



Bibliometric Analysis: The Role of AI In PAI Learning Activity In The Modern Education Era

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Abstract. PAI is supporting learning which aims to instill religious characteristics in individual lives. We strive to support the advancement of sophisticated technology to play an important role in helping educators in shaping the character of the nation's children with religious knowledge and science and technology knowledge. This research aims to collect all relevant scientific views regarding the use of Artificial Intelligence (AI) as a means of supporting PAI learning at all levels of education in the current modern era. The research methodology used is to analyze data sets using bibliometric analysis methods. The research will be carried out by searching data from each scientific database which is input into indexes such as Scopus and Dimension, the data obtained will be analyzed bibliometrically on supporting software, namely Vosviewer, this software will provide a direct picture in the form of a network which provides an overview of the role of AI in supporting PAI learning with Bibliometric Analysis steps provides continuity in the continuous learning process. The results of the analysis were carried out in terms of Title, Author, Research Results and References, the points found revealed that AI has an important role in the progress of modern education today. The conclusion of this research states that the development and evaluation results of the use of AI in PAI learning are able to have a high impact on learning activity as revealed by the bibliometric analysis network. The limitation in this research is that the researcher only analyzed data only in Scopus and Dimension, therefore it is hoped that future researchers will analyze a wider range of data to increase the existence of the role of AI in supporting the effectiveness of PAI learning.

Keywords: Bibliometric Analysis, Learning Effectiveness, PAI.

1 Introduction

Changes in learning at this time in education are experiencing significant changes, this can be seen from the diversity that results from the processes or steps implemented in the learning process [1]–[3]. The changes felt in the educational development process and knowledge transfer have experienced significant progress in the learning process [4]–[6]. This is related to knowledge which plays a very important role in the translation of life into a sustainable phase of life. Where the absorption of knowledge acquired by individuals becomes a benchmark in knowing the resources and quality of

the quality of education they receive [7]–[9]. In receiving that knowledge, it will give an impression if an individual has advantages and superiority to create the embodiment of an educated and knowledgeable human being.

The increasing progress of education makes a benchmark for a nation or country in testing the ability of its human resources in its understanding of world education speculation. [10]–[12]. This is driven by the proven quality of education with technological developments as a support. With this, education has a connection between integrity and technology in facing challenges for change in all related aspects [13]–[15]. The changes that arise are an adjustment to the application of the patterns used in the learning process in an education, experiencing an estimated adjustment to new challenge factors with an increasing percentage of use. [16]–[18]. Therefore, the relationship between the use of technology and education is carried out in a deeper study to review the aspects that are the basis for the systematic excellence of the learning process that is carried out.

In its use, education today will not be separated from its name of technological assistance, this has become the main factor in evaluating education with integrity and progress [19]–[21]. The approaches used in carrying out a series of knowledge that will be taught will be linked to the use of technology [22]–[24]. Education can now be realized effectively if it can reach the stability of the use of modern technology which is increasingly developing rapidly. A series of principles in combining technology and education have begun to be implemented effectively, this can be seen from the various educational institutions that have a close relationship with technology which is used as a supporting tool in optimizing the learning process and related progress. [25]–[27]. This certainly creates a picture of the enormous use of technology that can show the impact of excellence for an education that pursues a learning process that is understood in a modern way and is based on science and technology.

This certainly creates a picture of the enormous use of technology that can show the impact of excellence for an education that pursues a learning process that is understood in a modern way and is based on science and technology. [27]–[29]. This will certainly be a big support and encouragement to minimize fraud that will arise from the use of technology in the learning system [7], [30], [31] This is also seen from the process of life over time that undergoes significant changes. Of course, this also makes the center of attention that must be observed for the continuation of the technology-based learning system to run well and effectively [32]–[34]. To obtain this analytical study, a search will be carried out using various sources of findings which will be used as references for the results of the collection of data that will be processed to obtain the desired discussion results in conducting this research.

The analytical study in this research discusses the use of technology in the form of AI (artificial intelligence) which has been published and has begun to be implemented to help the learning process take place in an educational institution. The use of AI as a publication or artificial media design at this time to support the learning process has become a common activity in attracting students' interest in learning in an effort to eliminate boredom when receiving learning. [35]–[37], in its application, AI is planned and applied as best as possible to increase the attractiveness in mastering the knowledge that has been covered. In the use and access of AI, it is still related to the reach of the use of the internet network as a media that helps access in the use of the

AI technology [38]–[40]. Of course, this use requires quite effective guidance and practice for the smooth application of AI as a supporting learning medium.

The continued use of this technology for guidance in publications on the use of technology provides sufficient attention to be able to provide educational outreach with perfect integrity [41]–[43], because support from various parties in supporting education to be more advanced provides its own value and enthusiasm for students who receive knowledge through the learning process that is applied [44]–[46]. This is also a form of support in advancing the nation's education in international education assessments, which are able to reveal that education in Indonesia is able to compete in the use of technology to support more effective and advanced learning process facilities in science and technology. [47]–[49]. This usage publication will provide an understandable overview of the learning process in the form of a spectacle that contains the intended learning elements.

The use of this publication is in the hope of developing the use of various technologies that can be put to good use by educational institutions as a means of supporting learning based on modern technology. And the role of AI in the advancement of educational activity can be assessed concretely, this is supported by advances in the world of education and changes in the current curriculum which provide an illustration of the significant demands for educators to have creativity. [50]–[52]. Judging from how the PAI learning process really has an interesting appeal in providing an understanding of the material to be conveyed through the help of AI. AI can be adjusted to be used in delivering material, understanding concepts, qiraah, and competency testing [53], [54]. Of course, this will provide a level of understanding that is easy to understand so that the learning process can be effective and interactive. Therefore, researchers want to examine the analysis of Bibliometric Analysis: The Role of AI in PAI Learning Activity in the Modern Education Era [55], [56]. Apart from that, the use of AI can support the accreditation of Indonesian education in the international education assessment arena. This has been proven by the various types of educational institutions that accommodate modern education with quite high levels of use of science and technology.

Monitoring the progress of how AI is used provides increased comfort and attractiveness in the learning acceptance process. As well as reviewing the extent to which AI plays a role in increasing the effectiveness of educators and students in its implementation, the researcher will carry out an analysis using biblioshiny analysis studies and bibliometric analysis. [57]. Through this analysis technique by researchers, it is hoped that they will be able to provide a significant picture to readers in seeing network access that identifies the role of AI in learning. PAI is able to provide effective existence support, with databases obtained as well as from collecting and reviewing scientific databases in various indexes that provide International journal publications support researchers to reveal the size of the network in revealing the extent to which AI in its development supports educational progress [24], [58], [59]. The hope in the use of this analysis is to help reveal the extent to which the facilities and learning process can be well received. In this analysis, researchers will obtain global mapping and graphical representations from several points of view that reveal the effectiveness of the use of AI in supporting the PAI learning process.

Data processing analysis will be taken from a database indexed in Scopus, Dimension. Sciencedirect [29], [60], [61]. The database results will be input into the R Stu-

dio and VOSviewer devices. In the R Studio data results, various very accurate analysis indices will be displayed, from author studies to references with graphic tables and global mapping. [62]–[64]. Meanwhile, VOSviewer will display a global mapping overview with a very high relevant range and will also provide cluster groups that provide an overview of the intended analysis. To input data from the 3 indexes taken. The database results found in the search will first be moved into RIS and CSV data [65]–[67]. This data processing will be input and will provide an overview of further discussion.

The analysis carried out will provide a significant discussion and qualitative descriptive explanation that has relevant data. This is supported because the researcher carried out a review of scientific data that was traced from publications in the last 5 years with international journal indexes. The results of the mapping description of the analysis carried out In doing so, it will provide a concrete explanation of how the use of video publications can play an important role in the learning process, especially in learning Arabic in higher education. Apart from that, the graphic mapping and global mapping that can be obtained will also be attached after carrying out biblioshiny and bibliometric analysis. Therefore, it will make it easier to draw conclusions from relevant research data carried out using bibliographic and bibliometric techniques. With this, we will know how intensive the role of AI is in the learning process, especially in PAI learning in the modern education era.

2 Methods

To obtain the intended research results, the researcher chose to review the data by searching data indexes from Scopus, Dimension, Sciencedirect. The results of the review of this index have provided a lot of insight into researching scientific data published in international journals [56], [68], [69]. And the database obtained has also been confirmed to be relevant to the search coverage of publications in the last 5 years, the data searched is related to the use of video as a support for the learning process, especially at the tertiary level. The results of the analysis data are expected to obtain concrete data to maintain the stability of the relevant level in the intended scientific work. The data review will be carried out later by transferring the data into RIS and CSV databases [70], [71]. This aims to make it easy to input the selected mapping image network device.

Therefore, this writing aims to educate about statements regarding the use of video publications to reveal the extent to which they are effective for use in the learning process. This is because the use of video increases students' interest in learning more quickly because it uses dedicated viewing tactics [72]–[74]. To reveal the relevance of the use of video publications in learning, researchers conducted data searches on international journal indexes that attach scientific databases that have previously conducted research on the use of videos as supporting learning publications. [75], [76]. After conducting a review, the researchers decided to take data from databases on Scopus, Dimension, Sciencedirect. This is because this index is trusted to publish scientific databases that refer to international journals.

Data processing will be taken from Scopus as much as 500 data, Dimension as much as 500 data, and from Scimedirect also as many as 500 scientific databases as well. The data will be processed by transferring the file into RIS data for input when using VOSviewer, while for R Studio the data will be transferred in the form of a CSV database. [51], [77]. For use on VOSviewer, the data will be displayed in the form of clusters that provide a global mapping view with various model plans from the system provided, and for data input on R Studio will provide a general overview in detail from the title to the collection of reference data and be sure to have relevant data that is concrete. Also in the acquisition of the results of data processing will be obtained the index pattern of published data which is referred to the publication span of the last 5 years.

Concrete explanatory results certainly require relevant data processing, therefore researchers pay close attention to the databases they find that have been published in international journals. This aims to ensure that there are no errors in presenting data processed using bibliographic and bibliometric analysis [78]–[80]. And from the results of searching and processing data that has been input, the researcher found the conclusion that AI has an important role in supporting the existence of educational progress in the era of modern educational progress, the use of VOSviewer and R Studio is supporting software in assisting bibliographic and bibliometric analysis, this is because The results of the graphic data and mapping images provided are very accurate and provide visual images that are creative and easy to understand. And it was also found in previous research that it was relevant to also use analytical techniques and use the same tools in processing data, which became an attraction for researchers in processing comparative data to access relevant data in the following period.

3 Results and Discussion

3.1 Results

The implementation of the research that had been planned has finally reached the stage of concrete explanation. The results of the data taken on dedicated index pages and published in international journals are able to provide a picture of relevant data. For the research carried out, the researcher chose to test the data by carrying out biblioshiny and bibliometric analysis techniques in exploring topical studies that discuss the use of AI. In the review, researchers developed data processing to draw insights that provide conclusions about the role of AI in the existence of educational progress today.

In reviewing the data, researchers also carried out strict data analysis in selecting published data sources to ensure that the relevant level of use did not decrease. This was supported because the scientific database was taken from published data published in the last 5 years. Therefore, researchers have obtained accurate translation and research results with data sources that definitely refer to reference standards for published data indexed in international journals. In the results of the study, researchers also conducted further investigations on how aspects of AI really provide an overview of its effectiveness in terms of its advantages and disadvantages in supporting a

learning process. The results of the review also found that the use of AI is still contaminated by various factors which include obtaining data on its advantages and disadvantages to be used as supporting media in the learning process.

Researchers found that the presentation of learning information summarized using AI was also well structured, of course the application of several concepts provided very positive direction to make it a direct interactive learning tool. And from the results of the review it was also found that students' learning abilities were also increasing with AI-based artificial intelligence methods, the content of visual robot elements, of course this will be able to show the dedication of using technology which is very useful in the world of education in advancing the quality of education and students' knowledge. . The application concept contained in this video uses the concept of understanding by providing an appeal that educators attach to supporting the learning process based on modern technology.

The use of AI as a learning publication based on artificial robots, really helps students in delivering learning material with the same repetition and can be accessed at any time, besides this use also becomes a development forum for educators to be more skilled and effective in delivering increasingly conductive learning. Of course, this will make the learning experience enjoyable because educators not only apply learning using the lecture method directly, but dedicate it to new things related to technology, creating a more interactive, creative, effective and practical learning process.

3.2 Discussion

Realizing the results of knowledge about the role of AI as a learning support media, especially in PAI learning. Researchers carry out scientific data processing studies by carrying out biblioshiny and bibliometric analysis studies in an effort to get a global mapping picture and a graphic mapping picture. The study of scientific databases in this research, researchers carried out data searches on the Scopus, Dimension, Scencedirect indexes which have been accommodated with international journal publications, of course the indexes from journals which have been accommodated internationally will provide relevant scientific databases to be used as considerations and illustrations. research being carried out. The results of the data found in this index will be processed and data transfer will be carried out in the form of RIS and CSV data in order to make it easier to input the data that will be input on the R Studio and VOSviewer devices. As a result of inputting the data, the researcher has obtained an overview of the analytical data which will be discussed below as follows:

Results of Biblioshiny's Analysis of the Role of AI in Learning.

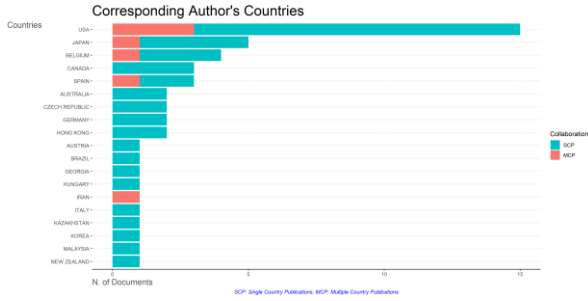


Fig. 1. Corresponding Author's Countries

It can be seen from the mapping above that it shows how the relationships and collaboration between fellow authors or writers are in choosing allocations in the target international journal publications. You can see that the journals that have the highest relevant index in carrying out the bullishment of the scientific data they carry out research are international journals. those in the USA. This corresponding author proves that many authors are united by grouping together to publish their scientific work on research by choosing foreign journal indexes to expand their work in the international research arena. And from researching scientific data carried out by researchers, there are also many scientific databases originating from Indonesia which are published using international journals outside their country.

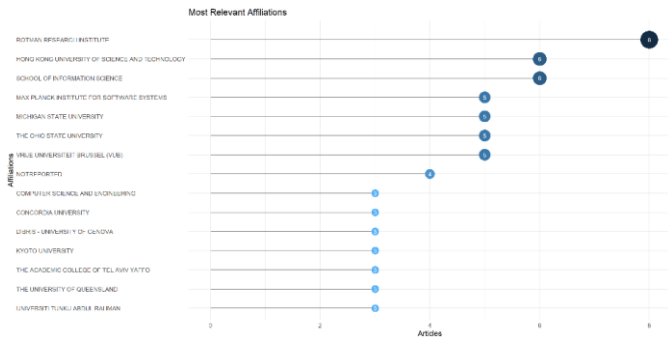


Fig. 2. Relevant Affiliate Results

This image is an illustration of the level of relevance of data that is indexed for publication in international journals. From the image above, it can be seen that the use of journal indexes that are intended to get high levels of relevant reviews is indeed publishing scientific data in USA journal indexes. The index range with other journals which are also international journals is not much different, it just has a percentage difference of around 20% with the journal index below it. Therefore, every data published on the pages of international journals has been ensured to be relevant as a consideration and reference in conducting the same research. The higher the relevance of a scientific database, the more accurate the source of data or information that will be used as a reference in conducting the same research.

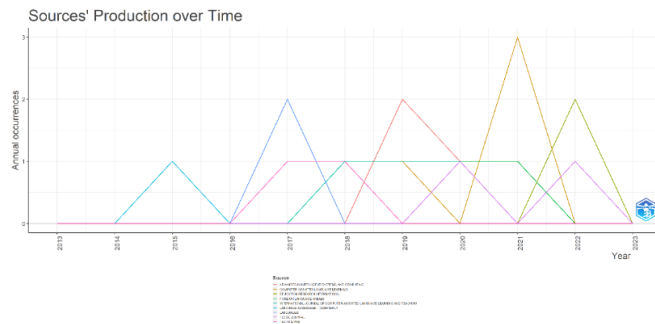


Fig. 3. Sources Production Over Time

The exploration of the extent to which the productivity of previously relevant researchers has supported renewal in their research at a new level of relevant data. It is very clear that in the role of AI which is reviewed in journal indexes which are already at the international journal level, the use of AI is used to various benefits, and can be seen from the images that have been displayed which provide guidance in writing. Of course, this is proof that AI plays an important role in the learning process.

Results of Bibliometric Analysis of the Role of AI in Learning.

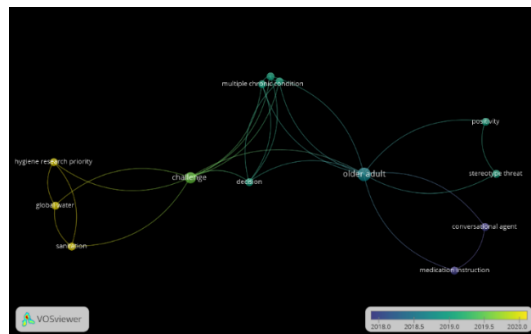


Fig. 4. Bibliometric Analysis Results of the Role of AI in Learning on Scopus data

The following discussion is about how bibliometric analysis can reveal facts about how AI learns globally in the form of a mapping network. These results were obtained by searching scientific databases taken from Scopus, the databases taken were 500 scientific databases which refer to international journals, therefore the index referred to has ensured that the data found is relevant. The results of the data explain that if there are 20 cluster groups grouped within each use of AI which is summarized in each particular field, of course it is again found that the use of AI is more likely to be used as a media to support learning in an educational institution. This can be seen from the extent to which the role of AI is able to improve the quality of learning with

In the results of the description above, it is explained that this use is indeed accommodated and is very suitable for use in the learning process in educational institutions, especially at the tertiary level, this can be seen from the distribution of clusters which is only 35 clusters, of course this result again raises conclusions about the use This video is very relevant and accurate according to the scientific database that researchers have previously published, and it is hoped that the use of AI in learning will further encourage students' interest in learning, especially for students in higher education, besides supporting student productivity in increase the quality of knowledge regarding modern technological advances.

Discussion of the analysis results from the use of AI in PAI learning reveals the fact that the continuous learning process with the help of artificial intelligence can produce more effective learning outcomes. In its use, this has been proven in many previous relevant studies regarding how the role of AI is a dedication that provides space for publication and implementation of effective, sustainable learning in the era of modern educational progress. The results of this research have helped researchers provide a relevant picture of the research carried out.

4 Conclusion

These are the results of an analytical study regarding the role of AI as a publication medium for artificial robots in the learning process, especially the topic of this research, namely PAI learning. The results of this analytical study were carried out by carrying out an analytical study process with binliometric and bibliographic analysis. The database results as an illustration of research views are taken from databases indexed in international journals published in international journals on the Scopus, Dimension and Sciencedirect indexes. Data processing in biblioshiny analysis will carry out data transfer in the form of a CSV data base, while for bibliometrics it will be transferred into the form of a RIS database. The device to access this input is taken from the VOSviewer and R Studio devices. After the input is carried out, the research results are obtained in the form of a global graphic and bibliometric mapping image as attached to the point in the results and discussion. Therefore, it can be revealed that AI plays a very important role in the progress of the effectiveness of educational progress, especially in the progress of modern education. The existence that can be seen from the description of the analysis research network above is that the progress of science and technology in the current era of education is able to become a forum for supporting learning with the help of intelligent robots that are Getting to know AI is one form of educators trying to be creative in developing IT-based learning. And it is hoped that this will be research that continues to support the relevant level of its use as a publication media that is utilized for the learning process, especially in PAI learning to achieve an integrated and progressive educational learning process in the field of science and technology.

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