



Bibliometric Mapping of Publication Trends on the Use of Learning Media and Character Values in the Scopus Data Base From 2013 to 2022

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Abstract: This study aims to find a map of the development of research in the field of learning media and character values in the Scopus database from 2013 to 2022. The research was carried out by searching through the Scopus database with the keywords 'learning media' and 'character values'. The data was processed and analyzed using the VOSviewer application program to determine the bibliometric map of learning media research developments and character values. The results of the research show that the number of research publications in the field of learning media and character values in Scopus in 2013-2022 has been published from year to year. The largest contributor to publications indexed on Scopus is Universitas Negeri Jakarta. The most productive foreign researcher is from the United Kingdom. The most productive researcher from Indonesia is Mulyati. Researchers in the field of learning media and character values mostly collaborate with the community from Taiwan followed by the community from Australia. Most subjects are teaching and education. Through network visualization, it shows that the map of research development in the field of learning media and character values is divided into 7 clusters. The theme of using instructional media and character values can be an opportunity for further research.

Keywords: bibliometrics, vosviewer, instructional media, character value

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INTRODUCTION

One of the goals of 21st-century learning is to encourage teachers to be literate with the use of learning technology and the formation of the character of their students (Khaeruddin & Bancong, 2022; Lapaire, 2022; Salmia & Idawati, 2020). Learning can be interpreted as an effort to influence feelings, intellectual and spiritual in a person to learn according to his own will (Zhang et al., 2014). Learning in a special sense can be interpreted as a learning process that is built by the teacher to increase all the potential and various abilities possessed by students, such as the ability to think, creativity, construct knowledge, solve problems, and master learning material (Baharuddin, 2015). These abilities are skills that need to be developed in the 21st Century (Bancong et al., 2021; Laka et al., 2020). However, the problem that occurs is that the learning environment used so far is still limited to delivering material that aims to improve cognitive abilities (Pinto & Terroso, 2022). In addition, the use of learning media is not integrated with the cultivation of character values (Solihatin et al., 2021).

Several studies have investigated the contribution of learning media and character values, such as the studies by Uzegbunam et al. (2018) and Ballano (2022) who argue that character-based learning media that is developed is included in national research priorities and is one part of the solution to improve the quality of Human Resources (HR). The importance of implementing character education-oriented learning to form quality, character, and noble human resources as early as possible, and to meet the aspirations of forming a golden generation in 2045 (Arsyad, 2018). Learning media and character values need publication in a reputable journal as an important task because the articles in this journal are of high quality in terms of methodology and research results (Lee et al., 2022; Jho, 2018; Henderson & Dancy, 2009). In addition, publication in reputable journals serves as a channel to communicate with other researchers to encourage the development of better research fields (Kim & Jeong, 2018; Otero & Meltzer, 2017; Yun, 2020).

Research on learning media and character values makes a real contribution to primary and secondary school level education as a guideline not only for revising learning but also for improving the teaching and learning process and building reference character values (Rimal et al., 2013; Peng, 2018). Likewise at the university level, learning media research and character values are used to develop learning strategies and character values to help students learn the application of learning media to be more effective (Bancong et al., 2021). This can make a real contribution to improving teacher competency in the future. However, several studies have shown that writing for scholarly publications is a challenge for most academics (Otero & Meltzer, 2017). Many researchers have difficulty identifying research topics to generate innovative ideas in designing current research. In particular, early researchers have a limited understanding of the characteristics of Scopus

journals and trending research topics in the field (Lee et al., 2022). It is not easy for novice researchers to determine developing research topics, design research, propose hypotheses, write research results, and select journal publications (Otero & Meltzer, 2017; Bancong et al., 2021). Therefore, for novice researchers, it is important to know research trends in the past, present, and future. This understanding will help to see the field of study from a broader perspective.

So far, more attention has been paid to bibliometric approaches to visualizing research trends in education (Ho et al., 2022; Lin, 2015). However, there is no research that explicitly describes the topic of learning media and character values that have been trending in the last ten years (2013-2022). Therefore, this study aims to describe the learning media and character values research topics that are trending in Scopus publications. Thus, the purpose of this study is to find out about the publication trend of the use of instructional media and character values in schools in the last 10 years, the countries that have contributed the most to research on the use of instructional media and character values in schools in the last 10 years, and author collaboration on research on the use of instructional media and character values in schools in the last 10 years. So, this study is devoted to the use of learning media and character values in the Scopus database from 2013 to 2022. The novelty in this study is that the successful application of character values to students can be instilled through multiple approaches, one of which is through learning media that can be made by teachers manually and easily understood by students. This study uses VOSviewer to map scientific research publications on learning media and character values. So that it can be studied Scopus reputable scientific publications for the last 10 years.

METHODS

This research was a type of qualitative research with a literature study (Moleong, 2013). Qualitative research methods with library study techniques are data collection techniques based on finding written data such as notes, books, papers or articles, journals, etc. (Zed, 2014). In a bibliometric study, data can be obtained from primary, secondary, or tertiary journals covering a certain period and analyzed from various angles to determine the data displayed in documents by affiliation, documents by country or region, documents by type, documents by subject area, documents by source, and documents by year (Zed, 2014). Research data used the Scopus search engine to identify journals about the use of learning media and character values from 2013 to 2022. Research publications related to character-based learning media from 2013 to 2022 totaled 452 documents. The Scopus database has become a major source of studies for evaluating scientific research. As one of the largest data centers in the world, Scopus can index scientific literature to provide accurate information about the metadata of every scientific article, including publication data, abstracts, references, etc. (Fuentes, 2015). Figure 1 shows the stages in data collection and processing of data analysis obtained in the Scopus database.

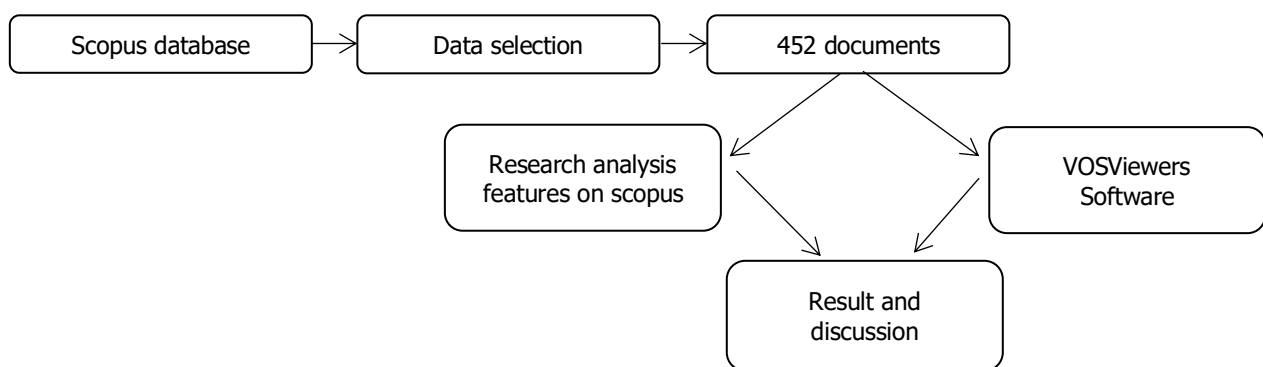


Figure 1. Research stages

This study used VOSviewer to map scientific research publications with the use of learning media and character values. This study used VOSviewer for publication visualization analysis in co-occurrence analysis. VOSviewer pays particular attention to the graphical representation of bibliometric maps. VOSviewer is a software tool for building and visualizing bibliometric network works. The VOSviewer functionality is useful for displaying large bibliometric maps in an easy-to-interpret way (Van Eck, 2017). This research was described to categorize topics and narratives in scientific research publications related to the use of instructional media and character values from 2013 to 2022 indexed by Scopus. Qualitative descriptive will make it easier to collect, categorize, map, analyze, and visualize qualitative data collected from papers (memos, reports, laws, and photographic documents) and interviews (Zamawe, 2015). Therefore, this research answered how the development of research with the theme of using instructional media and character values from 2013 to 2022.

RESULT AND DISCUSSION

Research on the use of instructional media concerning character values has become extraordinary in recent years. This is caused by the rapid development of information technology, especially social media used by educators. Learning media has developed along with technological developments, so the learning media that is often used today is digital-based, which makes it easy for users to access these learning media. The results of learning media research documents and character values in reputable journals through scientific publications from the Scopus database obtained 452 documents. Figure 2 shows the trend of research publications on the Scopus database with the keywords learning media and character values from 2013 to 2022.



Figure 2. The document by years

As shown in Figure 2, in 2016, research in the field of educational media and character values experienced a decrease in the number of documents, namely only 17 documents when compared to the previous year. In addition, submissions also decreased in 2017 with a total of 18 documents. Meanwhile, it also reached 18 documents at the end of publication in November 2022. Although it has decreased in several years, developments in research on learning media and character values in terms of quality prove that research in this field is still a topic of interest and continues to grow from year to year in various countries. The results of the research documents show that there are several publishers who publish articles about learning media and character values, but there are ten publishers with the most as shown in Figure 3 below.

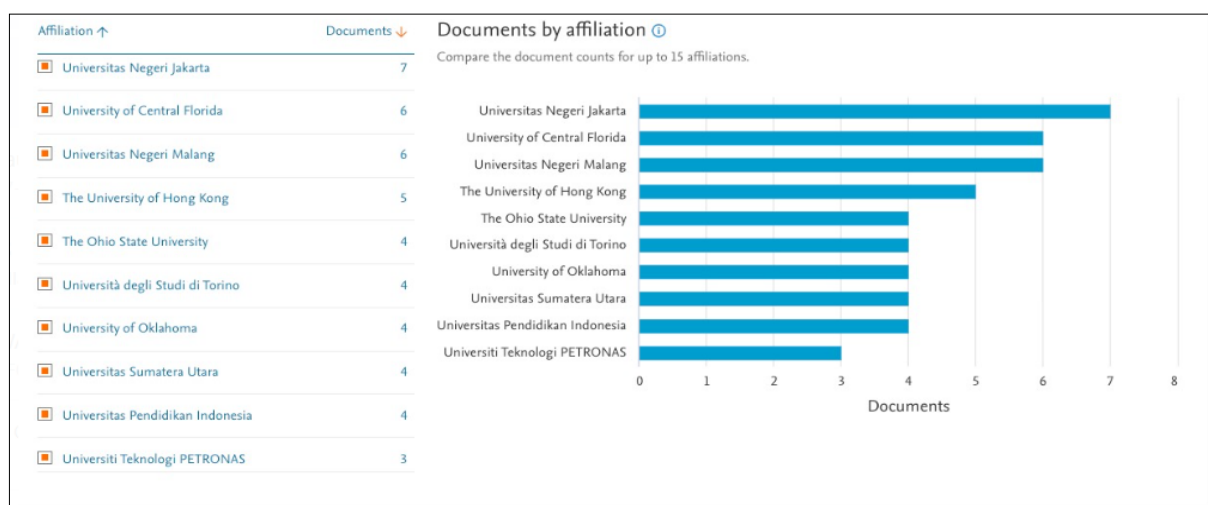


Figure 3. Graph of documents by affiliation

As seen in Figure 3, there are several publishers who publish articles about learning media and character values in learning. Most articles related to learning media and character values in terms of data analysis

processing obtained in the Scopus database were published by Universitas Negeri Jakarta, followed by the University of Central Florida and Universitas Negeri Malang with six articles. Judging from the countries that have contributed the most to research indexed by Scopus with the keywords learning media and character values from 2013 to 2022, it can be seen in the following table.

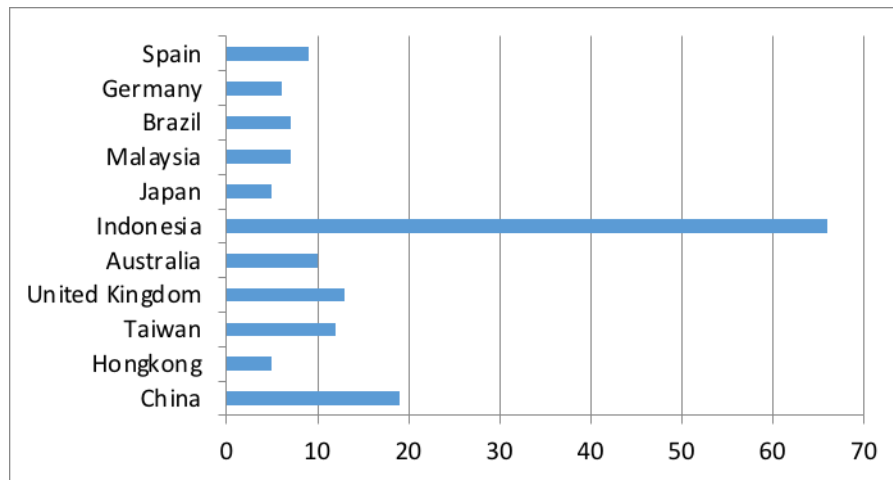


Figure 4. The document by the country

The table above shows that researchers in the field of learning media and character values in Indonesia have contributed at most 66 articles that discuss learning media concerning character values in learning. The two that contributed the most were China with 19 articles, followed by the United Kingdom with 13 articles. The countries that contributed the least were Hong Kong and Japan each with 5 articles. Based on scientific research on the Scopus database from 2013-2022 with the keywords learning media and character values. Figure 5 shows the eighteen authors who have contributed the most to scientific research on learning media and character values.

Selected	Author	Documents	Citations	Total link strength
☒	astuti s.	2	0	4
☒	fitriana o.	2	0	4
☒	siang j.i.	2	0	4
☒	solihatin e.	2	0	4
☒	syarifain r.i.	2	0	4
☒	wan achmad w.f.	2	0	4
☒	lombardo v.	3	35	3
☒	pizzo a.	3	35	3
☒	sitompul d.r.p.	4	6	3
☒	bakri f.	2	5	2
☒	furqan m.	2	2	2
☒	muliyati d.	3	5	2
☒	scott j.a.	2	14	2
☒	wohlwend k.e.	2	14	2
☒	sihombing p.	2	7	1
☒	friedman s.h.	2	18	0
☒	li t.	2	1	0
☒	richards m.n.	2	48	0

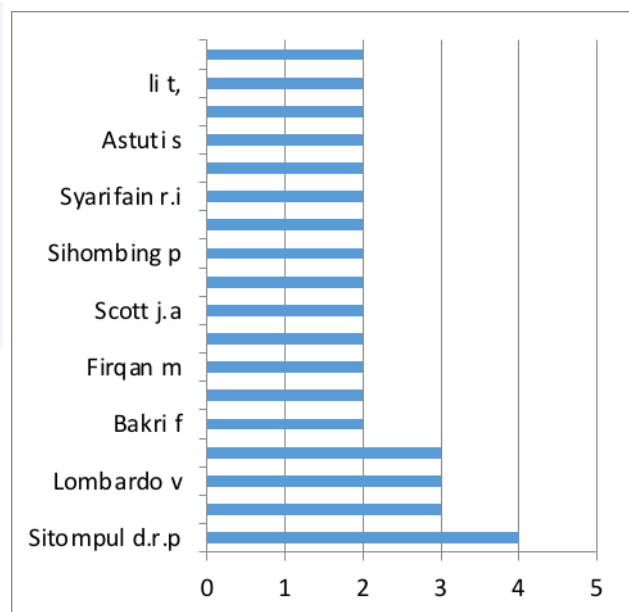


Figure 5. The document by the author

Authors of Scopus publication articles for 2013-2022 related to learning media and character values were analyzed through VOSViewer. There is a minimum number of articles from previous researchers of 2 articles while a maximum of 4 articles. The result is that 14 researchers have fulfilled the criteria of the 18 researchers who were detected.

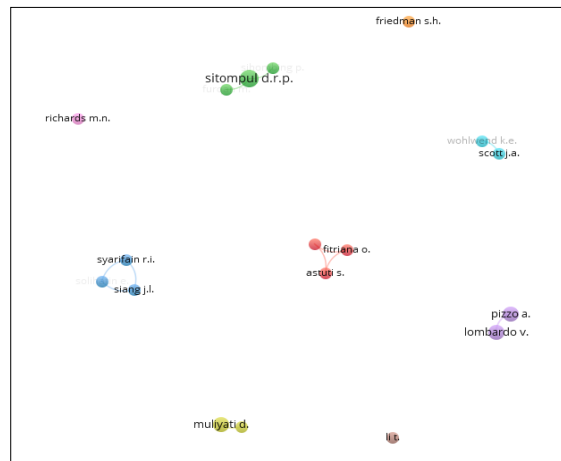


Figure 6. Network co-authorship visualization

Figure 6 shows the network visualization on co-authorship which is marked with nodes (circles) that represent writers or researchers, and edges (networks) that represent relationships between writers or researchers. The set of nodes equipped with edges explains that there is a correlation or relationship between researchers in research on learning media and character values. Bibliometric analysis based on researchers or authors (author) centered on Sitompul's. The network shows that there is a relationship or collaboration of authors, such as a network (edge) that connects Sitompul's authors with other authors. Bibliometric analysis is carried out by making visualizations in the form of networks, overlays, and densities which aim to determine the bibliometric network between articles or online publications from the downloaded metadata. From the search results through the Scopus database, it was obtained as many as 452 documents on the development of research results in the field of learning media and character values, then inputted and analyzed with VOSViewer, the following results were obtained.

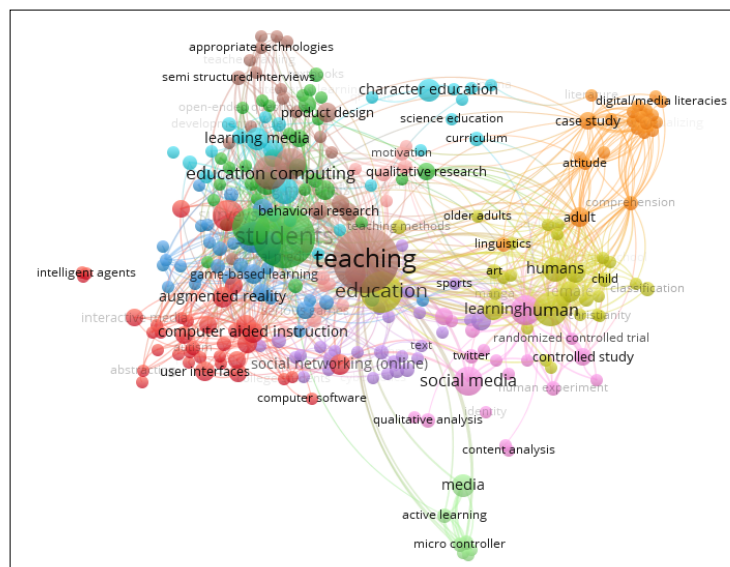


Figure 7. Visualization of Network keywords (Co-Occurrence)

Network visualization on co-occurrence which explains the network or relationship between one term and another term in research in the field of learning media and character traits in the period 2013 – 2022. Of the 452 articles indexed by Scopus, they can be grouped into 7 clusters which can be identified by color. node each keyword. Cluster 1 is symbolized in brown and includes terms related to the field of learning media and character values that have been studied, namely teaching, education, etc. Cluster 2, which is symbolized in dark green, consists of education computing, learning media, product design, etc. Cluster 3 which is symbolized in yellow consists of terms such as learning human, child, etc. Cluster 4, which is symbolized by the color orange, consists of the terms digital/media literacies, case study, attitude, and adult. Cluster 5, which is symbolized in red, consists of the terms computer advanced instruction, game, based learning, and integrated agents. The 6th Cluster which is symbolized in blue consists of the terms learning media, education computing, etc., and the 7th cluster which is symbolized in purple consists of the terms social media, controlled study, Twitter, etc.

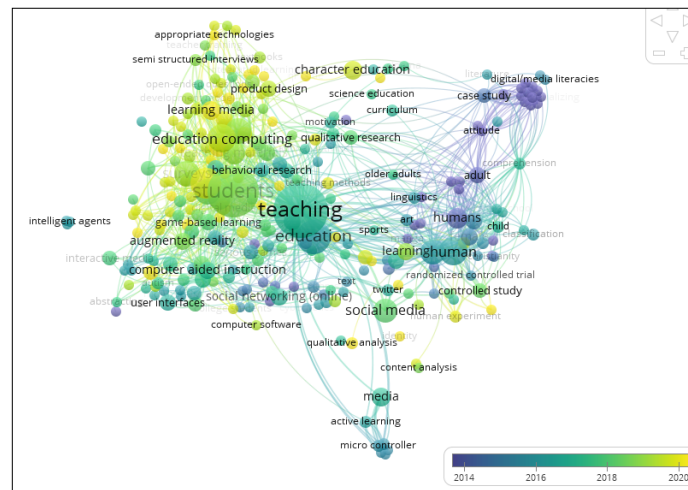


Figure 8. Overlay Visualization on co-occurrence

After identifying the mapping and clustering of learning media fields and character values using network visualization, the next step is to map and cluster learning media research trends and character values based on historical traces or years of research publication. The information obtained from the overlay visualization results in Figure 8 can be used as a reference for identifying and detecting the state of the art from research in the field of learning media and character values conducted in the period 2013 – 2022. The results of the bibliometric analysis imported into Vosviewer software produce an Overlay visualization. In this visualization, the colors on the nodes represent keywords that indicate the year of publication. For example, the keyword 'teaching' has green nodes, which means that articles containing these keywords were published in 2016 – 2018. Another example is the term 'education computing' which in the Overlay visualization is depicted as having light green nodes, this means that The term 'education computing' in research on learning media and character values has only been discussed by researchers in 2018 – 2020. Another example is the keyword 'labelling' which has a dark purple node color. The term 'attitude' is already attached to the field of learning media and character values. Therefore, the keyword 'attitude' in research was used much earlier by researchers in conducting research on learning media and character values.

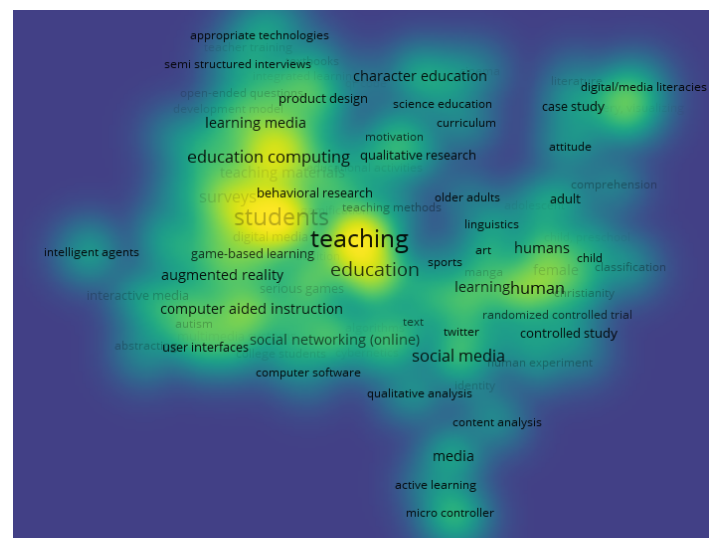


Figure 9. Visualization of density on co-occurrence

Next is bibliometric analysis using density visualization or density visualization. From the results of the visualization shown in Figure 9, it can be identified that there are dense areas or that have high density at one node with other nodes. The saturation level identified in the number of keywords marked in yellow means that the area is a topic that has been extensively researched and indexed by Scopus, for example, the keywords teaching, education, humans, and students. Meanwhile, nodes marked with dark colors indicate that these topics have not been studied much. This can foster opportunities to conduct research or research on these topics. Learning media has developed along with technological developments, so the learning media that is often used today is digital-based, to make it easy for users to access these learning media. Although it has decreased in several years, the development of research on learning media and character values in quality proves that

research in this field is still a topic of interest and continues to grow from year to year in various countries. The context of learning media for fostering character values aims to create a school environment that can assist students in developing ethics and responsibility through learning media.

Character values should be instilled in students so that they can apply them in their lives in the family, school, community, and country so that they can make a positive contribution to their environment. Therefore, research on learning media and character values in education is a center for learning activities for further research. This is due to the development of the times which require educators to provide the best for their students. Therefore, researchers need to explain research trends on learning media and character values, in terms of the number of publications in the last 10 years, related keywords, authors, and relationships between authors. Not only that, the author also makes narrative mapping and finds topics that have the opportunity to be studied further which is the reason for the importance of this research. The country that has contributed the most to research indexed by Scopus based on VOSviewer data shows that the country that has contributed the most is Indonesia, followed by China and then followed by the United Kingdom, and the least collaborating are Hong Kong and Japan. Scientific research on the Scopus database with the keywords learning media and character values in the last ten years was eighteen authors who contributed the most to scientific research on learning media and character values. The VOSviewer mapping analysis has themes related to learning media and character values. This means that these themes are often researched in Scopus journals from 2013 to 2022 as many as 452 documents. This can be a novelty theme in terms of research and reference material for further research development.

This is in line with studies by [Furqan and Sitompul \(2016\)](#), [Sitompul and Sihombing \(2018\)](#), [Amaruddin et al. \(2019\)](#), and [Golick et al. \(2013\)](#) which reveal that further research is needed to analyze the increase in the use of learning media in the teaching and learning process and also efforts to increase character values for students. Analysis carried out bibliometrically can help understand the intensity of current research on a topic from various research fields explored by researchers. Bibliometric analysis is useful for understanding the character of the results of literature based on indexes, keywords, titles, authorship, and information growth. Learning media does not only refer to the subject matter taught at school but how it is carried out and given following the real situation of the student's environment which then provides interesting experiences for applying material concepts that are integrated with instilling character values in everyday life.

The learning media used in schools refers more to the pattern of internalizing character values which is carried out with the view that learning media can improve student learning patterns by reflecting character values so that they can develop the ability of the younger generation to be able to explain an event scientifically, evaluate, and become a person of character. A study by [Hindarto and Nugroho \(2018\)](#) reveals that there are 68.43% of students report that learning media can help them improve learning achievement, this is a challenge in future research to be able to increase learning motivation by utilizing learning media. The teaching and learning process becomes easy and interesting so that students can understand and understand the lesson easily, student learning efficiency can increase because it follows learning objectives, helps students concentrate because learning media is interesting and according to student needs, and increases student learning motivation because of student attention to the lesson can be increased, provide a thorough experience in learning so that students can understand in real terms from the material provided better understand the material as a whole, students are involved in the learning process so that students actively follow and are involved in the learning process and students have the opportunity to do creativity and develop their potential owned.

Improving student learning achievement is inseparable from the teacher's ability to implement learning that provides more experience for students during the learning process. The learning process and the selection of inappropriate media can be a factor in low student achievement. Teachers can change patterns and learning processes so that they are not teacher-centered and students can participate actively and creatively in carrying out various activities during the learning process. It is necessary to have the role of various parties so that the implementation of learning media that is integrated with character values for students can be carried out properly, one of which is through research conducted by researchers regarding development and novelty to provide strengthening of understanding by using learning media that is integrated with character values at the school level following the times.

CONCLUSION

Based on the findings and discussion, the number of Scopus-indexed scientific publications from 2013-2022 is 452, the highest number of publications in 2018 and 2021 is 39 articles, while in 2016 the lowest is 17 using the VOSViewer software. The results of the network visualization find 4 clusters with topics that have a relationship with each other, namely teaching and education. The analysis carried out shows that there is a relationship or collaboration between authors, such as a network (edge) that connects writers with other writers. Meanwhile, researchers in the field of instructional media and character values in Indonesia have mostly

collaborated with academics from China and those who have collaborated the least are academics from Hong Kong and Japan. The results of the research based on overlay visualization and density visualization in 2016-2018 are centered on teaching variables, meaning that this research is still rarely researched and is a theme of renewal in research.

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