Use of Puzzle Media for Early Childhood: Bibliometric Analysis

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Abstract

This research aims to become literature material related to learning media for early childhood, one of which is puzzles. Know the main information from the data obtained. Know the most journal publications. Find out information related to the author's educational origins, the most authors, the most countries that publish journals related to puzzle media for early childhood. This research method is bibliometric analysis. 7Displays classification analysis and theme maps related to early childhood puzzle media. Using r studio help to search bibliometric data. The type of data obtained comes from Scopus data. The results of puzzle media research have increased from 2016 to 2023. The country that produced 45 articles was the USA. The name of the author who wrote 125 articles is unknown. Early Childhood Educational is the source of 129 journals. ESCHM is the largest affiliate with 14 articles published there.

Keywords: Bibliometrics, Media, Puzzle.

Abstract

This research aims to become literature related to learning media for early childhood, one of which is puzzles. Knowing the main information from the data obtained. Find out the most journal publications. Find out information related to the origin of the author's education, the most authors, the most countries that publish journals related to puzzle media for early childhood. Displays classification analysis and theme maps related to early childhood puzzle media. Using the help of r studio to find bibliometric data. The type of data obtained comes from Scopus data. The results of puzzle media research have increased from 2016 to 2023. There are 45 countries that have produced articles, namely the USA. The names of the authors who have written 125 articles are unknown. Early Childhood Education is the source of 129 journals. ESCHM is the most affiliated with 14 articles published there.

Keywords: Bibliometrix, Media, Puzzle.

INTRODUCTION

Early childhood education is an educational institution specifically for children aged 0-6 years (Nugraha, 2005) . This education was formed with the aim of developing the development within children (Nursalim, 2020) . Through this education, children will develop their potential, starting from cognitive, physical, motor, moral, religious and artistic (Tri Sayekti, 2016) . Education will be implemented optimally if all teachers or educators carry out innovative learning. However, currently there are many teachers who have not yet developed the learning methods they apply (Setiawati & Ulfah, 2018) . They still use the method of using monotonous student worksheets in teaching it (Nimawati & Zaqiah, 2020) . The use of student worksheets is still often found in schools as a result of which children

easily get bored when participating in learning activities (Gunawan et al., 2019) . Therefore, teacher creativity is needed to create fun and meaningful learning.

The word puzzle comes from English, meaning puzzle or disassembly (Nurwita, 2019) . Puzzles are child-friendly games so they can be used as educational games. Using puzzle media can be a medium that can be used to teach something to children. Puzzle media is a medium that can be used to train concentration in young children (Fitriah et al., 2021) . The use of puzzle media can be used to train children's patience and train children's memory (Ima Frima Fatimah, 2021) . With puzzle media, children become more interested in learning (Astuti, 2020) . The difficulty level of the puzzle can be modified according to the child's psychological development and intelligence level. Playing puzzles can have an influence on a child's fine motor development, but it can also influence their social and emotional abilities. Puzzle games can be used in groups or alone, thereby training children to cooperate and adapt to their surrounding environment. In accordance with the results of research conducted by Syisva, puzzle games make children happy, entertained and able to develop their fine motor skills (Nurwita, 2019) . Other research also states that there is an influence of puzzle media on student learning outcomes (Yunita & Supriatna, 2021) .

Current bibliometric studies have not discussed much about puzzle media for early childhood. Bibliometrics is a data analysis that can be carried out using software programs to analyze it (Alfatihaturrohmah et al., 2018) . Bibliometric studies are carried out by entering data obtained from *websites* and then entering them into the assistance program, namely Biblioshiny (Tupan, 2022) . The use of bibliometric studies which has not been widely discussed is the reason this research was created. The use of puzzle media for early childhood using bibliometric analysis methods aims to become literature material related to learning media for early childhood, one of which is puzzles. The purpose of using this method is to find out the most journal publications, obtain information related to the author's educational background, the most authors, the most countries that publish journals related to puzzle media for early childhood. Displays classification analysis and theme maps related to early childhood puzzle media.

METHOD

This type of research uses a qualitative research method, a descriptive study that utilizes a database in Scopus. Bibliometrics comes from the word boblio or bibliography which means book, while metric means to measure (Fauziah et al., 2022) . So bibliometrics means the process of analyzing scientific or literary works using a mathematical and statistical approach. The search was carried out by entering keywords on *the website platform* , namely " *media"* and "*puzzle"* . Produced 366 documents related to *puzzle media* . The steps taken after entering keywords are downloading the data that has been obtained. Then open Bibliomeric then import *the*

data there. Regarding main information, most authors, most countries, most affiliations, classifications and thematic maps related to puzzle media. In general, the analysis used to assess the quality of research results is based on the assumptions of one researcher and another (Mubarrok & Rahmawati, 2020) .
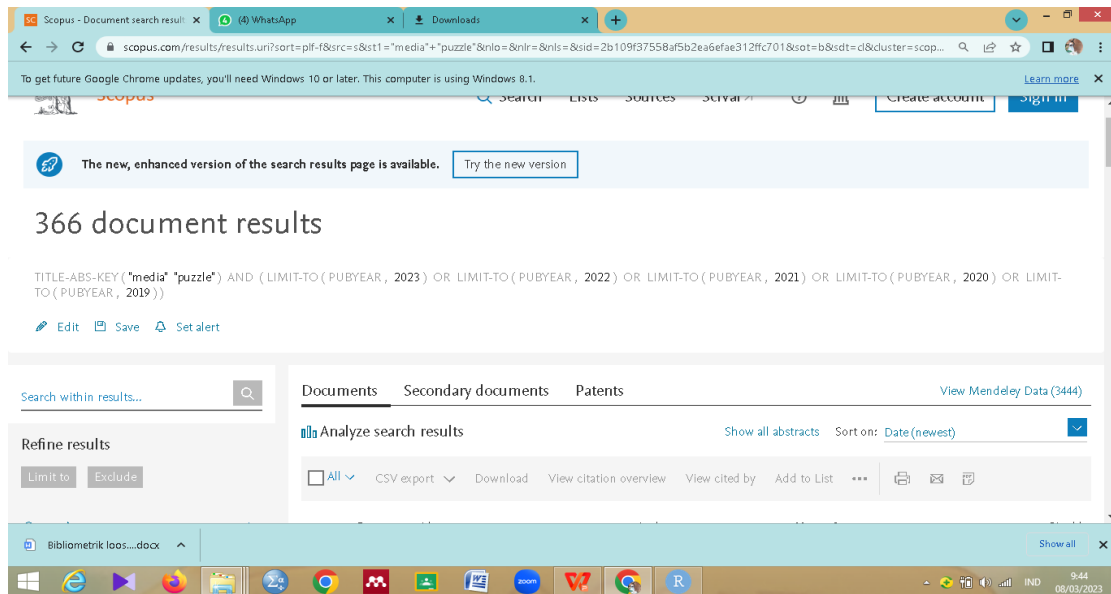

Figure 1: Data Search Evidence

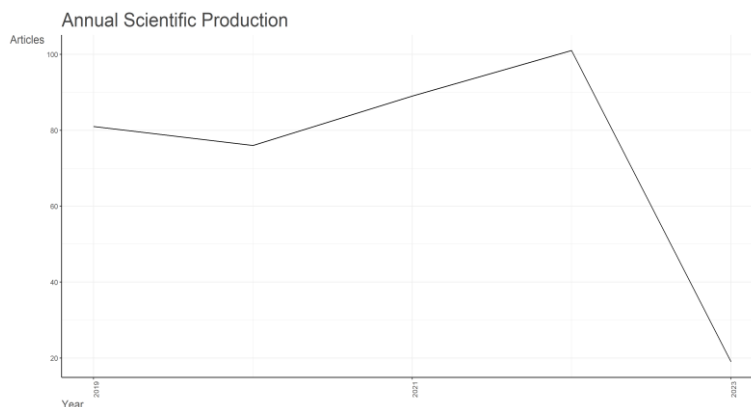**RESULTS AND DISCUSSION**
Annual Scientific Production

Figure 2: Annual Scientific Production

The image above shows a growth graph regarding puzzle media for early childhood, starting to develop from 2014 to 2022. In 2014 there were 80 articles related to puzzle media. Then it decreased slightly in 2016 to 76 articles. Then it experienced a very rapid increase, producing as many as 100 articles related to puzzle media in 2020. There was a drastic decline in 2022, which only produced around 20 articles related to puzzle media. It can be said that articles related to puzzle media have experienced ups and downs, experiencing an increase in 2016 producing 100 and experiencing a drastic decrease in 2022 producing only 20 articles.
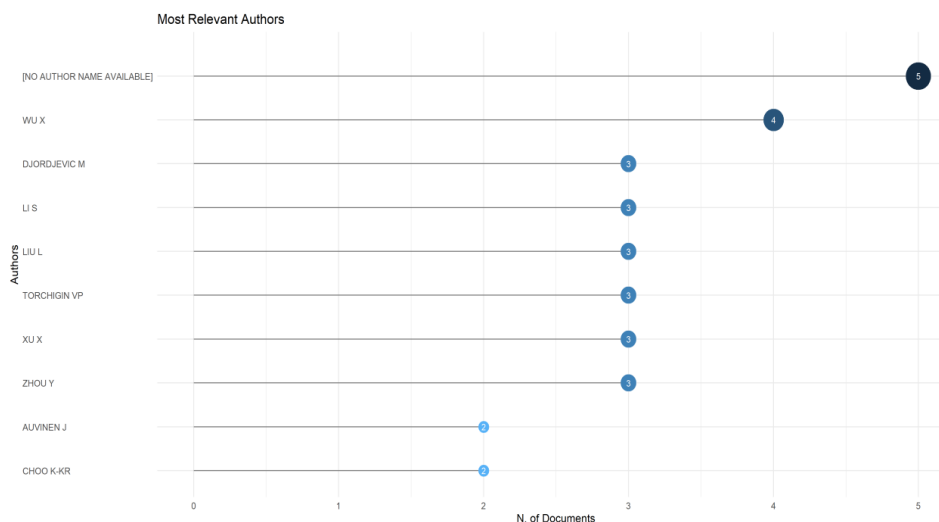
Most Relevant Authors

Figure 3: *Most Relevant Authors*

The image above shows the author or writer who explains related to puzzle media. In the first place the name of the author who contributed 5 articles was not detected. Wu X wrote a work totaling 3 articles related to puzzle media. Djordjevc M, Li S, WL, Torchgin Vip, Xu X, Zhou Y, they all contributed 3 articles each discussing puzzle media. Auvnen J and Choo Khow each produced 2 articles related to puzzle media. It can be said that there are still very few articles related to puzzle media.
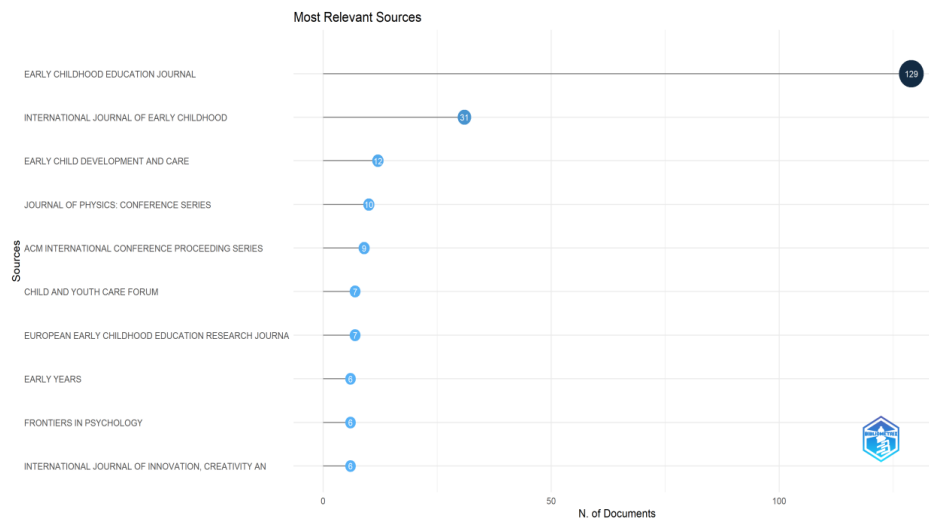
Most Relevant Sources

Figure 4: *Most Relevant Sources*

The image above shows information related to the place where the journal is published or what is often called the journal's house. First position resulted in 129 articles published by the Early Childhood Education Journal. The International Journal of Early Childhood produced 31 puzzle media articles. Early Child Development And Care produced 12 articles. The Journal of Physics Conference Series produces 10 articles. ACM International Conference Proceedings Deries produced 9 articles. Child and Youth Care Form produces 7 articles. The European Early Childhood Education Research Journal produced 6 articles. Early Year, Frontears in Psychology, and the International Journal of Innovation Creativity produced 5 articles related to puzzle media. It can be said that the one that published the most articles related to puzzle media is the Early Childhood Education Journal with 129 articles.
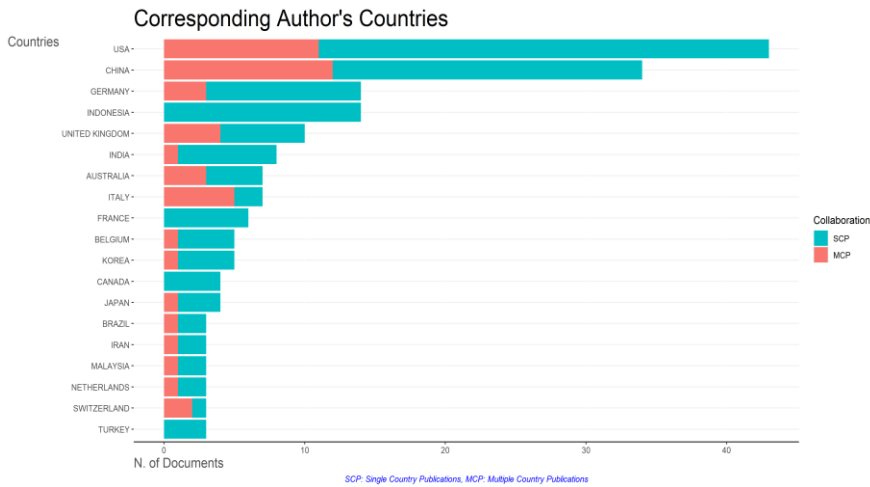
Most Relevant Countries

Figure 5: Most Relevant Countries

The country that contributed as a publisher or place of origin for the author in contributing articles related to puzzle media, namely the USA, contributed 45 published articles. China produced 30 articles. Germany and Indonesia contributed 15 articles. United Kingdom produced 10 articles. India published 9 articles. Australia and Italy each contributed 8 articles. France produced 7 articles. Belgium and Korea both published 6 articles. Canada and Japan produced 5 articles. Then Brazil, Iran, Malaysia, the Netherlands, Switzerland and Turkey produced 4 articles. It can be concluded that the country that discusses the most articles related to puzzle media is the USA with 45.
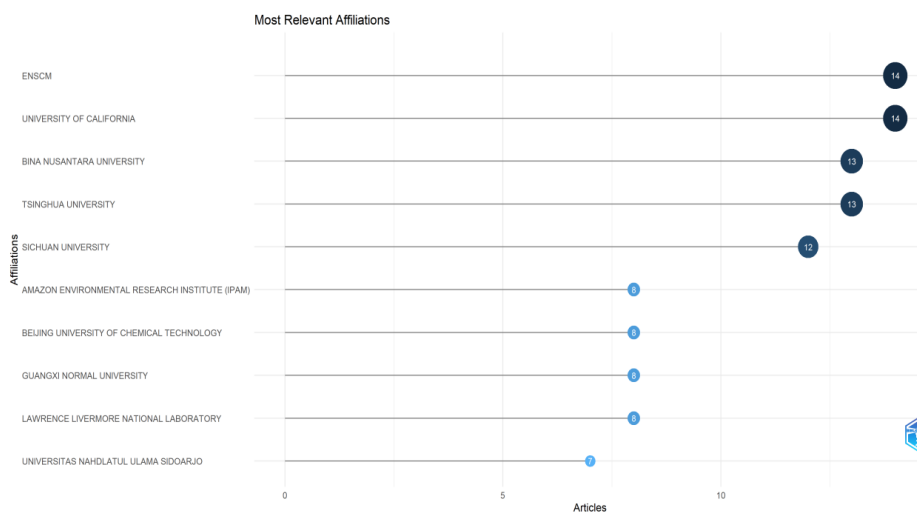
Most Relevant Affiliation

Figure 6: *Most Relevant Affiliations*

Affiliate is a university or education pursued by the author. Affiliates related to puzzle media articles are in first place, namely EHCM with 14 articles and also the University of California which equally contributed 14 articles. Bina Nusantara University was in second place which produced 13 works related to puzzle media and Tenghua University also produced 13 articles. Sichuan University ranked third producing 12 articles. Amazon Environmental Research Institute, Belung University of Chemical Technology, Guang Normal University, and Lawrence Liverence National Laboratory each produced 8 articles. And the last sequence was at Nahdatul Ulama University Sidoarjo producing 7 articles. It can be concluded that the universities that contributed articles related to puzzle media were EHCM and the University of California with 14 articles.
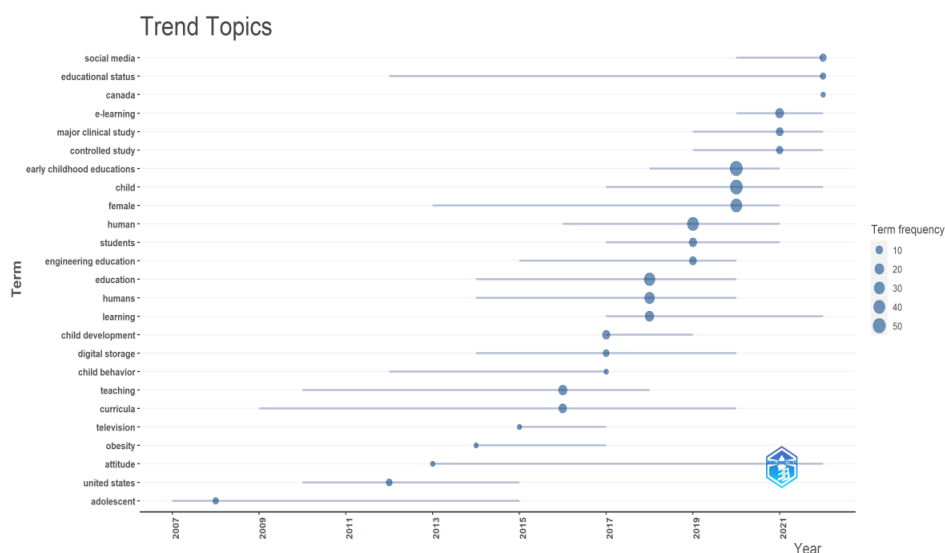
Trend Topics

Figure 7: Trend Topics

From the data, what can be concluded regarding topic trends is that the first place is social media which has fans from 2019 to 2023 with a frequency of 30. Second, educational status which started trending from 2012 to 2023 has a frequency of 20. Canada is the third trending point in 2023 with 10 frequencies. *E-learning* developed in 2019-2023 with a frequency of 20 in 2020. Major clinical study developed in 2018 to 2023 with a frequency of 20 in 2020. Controlled study developed in 2018-2023 with a frequency of 20 in 2020. Early childhood education will start transcribing in 2020-2023 with a frequency of 40. The line shows developments or hot topics that are currently developing and the colored circles show the number of articles related to that theme.
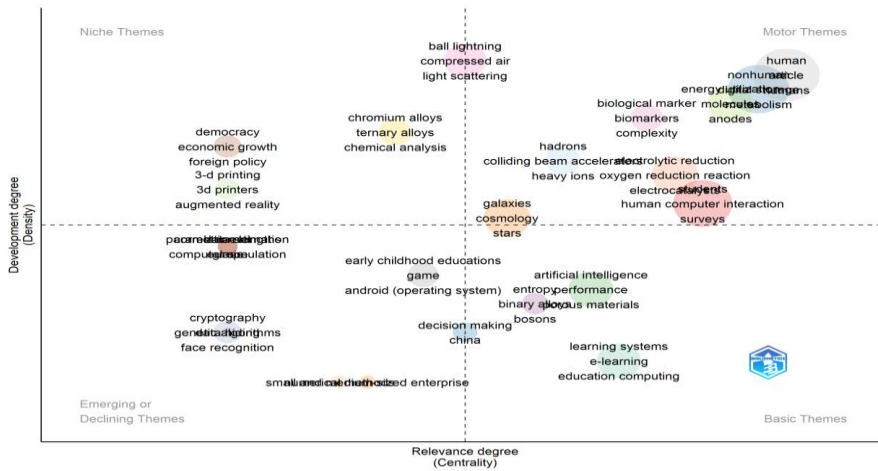
Thematic Map

Figure 9: Thematic Map

Thematic images have a rule, namely when the density shows the level of trend that is currently popular. In contrast to centrality, which moves further to the right, it becomes a relevant and important topic to study. In the topic of puzzle media, puzzles are basically a game. And "game" is at the bottom of the middle which shows that this research has not been studied much and is starting to progress or become popular. So it can be concluded that puzzle game media needs to be tested and is relevant to current education as well as being a fun teaching medium.
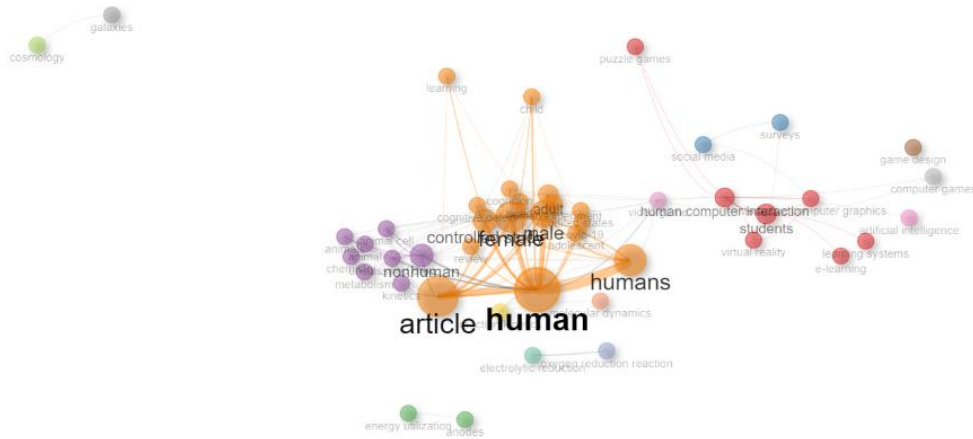
Co-Occurrence

Figure 10: *Co Occurrence*

The image above shows an exposed network. There are two networks in orange, namely child and learning. Then there is a red network that says puzzle games. In both orange and red networks, they are not connected by lines, which is the reason

this research was carried out. When the network is very thinly connected it is also an opportunity to research the topic because it has not been researched much.

Bibliometrics is a method related to data processing and related to measuring impact in research with a quantitative approach. In this case, quantitative and qualitative complement each other by displaying standard data and then describing it in their own language (Maya & Tafonao, 2021) . Bibliometrics has the function of describing data or displaying data in various forms such as images, tables, graphs. Where the image data presented already contains a lot of information related to the author, country, affiliation and journal source (Supinah & Soebagyo, 2022) . This research discusses the use of puzzle media for early childhood: bibliometric analysis. Producing various information, namely puzzle media experienced ups and downs, experiencing an increase in 2016 producing 100 and experiencing a drastic decrease in 2022 producing only 20 articles.

The country that produces puzzle media articles is in the USA with 45 articles. The anonymous author produced 125 articles. The most journal sources produced 129 articles published by the *Early Childhood* Education Journal. The author's affiliation is with EHSCM as many as 14 authors come from there. Then researchers began researching media for early childhood with a frequency of 40 and the theme of puzzle media for early childhood really needs to be studied more deeply and is relevant today. This research experiences various limitations because it uses the help of a formal analysis tool, namely Biblioshiny, which allows errors in identification. For this reason, it is hoped that the next author will discuss more about other parts of learning media for early childhood and can use other analysis tools such as *HistCite.*

CONCLUSION

From the results of the discussion above, a conclusion can be drawn that the puzzle media trend experienced increases and declines, in 2016 it became the peak of the most popular media and then experienced a decline. The USA was the country that produced the most articles with 45 articles. ESHCM was the largest affiliate producing 14 articles. The largest source of articles was published by the Early Childhood Education Journal, producing 129 articles. However, unfortunately the name of the author who wrote 129 articles was not detected. The puzzle media trend is a topic that is currently popular, so it is an opportunity to study it more deeply and is relevant to current education.

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