "Funding details" and "Other information", etc. are recorded in detail in the searched relevant documents. Also the CiteScore, SJR, SNIP score of each "publisher" and the "ASJC Category", "Quartile", "Percentile", and "Rank" are checked and recorded one by one, so as to have a macro-level understanding.

Analysis

The research methods employed in the study were designed to align with the research objectives. For Objective 1, the researchers used a bibliometric approach, extracting and analyzing empirical data from the Scopus database, including author collaboration, keyword co-occurrence, and impact factor analysis using VOS viewer and Excel. To address Objective 2, a detailed cluster analysis of keywords and annual trends was conducted to uncover patterns and emergent themes within the literature on blended learning management. Finally, for Objective 3, the study utilized a systematic review method to identify research gaps, critically analyzing the quality and focus of the existing studies and suggesting areas for future research to optimize blended learning environments.

Results

Overall Situation of Educational Research on "Blended Learning Management"

The researchers retrieved 46 articles on "blended learning management" from 42 journals, of which 9 were published in 2020, 12 in 2021 and 2022, 5 in 2023, and 8 by July 10, 2024 (see Figure 1).

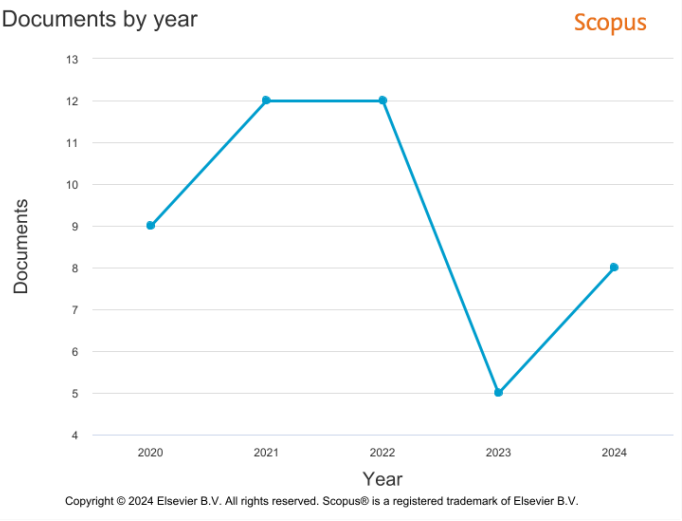

Figure 1 Documents by Year

Source: The author drew it based on the Scopus database from July 2024.

From the perspective of the subject area classification of published academic articles, the number of publications in the "Social Sciences" category accounts for 45.7% of the total retrieved documents, making it the category with the largest publication ratio; the second is the "Computer Science" category, with the number of publications accounting for 19.8% of the total retrieved documents; the third is "Business, Management and Accounting", with the number of publications accounting for 9.9% of the total retrieved documents. The number of publications in other categories is less than 5% of the total number of retrieved documents (see Figure 2).

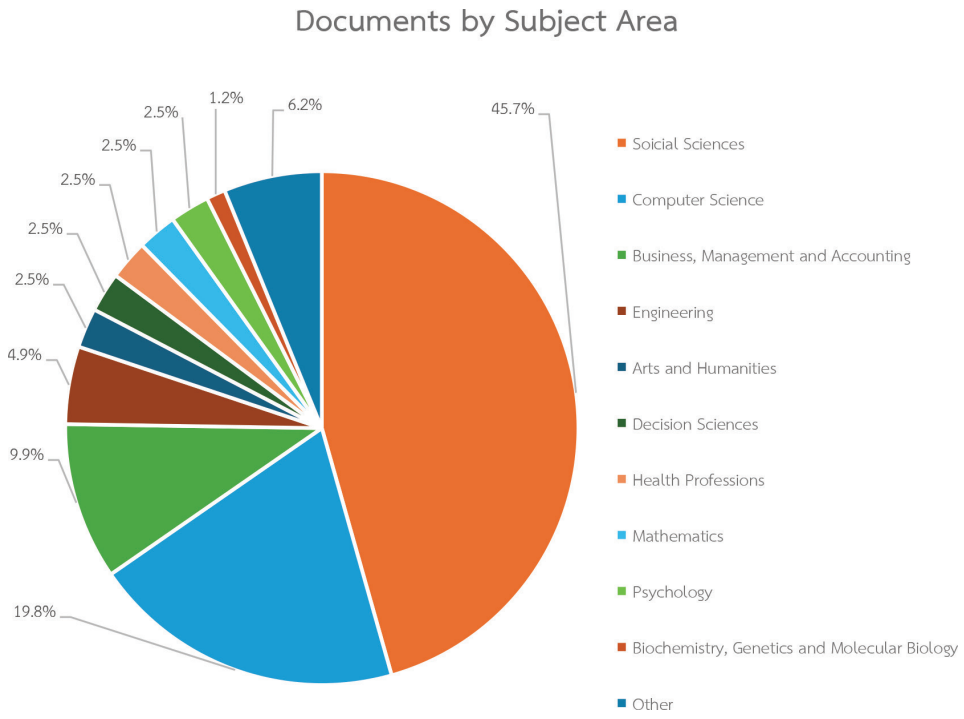

Figure 2 Documents by Subject Area

Source: The author drew it based on the Scopus database from July 2024.

The above literature belong to 23 countries in the world, including 6 from Indonesia, 5 from China and Malaysia, 3 from Ghana, Thailand and the United States, 2 from Australia, Brazil, Germany, and Spain. Belgium and 13 other countries each have 1 article, a total of 46 journal articles published in 23 countries (see Table 1). From the overall number of publications, it can be seen that the academic research on "blended learning management" is in a weak position.

Table 1 Statistics of Journal Publication by Country

Country	Number of Publications
Indonesia	6
China	5
Malaysia	5
Ghana	3
Thailand	3
United States	3
Australia	2
Brazil	2
Germany	2
Spain	2
Belgium, Bulgaria, Canada, Chile, Guinea, India, Pakistan, Poland, Russian Federation, Saudi Arabia, South Korea, Turkey and United Kingdom	1 each
Total: 23	46

The Most Prolific Authors in the Field

Bervell, Brandford and Umar, Irfan Naufal are the authors with two publication records among the 46 research subjects, and the other authors appear once.

Bervell, Brandford and Umar, Irfan Naufal published in the journals "Open Learning" and "Contemporary Educational Technology" in 2020 and 2022 respectively. The quality of these two journals is relatively high. They are also in Quartile 1 of the ASJC category of the Scopus database, with rankings of 53/1543 and 187/1543 respectively. The research of the two scholars is also about "blended learning of Learning Management System (LMS)". The difference is that their research results in 2020 focus on revealing the antecedents of teachers' anxiety about the actual use of LMS; their research results in 2022 focus on revealing the decisive factors that promote teachers' voluntary use of LMS, etc.

Research Value, Theme and Research Focus

The researchers tried to explore the overall academic quality of blended learning management by summarizing the quartiles of 46 documents. After sorting, 25 of the 46 documents are in the Q1 area, 10 are in the Q2 area, 7 are in the Q3 area, and 4 are in the Q4 area (see Table 2). Although the overall number of publications shows that the academic research of "blended learning management"

is in a weak position, from the perspective of the quality of published journals, the number of research results in the Q1 area exceeds more than half of the total number of research objects, indicating that the research quality of "blended learning management" is at a high level.

Table 2 Quartile Distribution of Literature Publications

Quartile	Quantity
Q1	25
Q2	10
Q3	7
Q4	4

In terms of the number of academic journals included, International Journal of Management Education included 3 articles, Education and Information Technologies included 2 articles, International Journal of Interactive Mobile Technologies included 2 articles, and other journals included 1 article each. Researchers use CiteScore and SJR to evaluate the reputation and academic quality of journals. According to the scores of CiteScore ≥ 10 and SJR ≥ 1.0 (Latest data, 2023), the journals that meet the above conditions are International Journal of Educational Technology in Higher Education, Internet and Higher Education, International Journal of Management Education, Education and Information Technologies, and Open Learning (see Table 3).

Table 3 Statistics of Journals with High Academic Reputation

Source Title	Cite Score 2023	SJR 2023
International Journal of Educational Technology in Higher Education	19.3	2.578
Internet and Higher Education	19.3	2.426
International Journal of Management Education	10.3	1.257
Education and Information Technologies	10	1.301
Open Learning	10	1.062

In the above five representative journal articles, the researchers explored the Affiliations and Abstracts behind the papers to explore the research focuses of the academic articles. Among them, only the paper «Blended learning or face-to-face? Does Tutor anxiety prevent the adoption of Learning Management Systems for distance education in Ghana?» published in the Open Learning journal was supported by the University of Cape Coast.

Analysis of the abstracts of the top eight most cited academic articles revealed several key findings about blended learning management: Flow experience mediates the relationship between e-learning engagement and perceived ease of use, enhancing the continuance of e-learning systems, although its direct effect diminishes with increased engagement (Bervell & Umar, 2022). Self-efficacy and resource management significantly impact learning engagement, moderated by depression levels. Academic reflexivity, social interaction, and agency are crucial for the adoption of blended learning. Student-generated instructional videos enhance understanding, retention, and planning skills in management education. A flipped classroom format improves cognitive processing and learning effectiveness in blended learning. LMS success relies on information, system, and service quality, user satisfaction, and professor actions. University students' LMS acceptance is influenced by community sense, engagement, perceived usefulness, and ease of use. Tutors' LMS anxiety is influenced by colleague support, outcome expectation, and use support.

Research Status and Trend Analysis

In addition, by using VOS viewer software to perform keyword co-occurrence cluster analysis, the study found that with the development of information technology and the continuous changes and upgrades in hardware equipment, learning software, and teaching methods of blended learning, Study, Blended Learning, Learning, Use, Research, etc. are still the research topics of scholars in the past five years (see Figure 3).

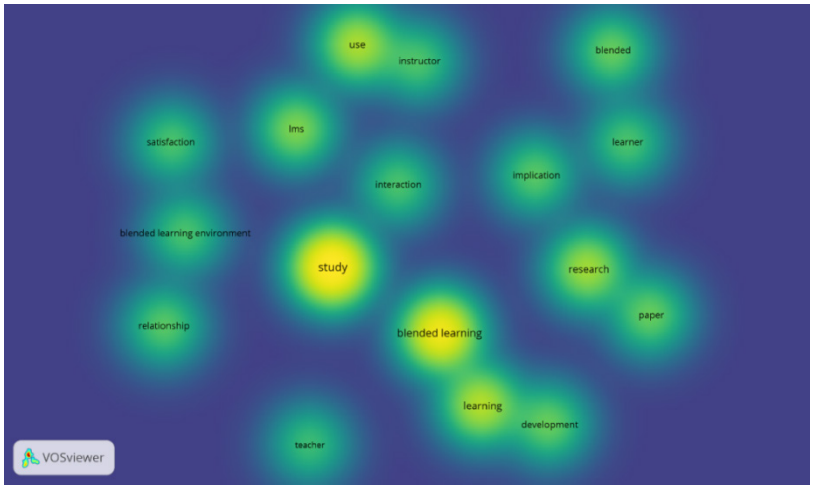

Figure 3 Keyword Co-occurrence Clustering Graph

Source: The author uses VOS viewer to draw

By using VOS viewer software to conduct annual keyword co-occurrence cluster analysis, the study found that in 2020-2021, scholars' research focus was on Interaction; Instructor; Development; Blended Learning; Study, etc. Entering 2022, scholars' research directions will focus more on Blended Learning environment; satisfaction; relationship; learner, etc. (see Figure 4).

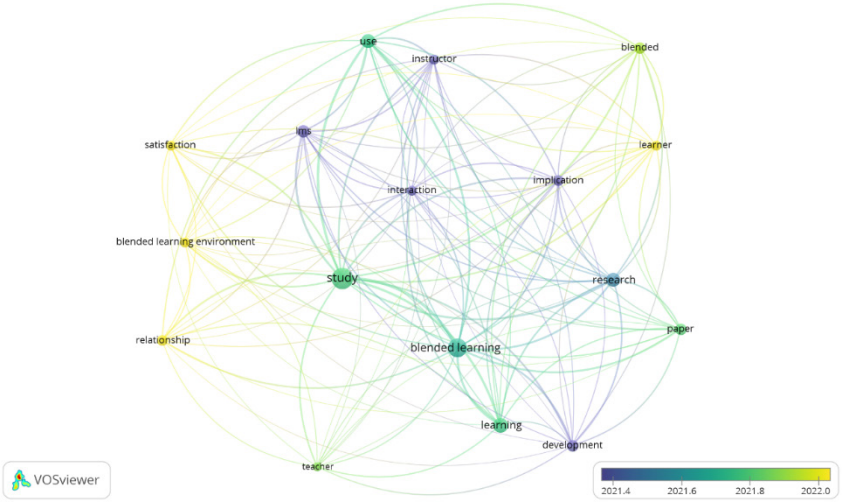

Figure 4 Annual Keyword Co-occurrence Clustering Diagram

Source: The author uses VOS viewer to draw

The above results show that:

1. The study analyzed 46 articles on "blended learning management" from 42 journals published between 2020 and July 2024. It revealed that the majority of research is published in the "Social Sciences" category (45.7%), followed by "Computer Science" (19.8%) and "Business, Management, and Accounting" (9.9%). This indicates a predominant focus on educational and social applications of blended learning management. The overall academic research on this topic remains in a weak position, but the quality of the research, as indicated by the number of publications in high-ranking journals (25 out of 46 in Q1 quartile), suggests a solid foundation in the field.

2. The keyword co-occurrence cluster analysis using VOS viewer identified major research focuses such as "Interaction" , "Instructor", and "Development" in the early period (2020-2021). In 2022, the focus shifted towards "Blended Learning environment", "satisfaction", "relationship", and "learner". This shift highlights the evolving research interest from basic instructional strategies and teacher roles to a more nuanced understanding of the learning environment and student satisfaction. It also reflects a growing emphasis on the personalized learning experience and the adaptation of blended learning in diverse educational contexts.

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Discussion

After a thorough discussion with the co-investigators, the key findings from the research can be summarized as follows. The main themes focus on teaching strategies, technology integration, and student engagement in blended learning environments. Effective teaching strategies involve balancing pedagogical decisions to enhance flow experience and learning outcomes while being mindful of their impact on the use of Learning Management Systems (LMS). Encouraging students to create digital content and using flipped classroom formats were found to significantly improve understanding, retention, and interactive learning experiences. Self-regulation and resource management were highlighted as critical for effective engagement, especially for students experiencing depression. The findings underscore the significance of creating an ecosystem in blended learning that not only supports the current pedagogical approaches but also adapts to the rapid evolution of educational technology, ensuring that learners are equipped with the skills necessary for the digital age.

Technology integration plays a crucial role, with the success of LMS depending on information and service quality, user satisfaction, and professor actions. Addressing LMS-related anxiety among instructors through colleague support is necessary to ensure effective system use. Flow experience mediates the relationship between e-engagement and system continuance, though its impact decreases as engagement levels rise. Building a sense of community within LMS enhances student engagement through collaborative activities. This shift towards a more student-centered approach aligns with the growing recognition that educational strategies must be responsive to the individual needs and preferences of learners, suggesting that future research should explore how to further customize the blended learning experience.

The research also emphasized the need to support students’ mental health, as the influence of self-efficacy on engagement varies depending on depression levels. This underscores the importance of balanced teaching strategies, robust technology integration, and proactive measures to foster student engagement in blended learning. These findings contribute to the ongoing discourse on optimizing blended learning environments and provide a foundation for future research focused on enhancing the efficacy and impact of blended learning

strategies in diverse educational contexts. The persistent gaps in research, particularly regarding the longitudinal impact of blended learning, indicate a need for sustained and in-depth studies that can provide educators with a clearer understanding of the long-term educational and psychological effects of this teaching strategy on student development.

Conclusions

The study analysed 46 articles on blended learning management from 42 journals, noting an increase in publications from 2020 to July 2024.

Comprehensive Analysis of Literature

The analysis of the selected articles highlighted a diverse range of studies focused on blended learning management. The majority of research is concentrated within the social sciences, reflecting a strong interest in the educational and social dimensions of blended learning. Despite this focus, there remains a need for broader exploration across other disciplines to fully understand the multifaceted impacts of blended learning management.

Identification of Emerging Patterns and Themes

The study revealed evolving research interests over the years, shifting from foundational aspects like instructor roles and course design to more complex issues such as learning environments and student satisfaction. This shift indicates a deepening understanding of how blended learning can be tailored to enhance educational outcomes, catering to diverse learning preferences and contexts.

Recognition of Research Gaps and Future Opportunities

Despite the progress in the field, the study identified several areas that require further attention, including the need for more targeted research on the effectiveness of specific blended learning strategies, the role of technology integration, and the mental health aspects of learning in hybrid environments. Addressing these gaps will be crucial for developing more effective blended learning models that can adapt to the dynamic needs of both educators and learners.

In conclusion, while significant strides have been made in understanding and optimizing blended learning management, further research is needed to explore under-represented areas and refine strategies for various educational contexts. This continued exploration will be key to advancing blended learning practices and maximizing their potential in modern education systems.

Limitations and Recommendations

Limitations

This study relied on literature from the Scopus database (2020 to July 2024). The limited number of objects and samples may have constrained the study's breadth and depth.

Suggestion for Using Research Result

Enhance Educational Strategies. Utilize the identified trends in technology integration and student engagement to enhance current educational strategies, ensuring they align with modern blended learning approaches.

Adopt Tailored Pedagogical Models. Educators can adopt the tailored pedagogical strategies discussed to cater to diverse learning needs and preferences, optimizing the blended learning experience for different student groups.

Institution-Wide Integration. Institutions can use the research findings to guide the integration of blended learning practices across various departments, promoting a cohesive and supportive learning environment.

Policy Development. Educational policymakers can use the insights from this study to develop policies that encourage and support the adoption of blended learning methodologies.

Further Investigation. Encourage educators and institutions to delve deeper into areas of interest highlighted by this research, such as the impact of specific technologies or the effectiveness of various blended learning models.

Suggestion for the Next Study

Given the limitations and the evolving nature of blended learning, the following suggestions can guide future research:

Longitudinal Analysis. Conduct longitudinal studies to monitor the long-term impact of blended learning on student learning outcomes and engagement.

Cultural Context Studies. Explore the role of culture in blended learning adoption and effectiveness to understand how different cultural contexts might influence the implementation and success of blended learning strategies.

Mental Health Focus. Given the impact of self-efficacy and depression on learning engagement, future studies should examine the broader implications of mental health on blended learning environments.

Emerging Technologies. Investigate the role of emerging technologies, such as AI and data analytics, in enhancing the effectiveness of blended learning experiences.

Expand Research Scope. Expand the scope of research to include a wider range of disciplines to gain a more comprehensive understanding of blended learning applications and impacts.

Comparative Effectiveness Studies. Undertake comparative studies to evaluate the effectiveness of different blended learning models and strategies.

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