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Bibliometric Analysis: Application of Blended Learning in the Development of Digital Skills in the Era of Digital Education

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Abstract

In the current era characterized by rapid and widespread technological progress, digital skills have become an important factor in shaping individual success and societal progress. Digital skills cover a wide range of proficiencies, including digital literacy, programming, data analysis, online collaboration, and information security. In the world of education, a lot of research has been carried out on digital skills, one of the most research topics is the application of blended learning to improve digital skills. Therefore, researchers conducted a bibliometric analysis of the application of blended learning in developing digital skills in the era of digital education which aims to conduct a comprehensive exploration of existing literature. This research involved a comprehensive approach combining a systematic literature review and bibliometric analysis to explore the development of digital skills through online learning and assess its impact. Additionally, the use of VOSviewer software to visualize bibliometric networks is also discussed. The research results show that six different thematic clusters were found in the literature on digital skills development in the digital education era. Each cluster summarizes a set of recurring keywords that describe existing research trends, providing valuable insight into the landscape of the field. It can be concluded that this research contributes to the growing understanding of digital skills development through online learning and highlights its transformative potential in the world of education.

A. Introduction

In the current era which is characterized by rapid and widespread technological progress, mastery of digital skills has become an important factor in shaping individual success and societal progress. Digital skills cover a wide range of proficiencies, including digital literacy, programming, data analysis, online collaboration, and information security (Haddar, 2023). These skills are not only essential for employability in an increasingly digitalized world of work, but also play an important role in promoting digital citizenship and enabling active participation in the modern global world (Caena & Redecker, 2019).

Traditional education has entered a significant transformation with the emergence of online learning platforms (Destari, 2023). The platform offers unprecedented access to students enabling them to acquire new skills at their pace and convenience. Online learning has become a viable alternative to a traditional

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classroom, especially for students to improve their digital competencies. Flexibility, scalability, and often lower costs make online learning an attractive option for individuals of all ages and backgrounds.

Blended Learning comes from two words, namely Blended and Learning. Blended means mixture/combination/combination, while lerning means studying/learning. In other words, blended learning is a learning process that mixes face-to-face and online, so that it becomes a unique learning experience (Fahlevi, 2022; Muzakkir et al., 2018; Noval & Nuryani, 2020). Through Blended Learning, the learning system becomes more flexible and less rigid (Masgumelar & Mustafa, 2021; Ramadhani, 2020; Victoria et al., 2021).

The combination of digital skills and online learning has sparked great interest in academic and other circles. As millions of students engage in online courses to develop their digital skills, it is crucial to critically evaluate the impact of this mode of learning. Although there are many success stories and testimonials that prove the effectiveness of online learning in implementing blended learning in digital era learning, a comprehensive exploration of existing literature is needed to build a clear understanding of its true impact. This research seeks to address this gap by developing digital skills and utilizing bibliometric analysis to map the scientific landscape.

The rapid evolution of technology has led to a paradigm shift in the way individuals interact with information, services, and each other. Digital skills have become an integral part of everyday life, influencing how individuals communicate, work and access resources (Andriani, 2015; Lubis & Nasution, 2023; Nugraha, 2022). In response to this digital transformation, educational institutions, governments, and organizations have recognized the urgent need to equip individuals with the necessary competencies to effectively navigate the digital landscape. The emergence of online learning platforms as a tool for acquiring skills has coincided with this digital shift. These platforms offer extensive course repositories that meet diverse learning needs, making education accessible to a global audience. However, despite the growing popularity of online learning, there is limited comprehensive research that systematically analyzes the impact of these platforms on digital skills development. This study aims to fill this gap by providing a comprehensive exploration of the available literature and conducting a bibliometric analysis.

B. Research Methods

This research involved a comprehensive approach combining a systematic literature review and bibliometric analysis to explore the development of digital skills through online learning and assess its impact. Additionally, the use of VOSviewer software to visualize bibliometric networks is also discussed.

This research involves collecting articles from existing databases such as Google Scholar. The search was well designed to obtain relevant articles related to the application of blended learning in digital skills development. Inclusion criteria include articles published within a certain time period, with a focus on empirical studies, literature reviews, and conceptual frameworks. This process aims to ensure the selection of articles that are appropriate to the research objectives.

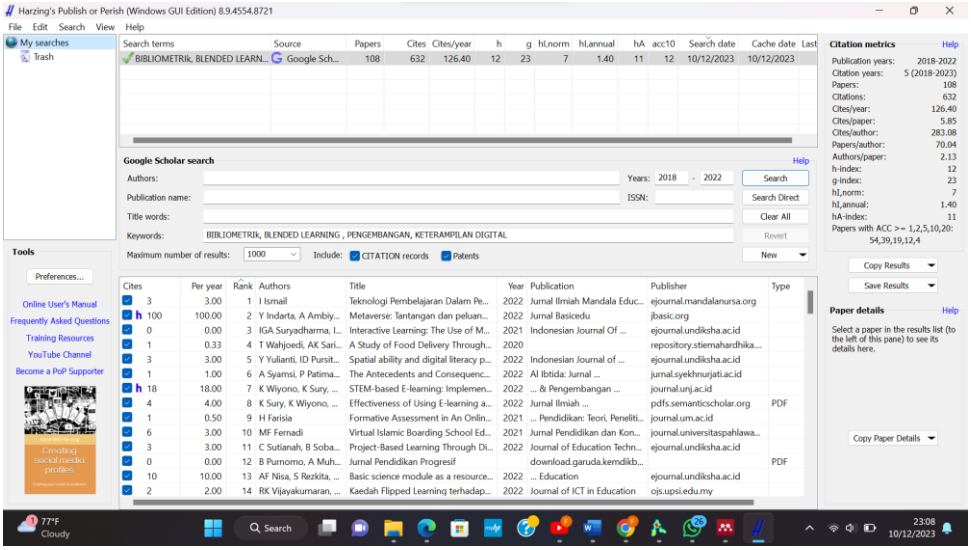

Figure 1. Google Scholar Database Search

Table 1. Data Metric Results

Publication years	: 2018-2022
Citation years	: 5(2018-2022)
Paper	: 106
Citations	: 632
Cites/year	: 126.40
Cites/ papers	: 5.85
Cites/author	: 283.08
Papers/author	: 70.04
Author/paper	: 2.13
h-index	: 12
g-index	: 23
hl, norm	: 7
hl, annual	: 1.40
hA-index	: 11
Paper whit ACC	: 1,2,5,10,20: 54,39,19,12,4

Bibliometric analysis offers a quantitative lens through which to view the scientific landscape. In this research, analysis was carried out using VOSviewer which can visualize bibliometric networks. VOSviewer enables the creation of visual representations that assist in identifying key contributors, influential works, and thematic groups within a research field. In other words, VOSviewer is a powerful tool facilitating the analysis of co-authorship networks, citation patterns, and keyword associations in a literature (Budianto, 2022; Effendy et al., 2021; Marpaung et al., 2023).

C. Results and Discussion

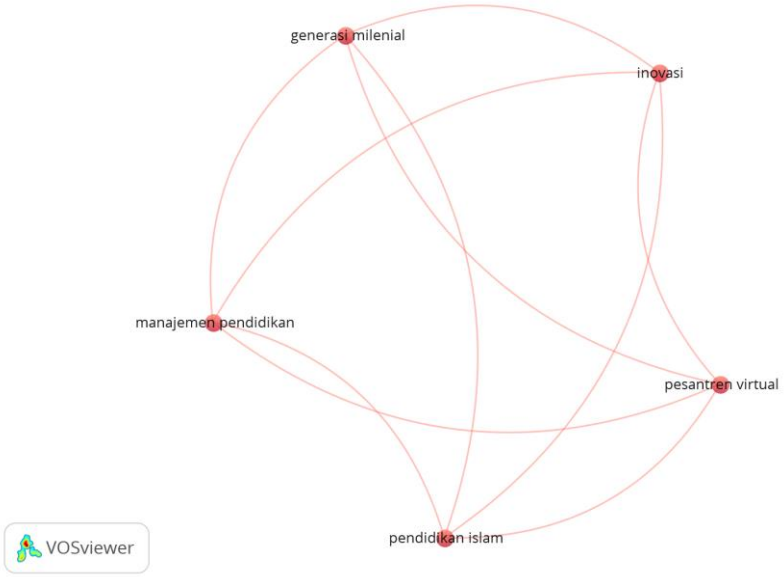

Figure 2. Results Visualization

Bibliometric analysis has shed light on the landscape of digital skills development through online learning, revealing influential works, prominent authors, and thematic clusters. The next section assesses the impact of online learning on the acquisition of digital skills, providing a deeper understanding of the application of blended learning in the development of digital skills in the era of digital education.

The identified clusters provide insights for educators, policy makers, and researchers. Educators can design interventions that address the themes in each cluster to enhance students' digital skills development. Policymakers can use these insights to adapt digital education initiatives to specific cultural contexts. Additionally, these clusters indicate potential avenues for future research, encouraging investigations into the impact of cultural factors on acceptance of online learning, strategies for increasing self-efficacy, and the long-term implications of the pandemic-induced shift to virtual classrooms.

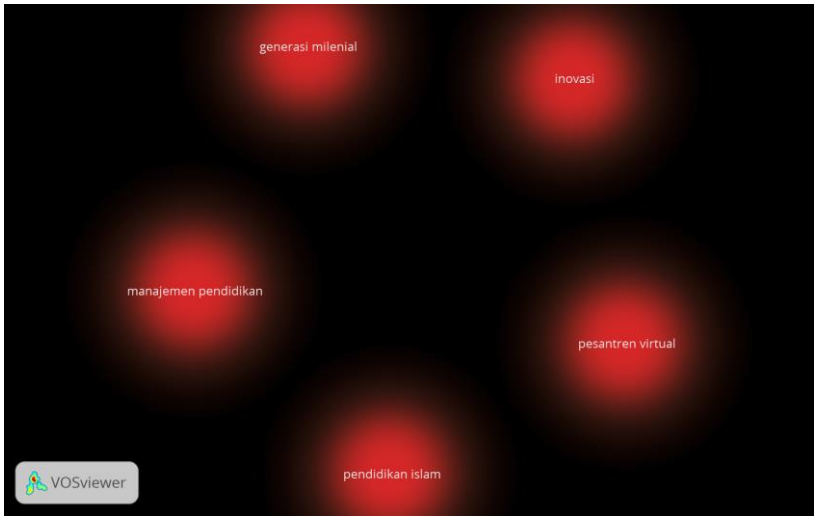

Figure 3. Cluster Visualization

Findings from VOSviewer analysis, which found six distinct thematic clusters in the literature on digital skills development in the era of digital education. Each cluster summarizes a set of recurring keywords that describe existing research trends, providing valuable insight into the landscape of the field.

The impact of these widely cited works extends beyond their immediate context. These works have served as basic references for subsequent research, influencing the design of online courses, the assessment of digital skills, and the conceptualization of effective pedagogical approaches. Citation analysis underscores the importance of these seminal works in shaping research trajectories in the field.

The insights gained from the most highly cited articles have implications for researchers and practitioners. Researchers can build on the concepts and frameworks proposed in these works to advance the theoretical foundations of the field. Practitioners can utilize the findings and recommendations from this research to inform instructional design and improve the delivery of digital skills development in the era of global education. Citation analysis provides a comprehensive view of important works that have influenced the discourse on digit skills development. These works have informed research trends, established theoretical frameworks, and guided practical considerations. The next section assesses the impact of learning on digital skills development, bridging insights from bibliometric analysis with real-world results.

D. Conclusion

The results of the bibliometric analysis regarding the application of blended learning in developing digital skills in the digital education era show that six different thematic clusters were found in the literature on digital skills development in the digital education era. Each cluster summarizes a set of recurring keywords that describe existing research trends, providing valuable insight into the landscape of the field. This research contributes to the growing understanding of digital skills development through online learning and highlights its transformative potential in education.

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