

LEARNING MEDIA AVAILABILITY: CHALLENGES AND OPPORTUNITIES FOR PRIMARY SCHOOL TEACHERS IN INDONESIA

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Abstract: Quality learning media is an important element in learning, especially in this era of technological change and the diversity of students' needs. This research aims to analyze the availability of learning media as a challenge and opportunity for elementary school teachers. The method used is the bibliometric analysis method. The data used came from the Scopus database which was then analyzed using Vos Viewer 1.16.9. The results of this analysis show that four clusters illustrate the development of learning media trends, in terms of frequently appearing keywords and existing research relationships. These findings provide an overview for elementary school teachers of opportunities and challenges to develop and produce learning media that suit curriculum needs and student growth. Recommendations for teachers require training and professional development that focuses on understanding student characteristics and using appropriate learning media.

Keywords: challenges; elementary school; learning media; opportunities; teachers

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INTRODUCTION

Learning media has an important position in classroom learning. Apart from helping teachers explain things that are difficult to explain (Tafonao, Saputra, & Suryaningwidi, 2020), media with certain advantages also helps students to learn independently, such as learning modules or videos that are designed according to student's needs. Learning media is not only limited to print media, which is often used in schools, but can also utilize social media as learning media in the classroom. Moreover, during the COVID-19 conditions from 2020 to 2022, face-to-face learning was eliminated due to the impact of COVID-19, thus requiring the use of social media in online learning so that learning can be carried out effectively, innovatively, and creatively.

However, the conditions that occur in the learning process are that not all teachers can utilize media in every lesson due to the lack of competence of teachers in utilizing technology-based learning media and in developing and producing media that suits students' needs. Hence, teachers tend to use learning media that is already available in schools, which is generally obtained from the Government. As a result, media utilization is not optimal. There are several reasons why media use is less than optimal, namely the use of technological media is considered troublesome, the use of sophisticated media is wasteful, learning technology in schools is still lacking, the level of educators' mastery of technology is still low, and they receive less appreciation from superiors (Tafonao, Saputra, & Suryaningwidi, 2020). Besides that, in using online learning media, teachers still experience difficulties. Teachers have difficulty developing IT-based media, navigating IT-based media, having insufficient facilities and infrastructure, and lastly, teachers have difficulty with innovation (Winda & Dafit, 2021). Apart from that, a lack of understanding from educators can make learning unable to meet future learning needs. As a result, students are not ready to face current problems and demands (Dzakkiyah & Anggraini, 2023).

Therefore, the availability of learning media has become a very important issue in the context of education in Indonesia, especially at the elementary school level. In recent years, information and communication technology (ICT) developments have presented opportunities to expand and enrich learning experiences (Sinaga, 2023). However, along with these opportunities, there are also several challenges faced by elementary school teachers amidst technological advances that have opened the door to various learning media that are more interactive and interesting. This will certainly be an opportunity and also a challenge for elementary school teachers in developing and producing innovative learning media to answer the challenges of technological developments in learning for primary school pupils. The problem of the availability of learning media during technological developments requires bibliometric analysis to determine trends regarding research topics related to the availability of learning media. By analyzing various scientific publications, we can understand how research on the availability of learning media, challenges, and opportunities for elementary school teachers in Indonesia has developed over time.

METHOD

Bibliometric analysis methods can be used as a tool to identify existing research trends in this topic. According to (Daulay, 2018) bibliometrics is a method used to identify academic publications related to quotations and scientific matters intended for use in libraries or other fields. Meanwhile, according to (Dzakkiyah & Anggraini, 2023) the bibliometric method is a research approach that uses quantitative analysis of scientific publications or relevant literature to reveal patterns, trends, and relationships between

bibliographic elements. The database used to search for articles is Scopus. The data obtained from the Scopus database was then analyzed using Vosviewer 1.6.19. Data findings using VosViewer are visualized in the form of networks and densities (Busro, Mailana, & Sarifudin, 2021) explains that visualizing bibliometric data allows a better understanding of the relationship between scientific disciplines, universities, and research fields.

RESULT AND DISCUSSION

To find out the extent of the availability of learning media, researchers conducted a database search. The database used is sourced from the Scopus database with searches using the keywords development, media, and elementary school. Based on a search of the database, 172 documents were found without filtering the search and year. Following the refinement of the search by document type (articles and reviews) and keywords (children and elementary schools), 108 documents were found. Metadata includes the author's name, article title, number of citations, associated URL, DOI, year of publication, and citations. The data was then analyzed using Vos Viewer 1.6.19. Table 1. Shows selected finding data based on citations from 2014 to 2023. The collection of articles is a data sample with 15 articles.

Table 1. Journal Article Publication Data Based on Citations

No.	Author	Title	Years	Research Method	Publisher	Citation Count
1	(Syawaludin, Gunarhadi, & Rintayati, 2019)	Development of augmented reality-based interactive multimedia to improve critical thinking skills in science learning	2019	Research and Development	International Journal of Instruction	48
2	(Ma & Wei, 2016)	A comparative study of children's concentration performance on picture books: age, gender, and media forms	2016	Qualitative Method	Interactive Learning Environments	29
3	(Scull, Kupersmidt, & Erausquin, 2014)	The Impact of Media-Related Cognitions on Children's Substance Use Outcomes in the Context of Parental and Peer Substance Use	2014	Study Expands Research	Journal of Youth and Adolescence	29
4	(Trobsy, et al., 2018)	Teacher knowledge experiment: Testing mechanisms underlying the formation of	2018	Experimental Method	Journal of Educational Psychology	27

No.	Author	Title	Years	Research Method	Publisher	Citation Count
		preservice elementary school teachers' pedagogical content knowledge concerning fractions and fractional arithmetic				
5	(Miyakawa & Winslow, 2013)	A web-based intervention for elementary school teachers of students with attention-deficit/hyperactivity disorder (ADHD)	2013	Case Study	Journal of Mathematics Teacher Education	25
6	(Hapsari, Hanif, Gunarhadi, & Roemintyo, 2019)	Motion graphic animation videos to improve the learning outcomes of elementary school students	2019	Research and Development	European Journal of Educational Research	22
7	(Polly, Neale, & Pugalee, 2014)	How Does Ongoing Task-Focused Mathematics Professional Development Influence Elementary School Teachers' Knowledge, Beliefs, and Enacted Pedagogies?	2014	multi-methods approach	Early Childhood Education Journal	19
8	(Maqsood & Chiasson, 2021)	Design, Development, and Evaluation of a Cybersecurity, Privacy, and Digital Literacy Game for Tweens	2021	Mix Method	ACM Transactions on Privacy and Security	8
9	(Winarni & Purwandari, 2019)	The effectiveness of turtle mobile learning application for scientific literacy in elementary school	2019	Experimental Method	Journal of Education and e-Learning Research	7
10	(Winarto, Khiyarusoleh, Ardiansyah, & Wilujeng, 2018)	A pocketbook based on the comic to improve conceptual understanding of Child Sex Abuse (CSA): A case study of elementary school	2018	Case Study	International Journal of Instruction	7
11	(Hanif, Herman, Mudinillah, & Rahmi, 2023)	Development of the Quizizz Platform as an Interactive Quiz-Based Learning Media for Arabic Language	2023	R & D Research	International Journal of Membrane Science and Technology	7

No.	Author	Title	Years	Research Method	Publisher	Citation Count
		Lessons at Madrasah Ibtidaiyah				
12	(Rukayah, et al., 2022)	Augmented Reality Media Development in STEAM Learning in Elementary Schools	2022	R&D research	Ingenierie des Systemes d'Information	6
13	(Septianingrum, Hakam, Setiawan, & Agustin, 2022)	Developing of Augmented Reality Media Containing Grebeg Pancasila for Character Learning in Elementary School	2022	R&D research	Ingenierie des Systemes d'Information	3
14	(Rachmadtullah, Setiawan, Wasesa, & Wicaksono, 2023)	Elementary school teachers' perceptions of the potential of metaverse technology as a transformation of interactive learning media in Indonesia	2023	Descriptive Method	International Journal of Innovative Research and Scientific Studies	3

Table 1 shows 16 articles with several citations that discuss the availability of learning media in elementary schools. In the Scopus database, the article (Syawaludin, Gunarhadi, & Rintayati, 2019) from 2019 to 2023 has 48 citations using research and development methods. This means that several articles refer to discussions about Augmented Reality, thus showing that the trend of learning media will develop a lot in the future. Meanwhile, even though the article published is relatively new in 2023 with 3 citations written by (Rachmadtullah, Setiawan, Wasesa, & Wicaksono, 2023) using descriptive methods shows metaverse technology as a transformation in the development of current learning media. Based on analysis using Vos viewer 1.6.19 on articles totaling 108 documents sourced from the Scopus database to produce computational mapping related to "Learning Media Availability" there are 4 clusters with a total of 31 items shown in Image 1 showing that these clusters have a relationship between each a term that indicates the existence of several interrelated concepts and related topics.

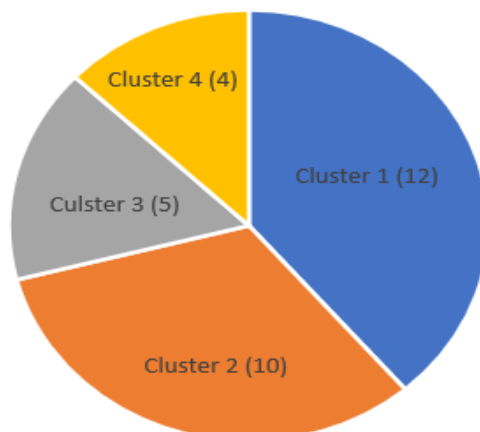


Image 1. Field Keyword Research Trending Topics

The clusters in Image 1 show mapping related to topics that examine the “Availability of Learning Media”. As for the mapping of the four clusters. The first cluster consists of 12 red items, including augmented reality, elementary school, elementary school students, elementary schools, human experiment, learning media, parents, primary school, professional development, students, teachers, and teaching. The second cluster consists of 10 green items, including adolescent, child, child behavior, longitudinal studies, longitudinal study, psychological aspects, school, schools, and student. The third cluster consists of 3 blue items including children, education, health education, mass media, and psychology. The fourth cluster consists of 4 blue items, including academic achievement, curriculum, learning, and program evaluation.

Meanwhile, Image 2 shows a visualization of the Vos Viewer analysis. The results of the computational mapping visualization are divided into three parts, namely network visualization (Image 2), overlay/difference visualization for each year (figure 3), and density visualization (Image 3). Each cluster in the image visualizes the relationships and connections between one item and other items. Each term is marked with a label in the form of a rectangular frame. These frames have different sizes depending on the frequency at which they appear. Frame size shows a positive correlation with the frequency of terms appearing in the title. The frame gets bigger if it contains terms that often appear in the title.

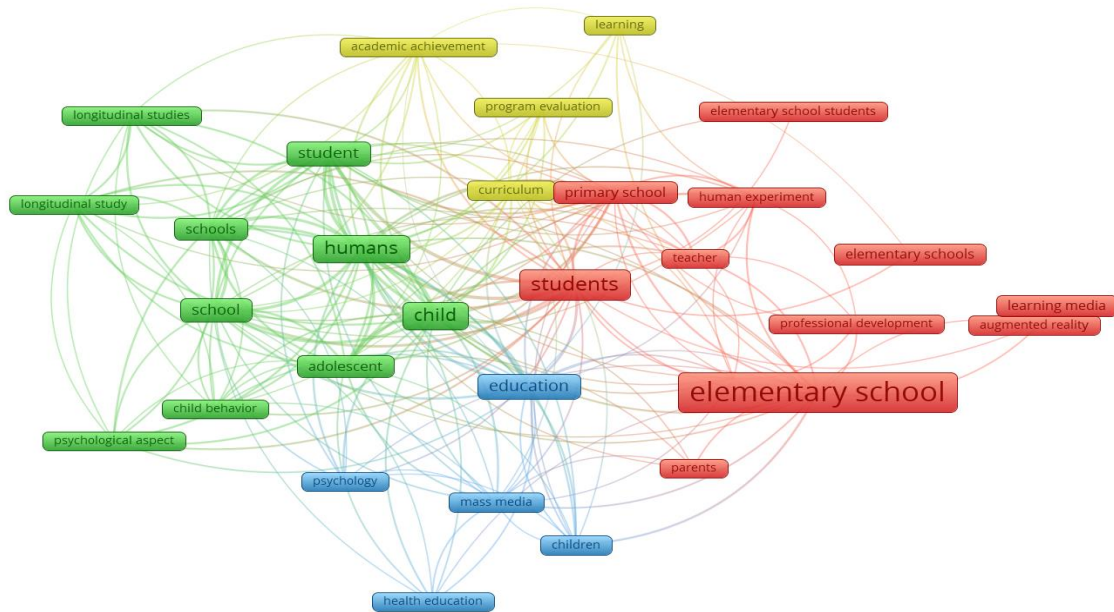


Image 2. Visualization Network Study Availability of Learning Media

Image 2 illustrates clusters of terms that appear frequently and are correlated with research fields. The size of the circle shows a positive correlation with the appearance of the term in the title and abstract. The size of letters and frames is determined by the frequency of their appearance. The more often a term appears, the larger the size of the letters and frames (Yulifar, 2021). The picture shows that the term elementary school is in the first cluster, connected to the second and third clusters, the terms humans and education.

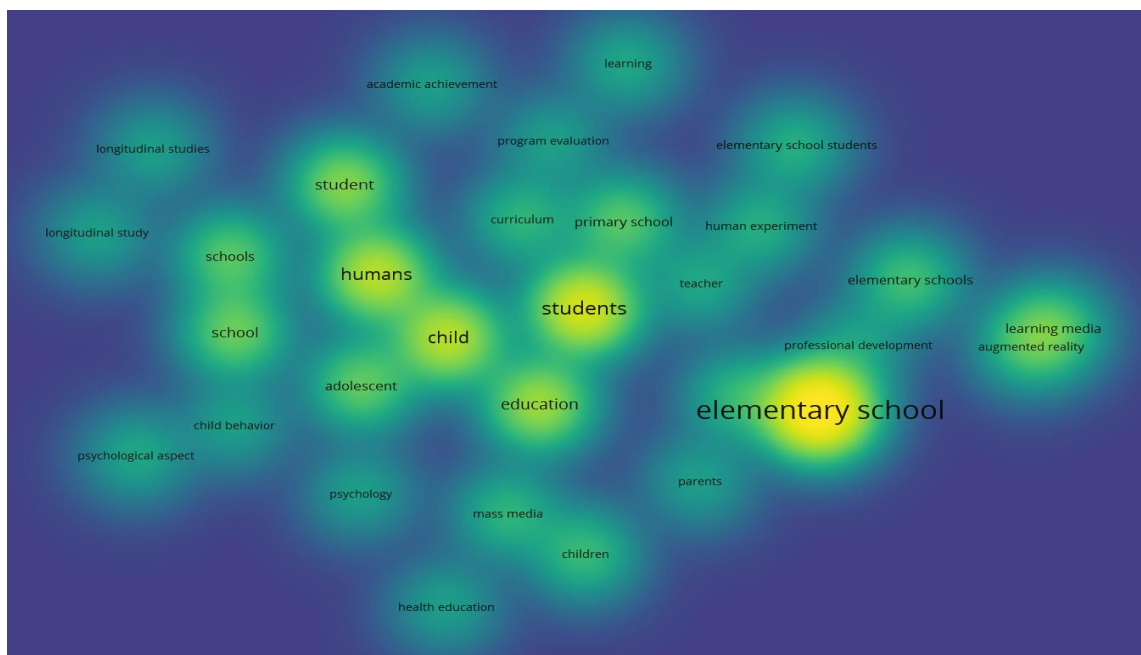


Image 3. Visualization of Research Density

Image 3 illustrates research density. The bold yellow color is a symbol of the density of a research theme, which means the high frequency of research on that theme or the relationship between themes. The brighter the density color indicates the greater the frequency of research. Variables that are dimly colored have the potential to be researched in the future (Mujahidah & Soebagyo, 2022). The picture shows that elementary school is connected to other themes, such as students, students, humans, child, education, learning media, Augmented Reality, and school. The dim color variables in the term's longitudinal studies, psychological aspects, health education, academic achievement, parents, and program evaluation can be potential in future research. These results indicate that the theme of learning media availability is a challenge and opportunity for elementary school teachers to develop and research related to this theme.

Data findings show several opportunities and challenges faced by teachers in the context of learning media, especially at the elementary school level. The first cluster, which focuses on elementary schools and elementary school students, shows opportunities for teachers to develop learning approaches that suit the characteristics of elementary school students. This involves a deep understanding of how students at the school level learn and interact with subject matter. This is also a challenge for elementary school teachers to create a learning environment that supports the development of students' cognitive, affective, and basic skills. In line with Edgar Dale's theory, namely combining various concrete learning experiences with increasing student motivation and involvement in learning (Jackson, 2016). Student involvement in school is very important (Fikrie & Ariani, 2019). Student involvement in the use of learning media can be increased through a collaborative approach that allows them to contribute to designing and using learning media according to their interests and needs. On the other hand, teacher professionalism produces learning media by creating relevant, quality, and effective content to support student learning. This is in line with the view (Notanubun, 2019) that the level of teacher professionalism is largely determined by the level of mastery of knowledge, attitudes, and skills that underlie the formation of professional competence.

The second cluster highlights psychological aspects and longitudinal studies. This indicates an opportunity for teachers to better understand student behavior and development during the elementary school years. This can help in devising learning strategies that are more effective and responsive to individual student needs. Teachers can carry out students' learning needs by conducting a needs analysis, namely identifying the fulfillment of students' needs through learning (Prastowo, 2014). Determining and developing effective learning strategies and using learning media is a challenge for elementary school teachers by providing learning that suits students' needs. Because of this, teachers conduct deeper research and apply the findings of this research in daily learning practices.

The third cluster includes health and mass media providing opportunities for teachers to include health aspects in the curriculum and understand the impact of mass media on student education. This reflects attention to a holistic approach to education. Holistic education promotes all pupils' potential in a harmonic (integrated and balanced) way, including intellectual, emotional, physical, social, artistic, and spiritual potential. Each potential should be cultivated in tandem (Miller, Karsten, Denton, Deborah, & Kates, 2005). Although, a holistic approach is nothing new in the world of education. However, this is a challenge for elementary school teachers in integrating health issues and understanding media holistically into learning.

The fourth cluster focuses on curriculum and program evaluation. This represents an opportunity for teachers to improve the curriculum to better suit student development. Effective program evaluation can also help teachers understand the impact of the learning strategies they use. It is also a challenge for teachers to design relevant curricula and effective evaluation methods that suit student development. This suitability is a key factor in creating effective and relevant learning. According to Dewey (1916), the curriculum should be student-centered, allowing them to take an active role in their learning. In the modern context, Vygotsky (1978) also highlights the importance of a curriculum that considers students' actual development zones, where learning appropriate to their developmental level will be more effective. Therefore, a curriculum that is appropriate to student development must be a combination of clear educational goals and the teacher's ability to identify and accommodate individual student differences.

Based on this discussion, it can be concluded that teachers must understand the characteristics of elementary school pupils and establish a learning atmosphere that is conducive to supporting cognitive, affective, and basic skills development by designing learning media according to students' interests and needs. Psychological aspects and longitudinal studies are an opportunity and a challenge for teachers to better understand student behavior and development through study so they can develop learning strategies according to student needs and apply them in learning practice. Health aspects and the impact of mass media in the curriculum provide opportunities and challenges for teachers in carrying out learning and integrating health issues and understanding media with a holistic educational approach. Furthermore, teachers could improve the curriculum and program evaluation to be more appropriate to student development to create effective and relevant learning.

CONCLUSION

Based on the findings, it can be concluded that there are four clusters of research topics sourced from the Scopus database. Each cluster provides an overview of teacher research trends at the elementary school level and presents various opportunities and challenges in producing learning media and designing them according to curriculum needs and student development. Therefore, there is a need for training and professional development that focuses on understanding student characteristics and using appropriate learning media. Teachers also need to apply a collaborative approach and analyze student needs in learning to create more effective and relevant learning experiences for elementary school students.

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