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Bibliometric Analysis of Oral Presentations with Mobile Technology in Tertiary Education

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Abstract

Background:
Oral presentations, vital for assessing student understanding and communication skills in higher education, are enhanced by peer feedback and video recording. However, language anxieties necessitate supportive strategies. This study explores mobile technology's role in presentations via a bibliometric analysis.

Methodology:
This study uses bibliometric analysis to track research trends in mobile technology use in higher education oral presentations from 2014 to 2023. Data was gathered from the Dimensions database and analyzed with Excel and VOSviewer, revealing publication and citation trends, top researchers, thematic clusters, and research categories.

Findings:
Research output rose steadily until 2017, then surged in 2020 due to the Covid-19 pandemic. Rising citations reflect enduring impact. The focus is on education, with contributions from various disciplines. Global collaboration is evident among top researchers.

Conclusion:
The study finds that mobile tech-based oral presentations are crucial in higher education, promoting learning and skills. It underscores research resilience and adaptability to global challenges like the Covid-19 pandemic, providing valuable insights for future research and teaching practices.

Originality:
This study explores trends in oral presentations with mobile technology in higher education via a detailed bibliometric analysis. It provides insights into research output, citation impact, and thematic clusters, contributing to the dialogue on effective teaching and assessment practices.

Keywords : Bibliometric analysis; Oral presentation; Research trends; Tertiary education

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1. INTRODUCTION

Oral presentations are important in higher education as they serve as assessment tools and opportunities for skill development. Students present information to their peers and instructors with the goal of effectively conveying knowledge and improving their communication skills (Lin, 2023). They offer students the opportunity to deepen their understanding of course material, enhance their presentation techniques, and cultivate confidence in their abilities. The significance of oral presentations in higher education cannot be overstated due to their multifaceted benefits.

One key aspect of oral presentations is the incorporation of peer feedback. Peers play an important role in this process by offering diverse perspectives and constructive criticism that can help presenters refine their delivery and content. Feedback from peers often covers various aspects of presentation delivery, such as content organization, communication clarity, and the effectiveness of visual aids like PowerPoint slides (Suharni et al., 2022). By receiving feedback from their peers, students gain valuable insights into areas of strength and areas needing improvement, fostering a cycle of continuous growth and refinement.

The use of video recordings as a feedback tool has become increasingly prevalent in recent years, in addition to peer feedback. Video recordings allow students to objectively review their presentations and observe their performance from an external perspective. This self-assessment process allows students to identify their strengths, weaknesses, and areas for improvement, empowering them to take ownership of their learning and development. However, the effective integration of video feedback requires careful consideration of students' readiness and the social dynamics of the activity. Educators must ensure that students are adequately prepared to engage with video feedback and provide support as needed to facilitate this process effectively (Barker, 2022).

The emergence of online collaborative platforms has revolutionized oral presentations in higher education. Platforms such as 'Gongyeh' provide students with opportunities for collaborative learning, peer interaction, and engagement beyond the traditional classroom setting (Wong, 2022). 'Gongyeh' is a mobile-based learning platform that provides students with opportunities for collaborative learning, peer interaction, and engagement beyond the traditional classroom setting. This platform allows students to create and deliver oral presentations, receive feedback from peers, and engage in discussions in real-time, enhancing their communication and presentation skills. Students can collaborate on presentations, share resources, and provide real-time feedback to their peers through these platforms. This

collaborative approach enhances the learning experience and cultivates essential skills such as teamwork, communication, and digital literacy.

Despite the benefits of oral presentations, challenges persist, particularly for students facing language-related anxieties. Fear and apprehension can hinder their ability to communicate effectively when tasked with delivering presentations in a non-native language (Arlan et al., 2022). However, students can overcome these barriers and build confidence in their language proficiency by employing coping strategies such as problem-focused and emotion-focused approaches. Educators can support students through these challenges by providing resources, encouragement, and opportunities for practice (Tsang, 2020).

As the interest in oral presentations grows in higher education, further research is needed to understand the trends and dynamics shaping this field. Exploring topics such as the effectiveness of peer feedback, the impact of video recordings on student learning outcomes, and the role of online collaborative platforms can provide valuable insights for educators and researchers alike. By investigating these trends, researchers can contribute to the ongoing dialogue surrounding oral presentation pedagogy and inform best practices for teaching and assessment in higher education.

In conclusion, oral presentations are essential components of higher education, providing students with opportunities for learning, skill development, and personal growth. Understanding research trends related to oral presentations in higher education can guide teaching methodologies, curriculum enhancements, and support mechanisms for students, creating a conducive learning environment (Rachman et al., 2023).

2. LITERATURE REVIEW

Oral presentation skills are crucial in higher education. Effective learning environments should include clear learning objectives, relevant learning tasks, behavior modeling, opportunities for practice, timely and intensive feedback, peer assessment, and self-assessment (van Ginkel et al., 2015).

Research on oral presentations in higher education has covered a wide range of topics. These include using presentations to improve oral communication skills (Nadeem & Rahman, 2013) and addressing linguistic and technological challenges faced by English language learners (Barrett & Liu, 2016). Moreover, scholars have examined the effectiveness of innovative approaches in distance and online education (McDougall & Holden, 2017), as well as the impact of multimedia-based instructional interventions on skill acquisition (De Grez et al., 2009). These studies emphasize the crucial role of oral presentation skills in higher

education and recommend customized, effective teaching methods to cultivate these essential competencies.

Research in higher education on oral presentations has explored various dimensions, including student perspectives, technological interventions, psychological aspects, and innovative teaching methodologies. One significant area of research focuses on understanding student perceptions of oral presentation assessments. This sheds light on the benefits perceived by presenting students and the engagement levels of non-presenting peers during these presentations (Barrett & Liu, 2016; Gwee & Toh-Heng, 2015; Mohd Radzuan et al., 2023).

One area of research involves the use of online collaborative platforms to deliver video presentations. Research in this field has shown that these platforms have a positive impact on several aspects of student learning, such as enjoyment, reflection, peer interaction, motivation, and overall engagement (Lin, 2023; Wong, 2022).

In addition, the phenomenon of anxiety experienced by students when confronted with oral English presentations has also received attention from researchers. Researchers have identified coping strategies employed by students, including problem-focused coping techniques like rehearsal and preparation, and emotion-focused coping techniques that involve managing anxiety and stress (Arlan et al., 2022).

Furthermore, an increasing amount of research has been conducted on the potential of virtual reality (VR) technology to improve oral presentation skills. Through the use of VR systems, researchers have developed innovative approaches to provide automated and personalized feedback to learners, which can aid in the development of oral communication competence (Barker, 2022).

Research gaps in oral presentation skills in higher education are evident in the lack of comprehensive pedagogical approaches tailored to the multimodal demands of 21st-century presentations. Existing methods often fall short of addressing these complex skills, highlighting a pressing need for innovative pedagogical strategies (Lee, 2021). Furthermore, there is a notable gap in the emphasis on oral presentation skills within distance and online education, which are crucial for workplace readiness and are highly valued in higher education(McDougall & Holden, 2017). This gap underscores the necessity for novel approaches to practice and evaluate oral presentations in these settings. Additionally, the absence of evidence-based educational design principles to enhance presentation competence in higher education, including effective feedback mechanisms and the use of alternative feedback modes like Virtual Reality, poses a significant challenge (van Ginkel, 2019).

To address these gaps effectively, conducting bibliometric analysis on research related to oral presentation skills in higher education is essential. Such analysis can reveal the current state of research, identify key trends, and pinpoint areas where further investigation is needed. By analyzing existing literature, researchers can gain insights into the extent to which pedagogical approaches and educational design principles have been studied, as well as the specific areas within these domains that require more attention. This can guide future research efforts to develop comprehensive pedagogical approaches, address the needs of distance and online education, and establish evidence-based educational design principles for enhancing presentation competence in higher education.

3. METHODOLOGY

Biometric analysis is a method to provide a comprehensive overview of academic literature (van Nunen et al., 2022). The literature data for this study was extracted from articles found through searches conducted on Dimensions, a platform that includes millions of research publications linked by over 1.8 billion citations, supporting grants, datasets, clinical trials, patents, and policy documents. Dimensions facilitated a literature review on the chosen subject.

The search on Dimensions aimed to filter publications that used the keyword 'oral presentation with mobile technology in higher education', focusing on publication titles and abstracts. The research period spanned from 2014 to 2023, and data collection occurred in December 2023, resulting in the identification of 6,623 relevant articles. The collected articles, selected for in-depth analysis, were converted into comma-separated value format (*.csv). The chosen format facilitates data mapping in VOSviewer and data analysis in Microsoft Excel.

Excel was used to analyze annual development data and categorize articles by citation count. VOSviewer was used to visualize and assess trends through bibliometric maps. The data from the source database was mapped in VOSviewer, resulting in three types of visualizations: network, density, and overlay. These visualizations are based on the relationships between items.

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To adhere to the PRISMA method for bibliometric analysis, the process involved several steps: identifying the research question, searching for relevant studies, selecting studies based on inclusion criteria, extracting data from selected studies, and synthesizing the results. Excel was used to analyze annual development data and categorize articles by citation count. VOSviewer was used to visualize and assess trends through bibliometric maps. The data from the source database was mapped in VOSviewer, resulting in three types of visualizations: network, density, and overlay. These visualizations are based on the relationships between items.

4. FINDINGS

4.1. Publication Each Year

Figure 1 shows the number of publications per year from 2014 to 2023. There was a gradual increase in publications in the early years until 2017, followed by a slight decrease in 2018. However, the trend reversed in 2019 with an increase in publications. A significant spike occurred in 2020, with 774 publications. This increase can be attributed to the widespread shift to remote learning due to the Covid-19 pandemic. As educational practices changed, the academic community responded by publishing more research. The trend continued to rise in 2021 and 2022, with over a thousand publications each year, indicating sustained academic productivity. However, by 2023, the number of publications decreased to 955, suggesting a potential shift in research focus or other contributing factors.

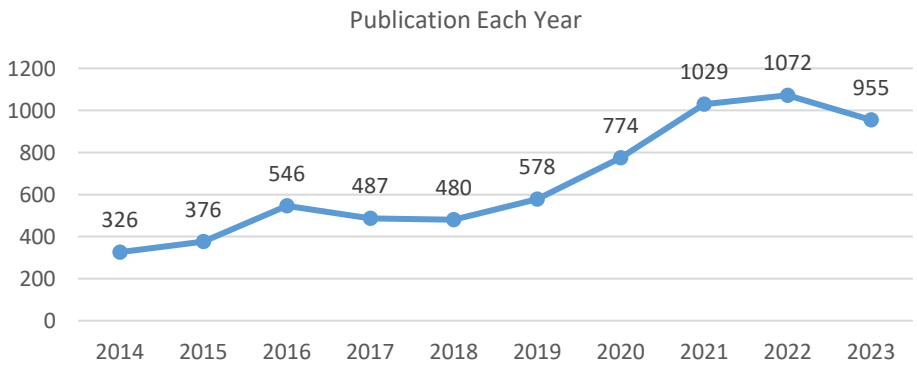

Figure 1. Number of publications on the topic of oral presentation with mobile technology in higher education from 2014 to 2023 (Data source: https://app.dimensions.ai/)

4.2. Citations

The citation data from 2014 to 2023 shows a consistent increase in scholarly impact, which parallels the annual publications. Notably, there is a marked increase in citations in 2016 and 2017, with a substantial surge in 2020, coinciding with the onset of the Covid-19 pandemic and the widespread adoption of remote learning. During this transformative period, scholarly contributions received increased attention. This is evidenced by a notable spike in citations to 7520 in 2020. The subsequent years, 2021 and 2022, sustained this upward trajectory with 13660 and 19707 citations respectively, underscoring the enduring influence of the research. By 2023, the cumulative citations reached 21043, illustrating the enduring impact and sustained scholarly recognition of the work conducted on the specified topics. This correlation shows how publication and citation trends have evolved and influenced the academic domain.

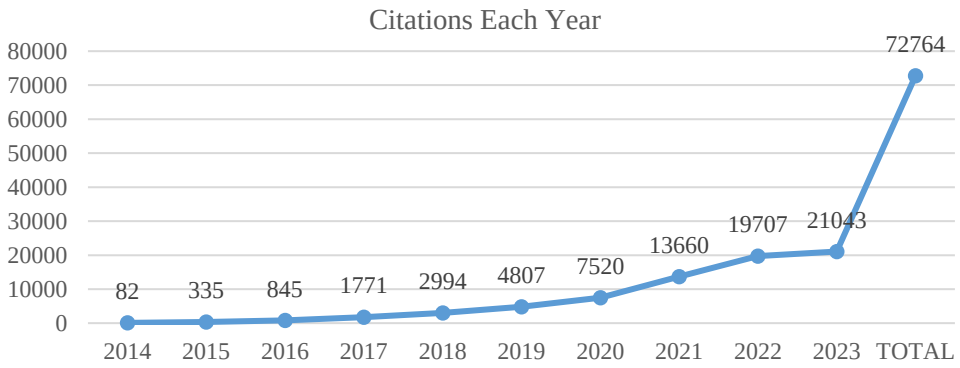

Figure 2. Number of citations on the topic of oral presentation with mobile technology in higher education from 2014 to 2023 (Data source: https://app.dimensions.ai/)

Out of the 6,623 articles, there were 72,764 citations, with some being cited more than 200 times, as shown in Table 1. The document with the highest number of citations was authored by Pei & Wu (2019), with 2676 citations.

4.3.Research Categories

Figure 3 shows how articles on the topic of oral presentation with mobile technology in higher education are distributed across various research categories. The category with the highest number of publications is 'Education,' with 4593 articles, reflecting its prominence in scholarly output. 'Language, Communication and Culture' follows closely with 2879 publications, emphasizing the significance of research in these domains. The table shows a diverse range of research areas, including Psychology with 161 publications, Health Sciences with 108, and Human Society with 170. The table shows a diverse range of research areas, including Psychology with 161 publications, Health Sciences with 108, and Human Society with 170. Additionally, Engineering has 83 publications, History, Heritage and Archaeology has 85, and Creative Arts and Writing has 380 articles. This distribution highlights the multidisciplinary nature of research output, with a significant focus on education, language, and cultural studies.

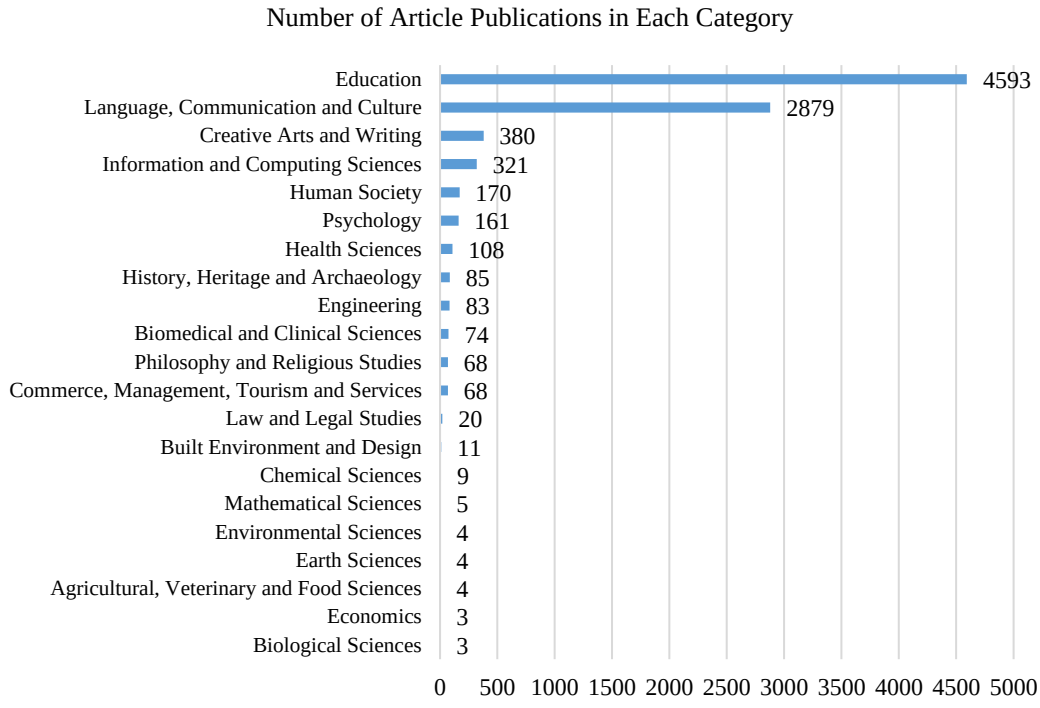

Figure 3. Number of article publications in each category on the topic of oral presentation with mobile technology in higher education from 2014 to 2023 (Data source: https://app.dimensions.ai/)

4.4. Journal

Table 2 provided highlights journals that have made significant publications and have notable citation impact in the field of mobile technology in higher education. Notably, 'Computers & Education' stands out with 75 publications and an impressive 5762 citations, resulting in a high citation mean of 76.83. The 'British Journal of Educational Technology' follows with 51 publications and a remarkable citation mean of 32.47. "Computer Assisted Language Learning" and "International Journal of Emerging Technologies in Learning (iJET)" have had a substantial impact with 103 and 83 publications, respectively. They have notable citation means of 26.52 and 15.35, respectively. Furthermore, "Anatomical Sciences Education" has a noteworthy citation mean of 35.74 with 38 publications. These journals have a significant impact on the distribution of research in this field, reflecting both the quantity and impact of scholarly contributions on the topic of oral presentation with mobile technology in higher education.

Table 2. Number of article publications on the topic of oral presentation with mobile technology in higher education in terms of journals from 2014 to 2023 (Data source: https://app.dimensions.ai/)

Source Titles	Publications	Citations	Citations Mean
Eurasian Journal of Educational Research	214	1673	7.62
Education and Information Technologies	120	1370	11.42
Sustainability	119	2676	22.49
Integration of Education	105	277	2.64

Source Titles	Publications	Citations	Citations Mean
Education Sciences	104	1002	9.63
Computer Assisted Language Learning	103	2732	26.52
International Journal of Emerging Technologies in Learning (iJET)	83	1274	15.35
Computers & Education	75	5762	76.83
Interactive Learning Environments	64	868	13.56
British Journal of Educational Technology	51	1656	32.47
Journal of Research in Curriculum Instruction and Educational Technology	45	28	0.62
Frontiers in Education	43	192	4.47
Educational technology research and development	40	615	15.38
Journal of Computer Assisted Learning	39	885	22.69
Anatomical Sciences Education	38	1358	35.74

4.5.Top Researchers

Table 3 provides a comprehensive overview of articles published on the subject of oral presentations with mobile technology in higher education, focusing on individual researchers from 2014 to 2023. It is noteworthy that Gwo-Jen Hwang from National Taiwan University of Science and Technology in Taiwan emerges as a prolific contributor with 34 publications and a high citation mean of 36.12. Taiwan is particularly well represented, with a few researchers making substantial contributions, such as Gi-Zen Liu and Neil Edward Barrett. Notably, researchers from China, including Rustam Shadiev and D I Zou, have also made significant contributions, highlighting the international scope of this field. The list includes researchers from diverse regions, such as Greece, the United States, New Zealand, and Egypt. This highlights the global collaboration and scholarly impact of these individuals in advancing knowledge on the integration of oral presentation with mobile technology in higher education.

Table 3. Number of article publications on the topic of oral presentation with mobile technology in higher education in terms of researchers from 2014 to 2023 (Data source: https://app.dimensions.ai/)

No.	Name	Organization	Country	Publications	Citations	Citations mean
1	Gwo-Jen Hwang	National Taiwan University of Science and Technology	Taiwan	34	1,228	36.12
2	Gi-Zen Liu	National Cheng Kung University	Taiwan	19	361	19
3	Rustam Shadiev	Zhejiang University	China	15	490	32.67
4	D I Zou	Education University of Hong Kong	China	13	285	21.92

No.	Name	Organization	Country	Publications	Citations	Citations mean
5	Wu-Yuin Hwang	National Central University	Taiwan	12	349	29.08
6	Athanasios S Drigas	National Centre of Scientific Research Demokritos	Greece	10	225	22.5
7	Neil Edward Barrett	Southern Taiwan University of Science and Technology	Taiwan	10	116	11.6
8	Nian-Shing Chen	National Taiwan Normal University	Taiwan	10	505	50.5
9	Yueh-Ming Huang	National Cheng Kung University	Taiwan	10	406	40.6
10	Zhonggen Yu	Beijing Language and Culture University	China	8	98	12.25
11	Morris Siu-Yung Jong	Chinese University of Hong Kong	China	8	349	43.63
12	Kevin M Wong	Pepperdine University	United States	7	114	16.29
13	Vivien Lin	National Changhua University of Education	Taiwan	7	137	19.57
14	Marek Tesar	University of Auckland	New Zealand	7	317	45.29
15	Hasnaa Sabry Abdel-Hamid Ahmed Helwa	Benha University	Egypt	7	10	1.43

4.6. Mapping Visualization Based on VOSViewer Analysis

Based on the analysis of the data generated by VOSViewer software, a total of 42,551 relevant terms were identified in the research on oral presentations with mobile technology in higher education. To establish a more focused dataset, we set a criterion of a minimum occurrence of 10 times, resulting in 1,465 terms meeting this threshold. From this pool, we selected the top 60% of the most pertinent terms, which amounted to 879 terms. To ensure the accuracy of our selection, we further verified the chosen terms, narrowing it down to 119 terms for mapping visualization. This selection was made based on their relevance to the research topic of oral presentations using mobile technology in higher education.

Figure 4 presents a visual representation of the publication network spanning the years 2014 to 2023, specifically focusing on the field of oral presentations with mobile technology in higher education. The visualization depicts the connections and the strength of relationships between terms, as indicated by the term link strength (Al Husaeni & Nandiyanto, 2021). The size of the nodes in the visualization network corresponds to the frequency of term occurrences. Larger nodes indicate more frequent appearances of terms (Nandiyanto et al., 2022). The thickness of the links between nodes signifies the intensity of the relationships between terms

(Al Husaeni et al., 2022; Nandiyanto et al., 2022). The network visualization categorizes each term into distinct clusters, with 6 clusters identified specifically for terms related to research on the oral presentations with mobile technology in higher education.

Table 4 shows the distribution of clusters in the research analysis mapping regarding oral presentation with mobile technology in higher education.

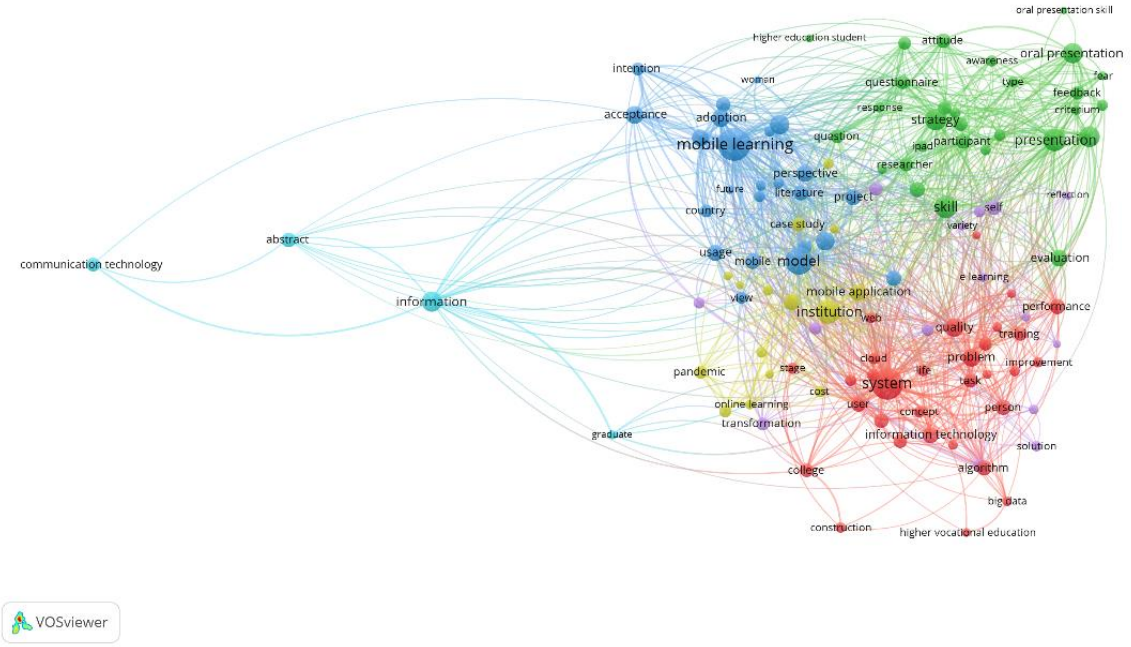

Figure 4. Network Visualization of Oral Presentation with Mobile Technology in Higher Education

Table 4. Clusters Based on the Results of the Keyword Visualization (Data source: VOSViewer Analysis)

No.	Cluster	Figure	Items
1	Cluster 1	7	Ability, advantage, algorithm, big data, cloud, college, college student, concept, construction, difficulty, experiment, face, higher vocational education, image, improvement, information technology, internet, life, management, performance, person, problem, quality, society, stage, system, task, training, user, video, web.
2	Cluster 2	8	Assessment, attitude, awareness, class, criterium, delivery, English, evaluation, faculty, fear, feedback, group, higher education student, instructor, interview, iPad, oral presentation, oral presentation skill, participant,
3	Cluster 3	9	Acceptance, adoption, country, difference, discipline, factor
4	Cluster 4	10	App, augmented reality, benefit, case study, cost, covid, institution, language, learning, lesson, mobile app, mobile application, moocs, online learning, pandemic, place, utilization.

No.	Cluster	Figure	Items
5	Cluster 5	11	Business, digital technology, e-learning, expectation, idea, innovation, lack, lecturer, reflection, self, solution, term, transformation, understanding, variety.
6	Cluster 6	12	Abstract, communication technology, graduate, information

Figure 5 shows a publication overlay visualization regarding oral presentation with mobile technology used by students in higher education. The visualization overlay shows the distribution of research years to see updates on using terms in related research (Al Husaeni et al., 2022; Nandiyanto et al., 2022).

In Figure 5, we can observe a notable surge in research focusing on the use of mobile technology for oral presentations in higher education during the year 2021. This surge coincided with the global Covid-19 lockdown, which compelled educational institutions to swiftly transition from traditional face-to-face classes to fully online learning environments. The covid term also appeared in Cluster 4. The dominant color gradient of the nodes in Figure 6, progressing from green to yellow, signifies the prevalence and significance of these studies conducted during this period of time.

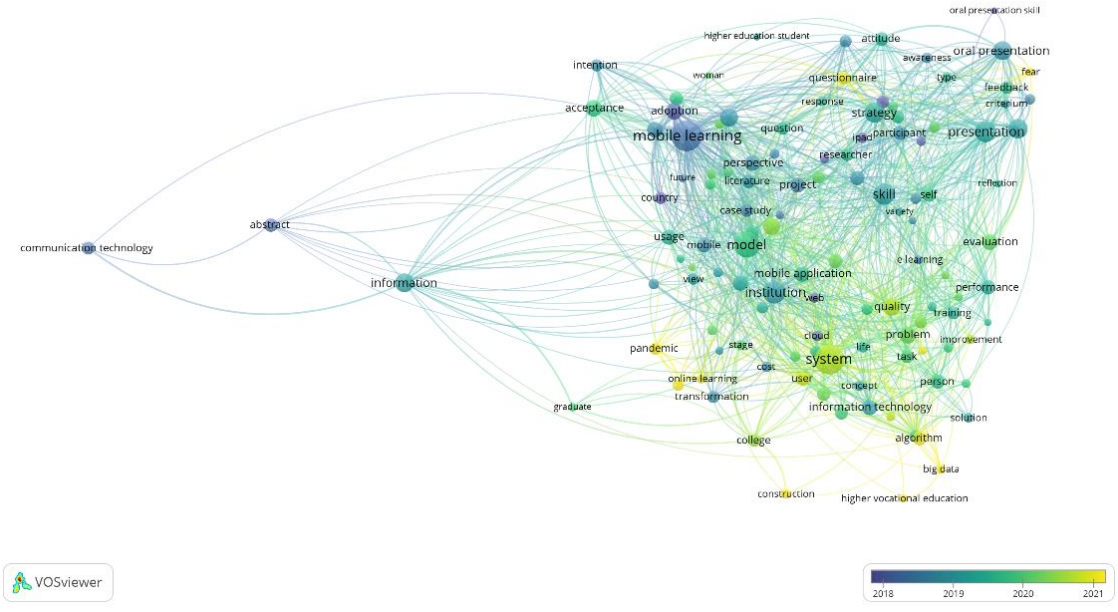

Figure 5. Overlay Visualization of Oral Presentation with Mobile Technology in Higher Education

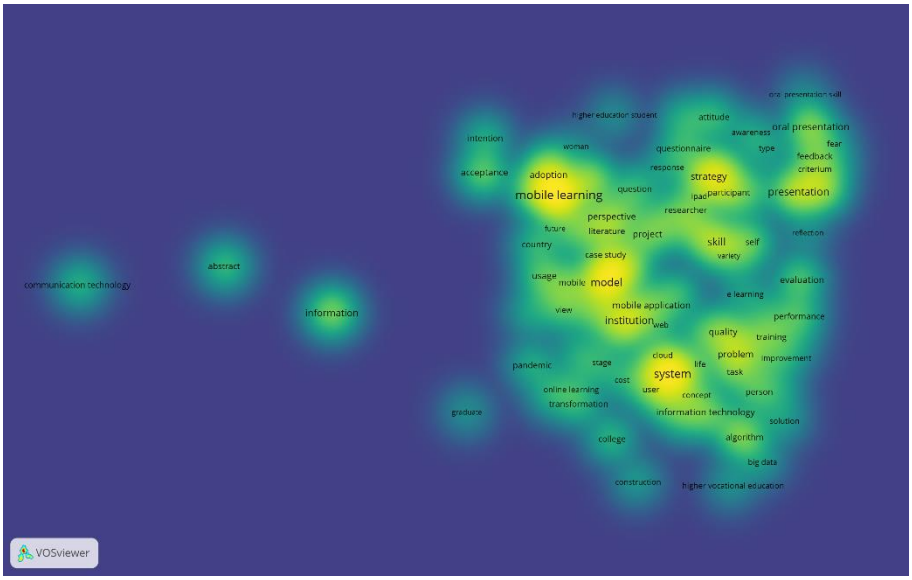

Figure 6. Density Visualization of Oral Presentation with Mobile Technology in Higher Education

Figure 6 shows how research on the use of mobile technology in oral presentations in higher education has been studied. The visualization allows for an assessment of the frequency of the term. The total link strength is represented by the font size of the keywords and the density of the background color. The visualization shows that larger font sizes indicate higher total link strength values. Additionally, the proximity between each keyword indicates the relevance of the research topic. This provides valuable insights into the importance and interconnectedness of research in this topic area (He et al., 2020).

Figure 6 displays a density visualization of several items and keywords, including mobile learning, institution, system, model, presentation, strategy, and mobile application. This visualization, created using VOSviewer, reveals the distribution of research and knowledge (Su et al., 2021). When selecting research topics related to oral presentation using mobile technology in higher education, it is recommended to select topics with low density visualization. Yellow colored nodes indicate that these topics have been widely used in previous journal publications.

5. DISCUSSION

The study's findings offer valuable insights into the trends and dynamics of oral presentations using mobile technology in higher education. The findings cover publication trends, citation impact, research categories, top researchers, and thematic clusters. This comprehensive overview of the field contributes to the existing literature and highlights areas for further exploration.

The analysis showed a consistent rise in publications about mobile technology use in oral presentations in higher education. There was a significant increase in 2020, which was attributed to the Covid-19 pandemic. Citation impact followed publication trends, indicating a lasting scholarly influence. Research in this area is multidisciplinary, with a primary focus on

education, language, and cultural studies. Top researchers from various regions have made significant contributions, reflecting global collaboration and scholarly impact. Thematic clusters have identified key areas of research interest, including assessment, feedback, technology adoption, and student perceptions.

The results of this study are consistent with prior research that emphasizes the increasing significance of oral presentations in higher education and the use of mobile technology to improve learning outcomes. Scholars have highlighted the advantages of peer feedback, video recordings, and online collaborative platforms in enhancing presentation skills and promoting student engagement (Lin, 2023; Suharni et al., 2022; Wong, 2022). Similarly, previous studies have addressed challenges such as language-related anxieties and proposed coping strategies and support mechanisms for students (Arlan et al., 2022; Tsang, 2020). The identification of top researchers and thematic clusters confirms the existing literature on the diverse and interdisciplinary nature of research in this field (Barrett & Liu, 2016; McDougall & Holden, 2017).

One strength of this study is its comprehensive bibliometric analysis, which provides a systematic overview of research trends and scholarly impact. The analysis is enhanced by the inclusion of diverse research categories and top researchers. Furthermore, the use of visualization techniques, such as VOSviewer, offers a clear and intuitive representation of data patterns and relationships. However, it is important to note that there may be potential biases in data collection and analysis, such as reliance on a single database and keyword selection. Additionally, while bibliometric analysis provides valuable quantitative insights, it may overlook important qualitative aspects such as the depth of content analysis and contextual understanding.

6. CONCLUSION

The bibliometric analysis of research on oral presentations with mobile technology in higher education from 2014 to 2023 reveals interesting trends. The publication landscape steadily rose until 2017, dipped slightly in 2018, and spiked substantially in 2020 due to the global shift to remote learning during the Covid-19 pandemic. Although subsequent years maintained high publication rates, 2023 showed a decline, suggesting potential shifts in research focus or other contributing factors. Concurrently, citations have consistently increased, with notable peaks in 2016, 2017, and a significant surge in 2020, demonstrating the enduring scholarly impact of the work. The cumulative citations reached 21,043 by 2023, highlighting the sustained recognition of research in this domain.

In conclusion, this study contributes to the understanding of oral presentations in higher education through the use of mobile technology. The findings highlight the importance of integrating technology-enhanced pedagogical approaches to improve student learning

outcomes and address challenges in presentation delivery. Further research is necessary to explore emerging trends, evaluate the effectiveness of innovative practices, and customize interventions to meet the evolving needs of students and educators in higher education.

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