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The growth of mobile learning applications in language education: a bibliometric overview

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Abstract

The rapid advancement of mobile technology has transformed education, with mobile learning applications (m-learning) becoming integral to language education. This study provides a bibliometric analysis of research on mobile learning applications in language education, examining trends, types of research, and key themes from 2010 to 2023. Data were collected from major academic databases, including Scopus, Web of Science, SINTA, and Google Scholar, using keywords related to mobile learning and language education. The findings reveal a significant increase in publications over the past five years, reflecting the growing academic interest in m-learning. Qualitative research methods have been predominantly used, focusing on user experiences and the contextual nature of mobile learning. Critical thinking skills have emerged as a key area of focus, indicating a shift towards using mobile learning for deeper cognitive processes. The study also highlights the central role of students as research subjects, while noting a gap in research on other stakeholders, such as teachers and administrators. Data collection has primarily relied on tests to measure cognitive outcomes, but the study suggests incorporating a variety of methods to capture a more holistic view of the learning experience. The conclusion emphasizes the need for ongoing research to optimize the use of mobile learning applications in language education, advocating for broader inclusion of stakeholders and diverse research methodologies. This bibliometric overview contributes to the understanding of mobile learning's impact on language education and offers insights for future research directions.

Keywords: Mobile learning applications, m-learning, language education, bibliometric analysis.

INTRODUCTION

The rapid advancement of mobile technology has significantly transformed various aspects of daily life, including education (Bullock & De Jong, 2013). Mobile learning, or m-learning, has become an integral part of the educational landscape, offering new avenues for teaching and learning that are accessible, flexible, and user-friendly (Han, 2019; Lindaman &

Nolan, 2015). In the context of language education, mobile learning applications have emerged as powerful tools that enable students to practice and enhance their language skills anytime and anywhere (Habibie, 2021). These applications provide a range of resources, from vocabulary exercises and grammar drills to interactive communication practices, making language learning more engaging and personalized. The growth of mobile learning applications in language education reflects the broader shift towards digital learning environments (Scholz & Schulze, 2017), driven by the increasing penetration of smartphones and tablets worldwide (Kukulska-Hulme, 2009; Miangah, 2012).

The proliferation of mobile learning applications has been accompanied by a surge in academic interest, with researchers exploring the efficacy, challenges, and implications of using these tools in language education (Han, 2019; Hsu, 2016; Khezrab et al., 2023). The convenience and accessibility offered by mobile applications make them particularly appealing for language learners, who can integrate practice into their daily routines (Motiwalla, 2007; Tahmasbi & RabaniEbrahimiPour, 2023). However, the diversity and variability of these applications also present challenges, such as ensuring content quality, maintaining learner motivation, and addressing the digital divide (Burston, 2015; İnan & Kılıçer, 2022). The growing body of research on mobile learning applications seeks to address these issues by evaluating the effectiveness of different applications, understanding user experiences, and identifying best practices for their integration into language curricula (Burston, 2015; Koole, 2009; Mahdi, 2018; Motiwalla, 2007; Sharples & Pea, 2014).

A bibliometric analysis of research on mobile learning applications in language education provides a comprehensive overview of the field, mapping the development of key themes, trends, and research gaps (Karakose et al., 2022). By examining publication trends, citation patterns, and thematic focuses, such an analysis can reveal the evolving landscape of mobile learning research and highlight the areas that have garnered the most academic attention (Librarian et al., 2021). This approach also allows for the identification of influential studies and researchers, providing insights into the collaborative networks that drive research in this area. Understanding these dynamics is crucial for educators, policymakers, and developers aiming to leverage mobile technology effectively in language education.

The increasing reliance on mobile learning applications in language education raises important questions about their long-term impact on language acquisition and pedagogy (Johnson, 2003). While many studies highlight the benefits of mobile learning, such as increased learner autonomy and flexibility, there is also a need to critically assess the

limitations and potential drawbacks. Issues such as screen fatigue, superficial engagement with content, and over-reliance on technology at the expense of traditional learning methods are areas that require further exploration. A bibliometric overview can shed light on how these concerns are being addressed in the literature and what future research directions are needed to optimize the use of mobile learning applications in language education.

In conclusion, the growth of mobile learning applications in language education represents a significant shift towards more accessible and flexible learning modalities. As these tools continue to evolve, it is essential to monitor and analyze their impact through systematic research. A bibliometric overview offers a valuable lens for understanding the current state of research in this field, identifying emerging trends, and guiding future investigations. This study aims to contribute to the ongoing discourse on mobile learning by providing a detailed analysis of the research landscape, highlighting key developments, and offering recommendations for enhancing the integration of mobile applications in language education.

METHODS

This bibliometric study on mobile learning applications in language education follows a systematic approach to data collection, processing, and analysis. The data were gathered from major academic databases, including Scopus, Web of Science, SINTA, and Google Scholar, ensuring comprehensive coverage of scholarly literature. The search was conducted using specific keywords such as "mobile learning," "m-learning," and "language education," focusing on peer-reviewed articles published between 2010 and 2023. The inclusion criteria were set to include only English-language articles that directly addressed the use of mobile learning applications in language education.

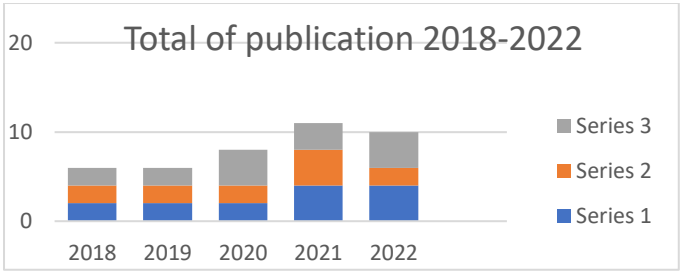
Once the relevant articles were identified, the data processing stage involved screening for duplicates and irrelevant studies. Key bibliometric information such as publication year, journal, authorship, institutional affiliation, country of origin, and citation count was extracted from the selected articles. Thematic data, including research focus and educational context, were also collected to facilitate a deeper analysis of the trends and themes within the field. This information was organized into a database to enable systematic analysis.

RESULTS AND DISCUSSION

Results

1. Number of Publications

The trend of increasing the number of mobile learning application research as the main concern has increased since the last 5 years Most of the research is generated because of the many aspects of life that require this mobile larning application. Therefore, conducting research is believed to be the most effective way to overcome and overcome the problem. Through research, researchers were able to identify the most effective learning media designs that might be able to optimally accommodate students' skills The number of publications of articles indicates how often research is carried out in a given period. Alluding to the graph shown in Figure 1, an article reviewing critical thinking skills can be found as early as 2018. No particular shifting pattern occurs in the number of publications from year to year. Nonetheless, referring to Figure 1, the number of publications since 2018 has increased higher than in previous years. The trend of increasing the number of publications on critical thinking skills suggests that there is a significant increase in the number of enterprising researchers investigating high-order critical thinking skills.



2. Types of Research

The type and design of research show an outline focus on the learning provided. Based on Figure 2, qualitative research is a design that is used more by researchers to investigate abilities in written corrective feedback.

Year		Research type
2018	-	Qualitative, quantotative
2019	-	Kualitative, metode design
2020	-	Kualitatif, deskriptif
2021	-	Kualitatif, kuantitatif, post test, kuisioner,
2022	-	Qualitative

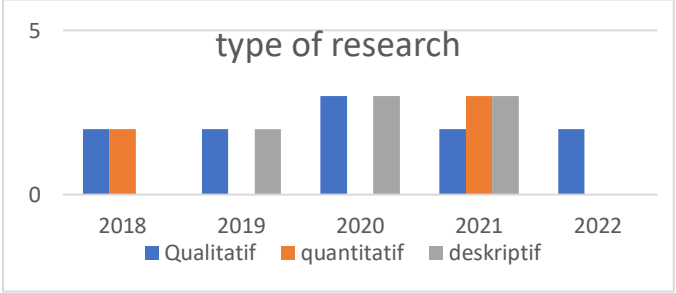
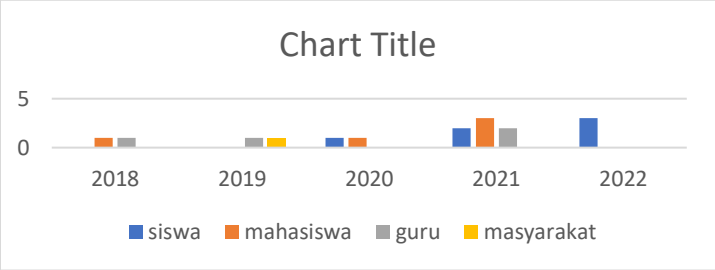


Figure 3. Dissemination of research based on written corrective feedback as a main concern about the type of research

3. Research subject

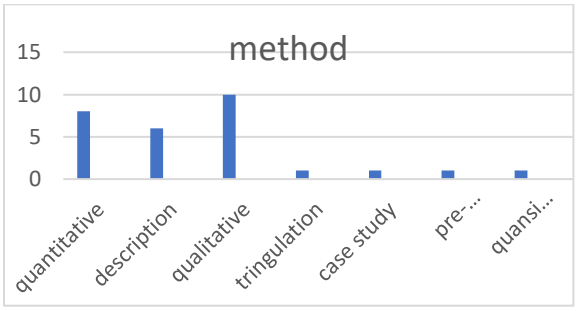
Critical Thinking Enhancement is aimed at students. Related Information about the type of study representing the quasi-experimental design Preference is given to the designs most commonly used by researchers. This is commonly displayed This study seeks to compare some of the best educational designs in the field of empowerment. Critical thinking in students. Researchers need research in order to do research Subject to test hypothesis Like in the table from our material in our group from 2013-2022 article talking about our material for collage much better than senior high school studies on Written Corrective Feedback (WCF, hereafter) have been increasingly prevalent in the last few years, inquiries on how advisory students perceive the lecturers' feedback on their writing tasks have been likely scarce, especially in Indonesian Higher Education Institutions (HEIs) contexts. This study examines the students' perception and evaluation of the lecturers' WCF in response to errors and inaccuracies in their academic writing tasks. Through an online survey questionnaire distributed to 46 respondents via email, the results show that the majority of students appreciated any forms of feedback from the lecturers. Their writing skills in four aspects (grammar, vocabulary, organization, and mechanics) also improved significantly through an enhancement of their self-directed learning. Following the analysis model by one of previous studies, the results showed that the students preferred direct WCF to the Indirect one (58.7 %: 15.2 %), while the "Praise" category was given the highest rate with an average score of (4.06). "Criticism", on the other hand, was the lowest one with an average score of only (2.3) in the evaluation. It is recommended that lecturers always avoid unclear, vague, aggressive, thoughtless, and inappropriate feedback to improve student use Mobile Learning Application.



4. Data collection instrument

In conducting research, researchers need an instrument to help them collect data. Students' critical thinking skill could be measured by means of numerous instruments developed by previous researchers. Based on the graph shown in Figure 5, test has been the most commonly used instrument to collect the data about critical thinking skill. In essence,

critical thinking skill constitutes a way of thinking that could be accessed or assessed based on students' answers to high-level questions. Additionally, data collection by means of test is deemed more objective than questionnaire and observation Example from our material : This is a quantitative study with descriptive analysis, aiming at exploring students' perception and evaluation of lecturers' WCF provided on their academic writing tasks at English Study Program, the Faculty of Education, Jambi University. It involved 46 randomly selected students (23 males and 23 females), both from S1 (Undergraduate) and S2 (Postgraduate) levels, who were in their final semester and the process of thesis supervision.



Discussion

The analysis of publication trends reveals a notable increase in research on mobile learning applications within language education over the past five years. This surge is indicative of the growing recognition of mobile learning as a vital component in modern educational practices. As mobile technology becomes more integrated into everyday life, its application in education, particularly in language learning, has garnered significant attention. The increase in the number of publications suggests that researchers are increasingly motivated to explore how mobile learning applications can enhance student outcomes, address educational challenges, and provide more flexible learning environments.

Regarding the types of research, qualitative methodologies have been predominantly employed in studies on mobile learning applications. This preference for qualitative research reflects the complexity and contextual nature of studying mobile learning, where understanding user experiences, perceptions, and interactions with technology is crucial. While qualitative methods provide rich, detailed insights into the educational process, there is also a growing need for mixed-method approaches to triangulate data and offer a more comprehensive understanding of mobile learning's impact. This trend mirrors broader educational research, where integrating qualitative and quantitative methods is increasingly valued for its ability to capture the multifaceted nature of educational phenomena.

The focus on critical thinking skills within the context of mobile learning applications further underscores the educational value of these tools. Critical thinking is a high-order cognitive skill that is essential for student success across disciplines. The increased attention

to this area in recent research highlights a shift towards using mobile learning not just as a tool for content delivery, but as a means of fostering deeper cognitive processes. By enhancing critical thinking skills, mobile learning applications can contribute to the development of more autonomous, reflective learners who are better equipped to navigate complex real-world problems.

Research subjects in these studies have primarily been students, reflecting their central role as the main beneficiaries of mobile learning applications. The diversity of student populations studied—from high school to postgraduate levels—indicates a broad interest in understanding how mobile learning impacts learners at different stages of their educational journey. However, there is a noticeable gap in research focusing on other stakeholders, such as teachers and administrators, whose perspectives are crucial for successful implementation and integration of mobile learning tools in educational settings.

In terms of data collection instruments, tests have emerged as the most commonly used tool to measure critical thinking skills in mobile learning environments. The preference for tests suggests an emphasis on assessing cognitive outcomes, which are often easier to quantify and compare. However, the reliance on tests alone may overlook other important aspects of mobile learning, such as student engagement, motivation, and satisfaction. Incorporating a variety of data collection methods, including observations and surveys, could provide a more holistic understanding of how mobile learning applications influence the overall learning experience.

CONCLUSION

In conclusion, the growing body of research on mobile learning applications in language education highlights the increasing importance of these tools in modern educational practices. The emphasis on qualitative research and the focus on critical thinking skills reflect the field's interest in exploring the deeper cognitive and experiential impacts of mobile learning. While students have been the primary focus, expanding research to include other stakeholders and employing a wider range of data collection methods could further enrich the understanding of mobile learning's potential. The findings underscore the need for ongoing research to fully leverage mobile learning applications in enhancing educational outcomes across various contexts.

REFERENCES

Bullock, A., & De Jong, P. G. (2013). Technology-enhanced learning. In Understanding Medical Education: Evidence, Theory and Practice: Second Edition. https://doi.org/10.1002/9781118472361.ch11

Burston, J. (2015). Review of mobile learning: Languages, literacies, and cultures. Language, Learning and Technology, 19(2), 44–49.

Habibie, A. (2021). Exploring the Use of Mobile Assisted Language Learning in University Students Context. Scope : Journal of English Language Teaching, 5(2). https://doi.org/10.30998/scope.v5i2.8537

Han, Y. (2019). Exploring multimedia, mobile learning, and place-based learning in linguacultural education. Language Learning and Technology, 23(3), 29–38.

Hsu, L. (2016). Examining EFL teachers' technological pedagogical content knowledge and the adoption of mobile-assisted language learning: a partial least square approach. Computer Assisted Language Learning, 29(8), 1287–1297. https://doi.org/10.1080/09588221.2016.1278024

İnan, B., & Kılıçer, K. (2022). The effect of mobile-assisted online flipped learning process on pre-service teachers' information literacy skills and educational beliefs. … of Educational Technology and Online Learning. https://dergipark.org.tr/en/pub/jetol/issue/72940/1159183

Johnson, M. (2003). A philosophy of second language acquisition. In A Philosophy of Second Language Acquisition. https://doi.org/10.2307/3657444

Karakose, T., Kocabas, I., Yirci, R., Papadakis, S., Ozdemir, T. Y., & Demirkol, M. (2022). The Development and Evolution of Digital Leadership: A Bibliometric Mapping Approach-Based Study. Sustainability (Switzerland), 14(23). https://doi.org/10.3390/su142316171

Khezrab, T., Raissi, R., & Hedayat, N. (2023). Iranian EFL Teachers' Perception-Practice Correspondence in Mobile-Mediated Discussion-Based Instruction. Iranian Journal of Learning and …. https://journal.iepa.ir/article_169244.html

Koole, M. L. (2009). Mobile Learning - A Model for Framing Mobile Learning. Mobile Learning: Transforming the Delivery of Education and Training.

Kukulska-Hulme, A. (2009). Will mobile learning change language learning? ReCALL. https://doi.org/10.1017/S0958344009000202

Librarian, N. A., Shoaib, M., & Abdullah, F. (2021). Trends of Research Visualization of Digital Collections and Resources in Academic Libraries from 2001 to 2020: A Bibliometric Analysis. Library Philosophy and Practice, 2021.

Lindaman, D., & Nolan, D. (2015). Mobile-Assisted Language Learning. IALLT Journal of Language Learning Technologies. https://doi.org/10.17161/iallt.v45i1.8547

Mahdi, H. S. (2018). Effectiveness of Mobile Devices on Vocabulary Learning: A Meta-Analysis. Journal of Educational Computing Research, 56(1). https://doi.org/10.1177/0735633117698826

Miangah, T. M. (2012). Mobile-Assisted Language Learning. International Journal of Distributed and Parallel Systems. https://doi.org/10.5121/ijdps.2012.3126

Motiwalla, L. F. (2007). Mobile learning: A framework and evaluation. Computers and Education. https://doi.org/10.1016/j.compedu.2005.10.011

Scholz, K. W., & Schulze, M. (2017). Digital-gaming trajectories and second language development. Language Learning and Technology, 21(1), 100–120.

Sharples, M., & Pea, R. (2014). Mobile learning. The Cambridge Handbook of the Learning Sciences, Second Edition. https://doi.org/10.1017/CBO9781139519526.030

Tahmasbi, S., & RabaniEbrahimiPour, K. (2023). The effect of mobile-assisted flipped learning on Iranian EFL learners' cohesive devices improvement in writing. International Journal of …. http://ijreeonline.com/article-1-779-fa.html