JURNAL UPI

Indonesian Journal of Teaching in Science

IJOTIS

Journal homepage: http://ejournal.upi.edu/index.php/ IJOTIS/

Bibliometric Analysis of Educational Research in 2017 to 2021 using VOSviewer: Google Scholar indexed Research

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ABSTRACTS

Education is the study of a group of people's knowledge, abilities, and habits, which is passed down from generation to generation through teaching, training, or research. The goal of this study is to combine mapping analysis with VOSviewer software to undertake a bibliometric analysis of research in the field of education. To acquire research data, the reference manager application is employed. The information gathered is based on search results for the term "education." From the search results, we found 993 articles that were published between 2017 and 2021. According to the findings, the number of studies in 2017 was 232, grew to 263 in 2018, and then continued to fall from 2019 to 2021. In 2021, there will be 39 education-related research publications published in Google Scholar indexed journals. The fundamental reason is that the Covid-19 pandemic has had a significant impact on educational research, as practically everything is focused on Covid-19. The value of bibliometric analysis in providing analytical data about what happens is demonstrated in this work. This study is meant to assist and serve as a resource for researchers in researching and identifying research themes.

ARTICLE INFO

Article History:
Received 25 Nov 2021
Revised 20 Des 2021
Accepted 13 Jan 2022
Available online 14 Jan 2022

Keyword:
Bibliometric,
Education,
Google Scholar,
VOSviewer.

1. INTRODUCTION

Bibliometrics data analysis has been done a lot lately. Analysis of bibliometric data that can be visualized is needed in line with the development of existing research. Visualizing data is called mapping.

Several mapping tools can be used, one of which is VOSviewer. VOSviewer is a software that can be used in mapping bibliometric data analysis (Al Husaeni & Nandiyanto, 2022; Hamidah *et al*., 2020; Mulyawati & Ramadhan, 2021). Several types of bibliometric mapping can be done with VOSviewer including co-authorship maps, citation maps, co-citation maps, bibliographic coupling maps, and co-occurrence maps (Van & Waltman, 2013; Nandiyanto *et al*., 2021).

One of the areas of research that requires bibliometric analysis is education. Education is a very important factor in life (Bhardwaj, 2016; Sullivan *et al*., 2003). Education can grow educated people who can build developed countries. Education is one of the directions that can guide humans to navigate life in the world. Education is a conscious and systematic effort to achieve a standard of living or for better progress. Education is a learning process for students to be able to understand, understand, and make people more critical in thinking.

There have been many studies on education including research conducted by Shaturaev on financing and management of Islamic education (Shaturaev, 2021), research on the development of education during the Covid-19 period (Chakraborty *et al*., 2021; Bergdahl & Nouri, 2021; Chang *et al*., 2021), education research conducted by Szymkowiak *et al*. (2021) regarding the determination of how technology and the internet affect the acquisition of education by generation Z. Educational research on the social field (Duanxian, 2021) and many other studies in the field of Education.

However, from these previous studies, there has been no research that discusses bibliometric analysis with the mapping analysis method in research in the field of Education for the last 5 years using VOSviewer to obtain information on the development and novelty of research on education that has been carried out. Therefore, this research was conducted with the aim of reviewing the development of research from the field of Education for the last 5 years (2017 to 2021) using the VOSviewer software mapping tool. By doing this research, it is hoped that this will be the starting point for determining the research theme, especially those related to research.

2. METHODS

The article data used in this study is based on research from publications that have been published in Google Scholar-indexed journals. The Google Scholar database is used in this study since it is free to access.

To collect research data, the Publish or Perish 7 reference manager tool was employed. Data collection was carried out in January 2022. In doing a literature review on the chosen theme, the phrase "Publish or Perish" is employed. Each article's data must be indexed by Google Scholar and in the format of journal articles, as well as comply with the search for the theme needed in this study, which must be backed up into the VOSviewer file. In our earlier study, we provided detailed information about VOSviewer and library search (Al Husaeni & Nandiyanto, 2022).

DOI: http://dx.doi.org/10. 17509/xxxx.xxxx
p- ISSN 2776-6101 e- ISSN 2776-6152

Each article was examined for this study, and articles linked to education were chosen. We looked for Publish or Perish data using the keyword "Education" and filtering by title and abstract. As a result, 993 articles were gathered and evaluated based on the chosen topic. The articles used in this study were published between 2017 and 2021.

After that, the articles are stored in *.ris format. Then, in the form of a bibliometric map, we use the VOSviewer tool to visualize and analyze trends. We filter the terms that will be included in the VOSviewer network mapping visualization. The article data was mapped using the database sources that had been generated. There are three forms of data mapping: network visualization, density, and overlay.

3. RESULTS AND DISCUSSION

The growth curve for research on education from 2017 to 2021 is shown in **Figure 1**. According to **Figure 1**, the number of publications published in educational research has increased from 232 to 263 in the last five years, i.e. from 2017 to 2021.

The year with the highest total was 2018. In 2019 there were 242 articles. In the year 2020, there were 217 articles, which was a decrease from the previous year. In 2021, the number of articles dropped dramatically to 39.

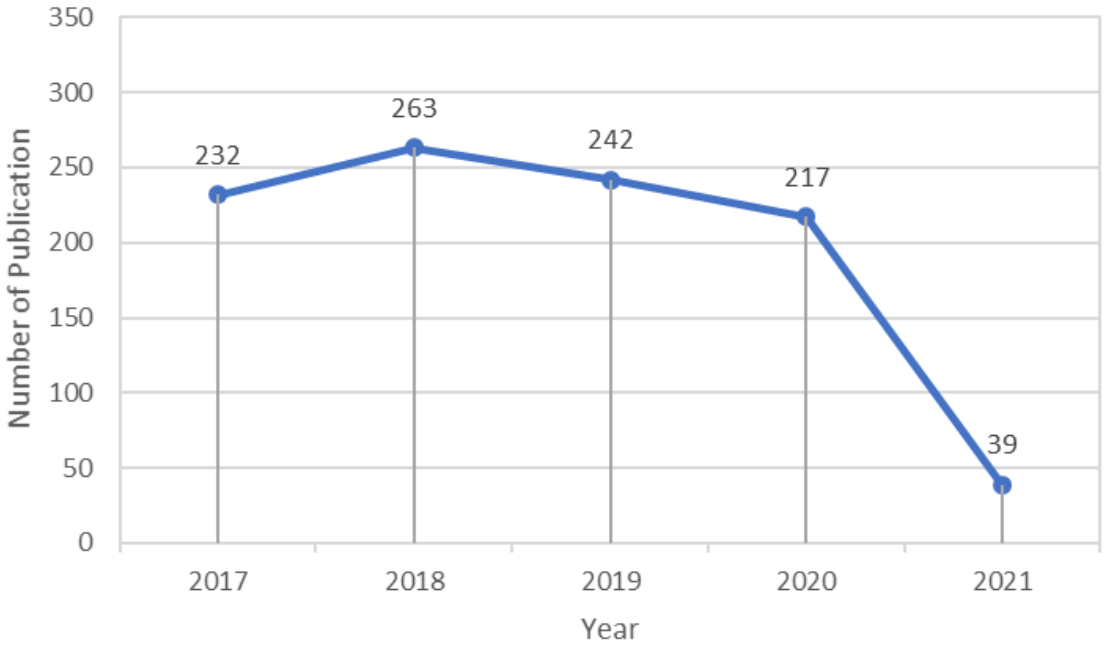

Figure 1. Level of development of education research.

Mapping analysis was carried out in this study. Mapping analysis was carried out to show the relationship between the terms contained in education research (Al Husaeni & Nandiyanto, 2023a). Each connection is described in the network visualization (Nandiyanto & Al Husaeni, 2021; Al Husaeni & Nandiyanto, 2023b). We also determine some provisions in the screening of terms in research in the field of Education. The minimum number of occurrences of a term is 10 times. Thus, from the 6441 terms found, only 171 terms will be used in visualizing publication data.

DOI: http://dx.doi.org/10.17509/xxxx.xxxx
p-ISSN 2776-6101 e-ISSN 2776-6152

The visualization network showed the relationship between the terms that have been shown (Al Husaeni & Nandiyanto, 2023c). The link between the concepts is depicted in **Figure 2**. In the network visualization, relationships are represented by networks or lines that connect terms. The clusters of terms in education research are depicted in **Figure 2**.

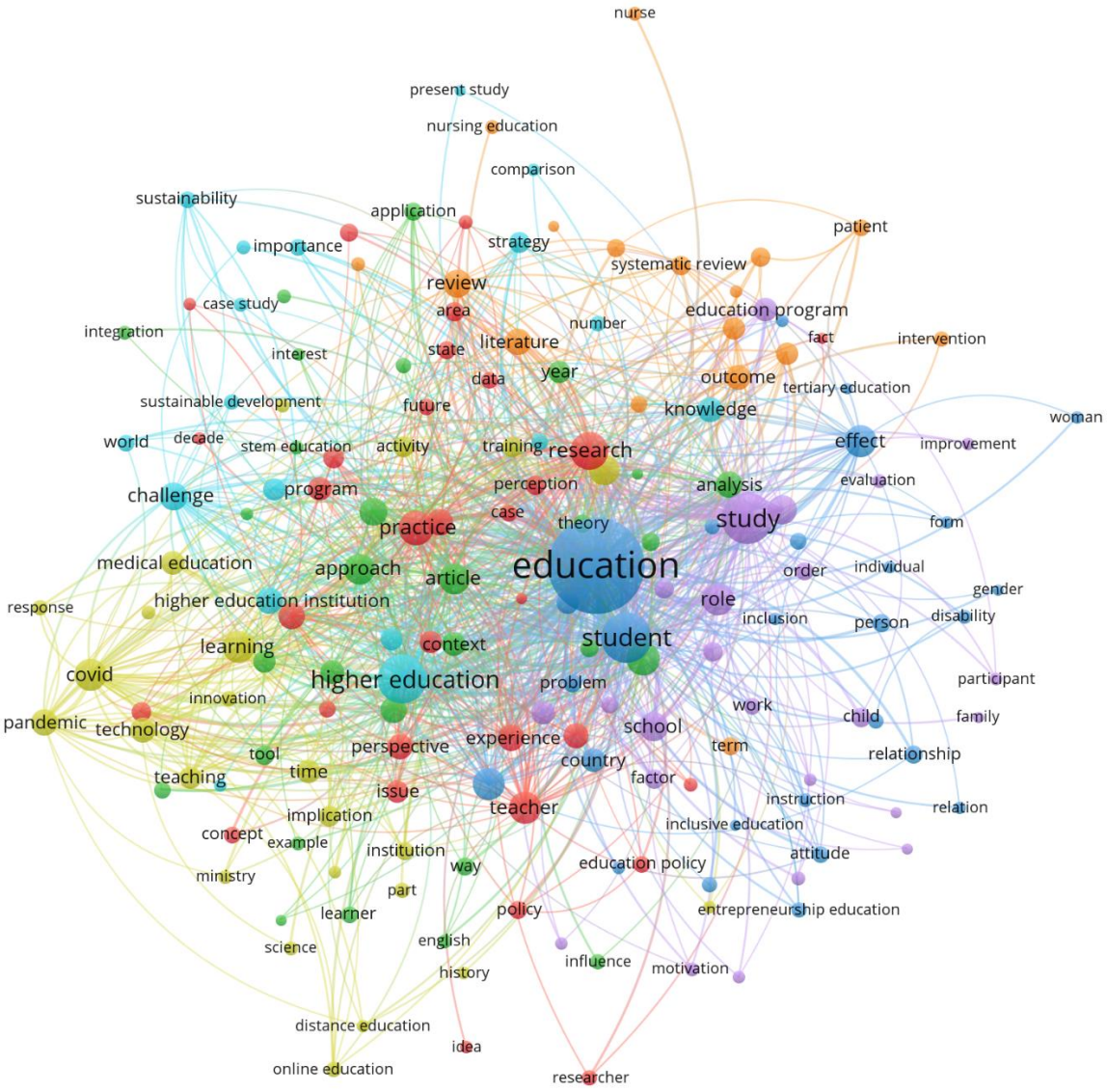

Figure 2. Network visualization of education research.

This study's network visualization is separated into several clusters (see **Figure 3**):

(i) Cluster 1 has 32 items, the items are access, area, case, college, concept, data, decade, education policy, educator, end, experience, fact, field, future, goal, idea, issue, opportunity, perception, perspective, pharmacy education, policy practice, program, quality, research, researcher, state, teacher, teacher education, teacher education program, and university.

(ii) Cluster 2 has 29 items, the items are analysis, application, approach, article, benefit, chemistry education, context, development, effort, English, example, focus, framework, influence, integration, interest, learner, model, principle, social medium, stem education, system, theory, tool, trend, united states, use, way, and year.

(iii) Cluster 3 has 27 items, the items are attitude, country, difference, disability, education, effect, entrepreneurship education, form, gender, inclusion, inclusive education, individual, instruction, nature, need, paper, person, problem, relation,

DOI: http://dx.doi.org/10. 17509/xxxx.xxxx
p- ISSN 2776-6101 e- ISSN 2776-6152

relationship, special education, student, support, tertiary education, view, vocational education, and woman.

(iv) Cluster 4 has 24 items, the items are activity, china, covid, dental education, distance education, education institution, education sector, history, impact, implication, innovation, institution, learning, medical education, ministry, online education, ministry, online education pandemic, part, response, science, teaching, technology, time, and training.

(v) Cluster 5 has 24 items, the items are character education, child, community, education program, education system, engagement, evaluation, factor, family, implementation, improvement, Indonesia, level, motivation, order, participant, primary education, role, school, secondary education, skill, study, value, and work.

(vi) Cluster 6 has 18 items, the items are author, case study, challenge, change, comparison, higher education, higher education institution, importance, knowledge, lesson, number, present study, process, strategy, sustainability, sustainable development, understanding, and world.

(vii) Cluster 7 has 17 items, the items are assessment, care, effectiveness, evidence, faculty, growth, interprofessional education, intervention, literature, nurse, nursing education, outcome, patient, review, systematic review, term, and type.

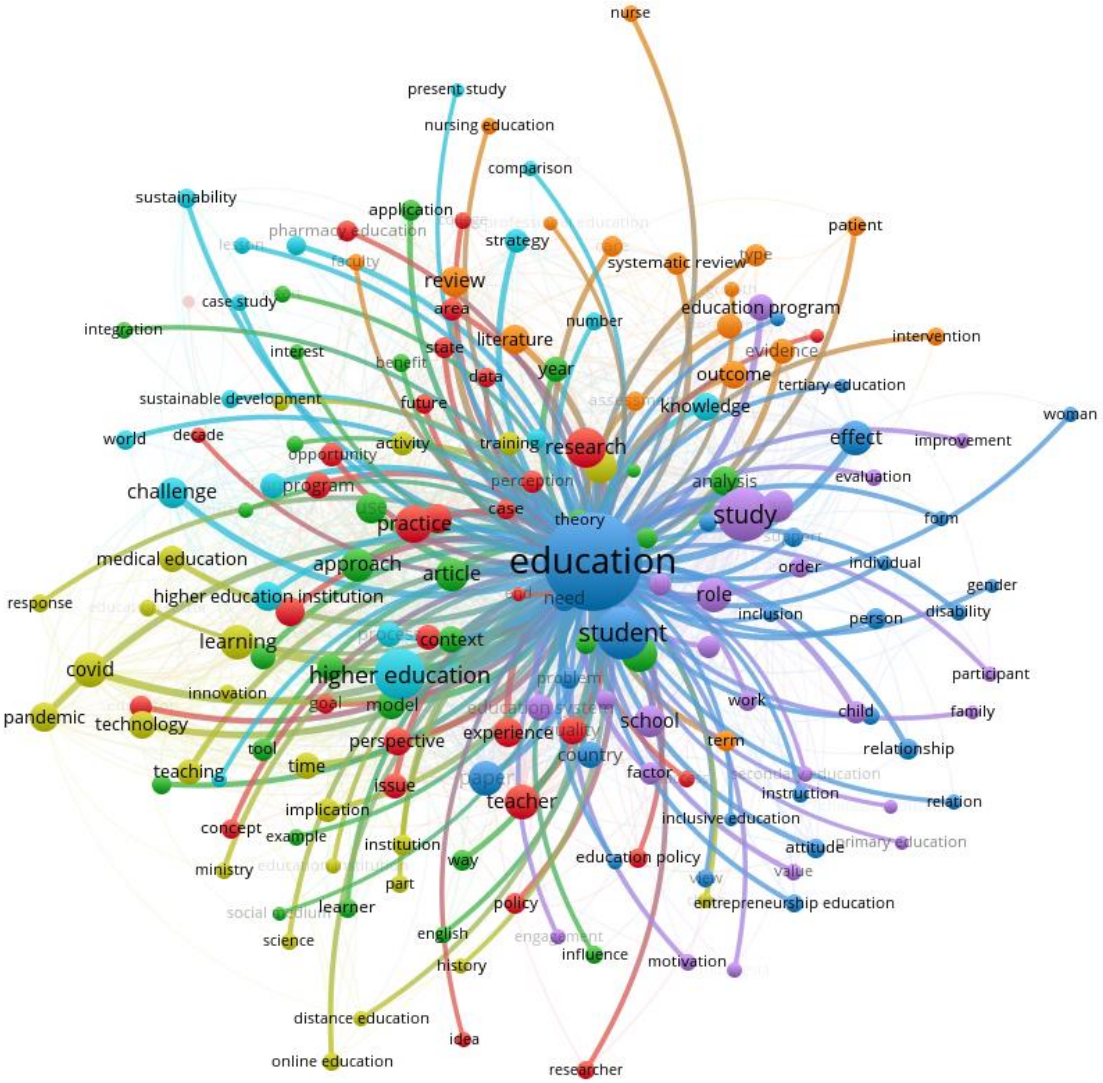

Figure 3. Network Visualization of education term.

DOI: http://dx.doi.org/10.17509/xxxx.xxxx
p-ISSN 2776-6101 e-ISSN 2776-6152

From the network visualization data, it is known that education is related to many terms. The education term is included in cluster 3 with a total of 7453 links and a total link strength of 21219. **Figure 4** shows the 10 highest terms connected to the education term, namely quality, approach, impact, development, learning, practice, effect, higher education, student, and study. The highest correlation is found in the relationship between education and study with a total link strength of 143. Education and student term have a total link strength of 137, education and higher education is 112 total link strength, education and effect is 68 total link strength, education and practice is 64 total link strength is the same as the relationship between education and learning. Total link strength education and development is 61 total link strength, education and impact is 53 total link strength and education and approaches 51 total link strength. The lowest relationship is the relationship between education and quality, which has a total link strength of 40.

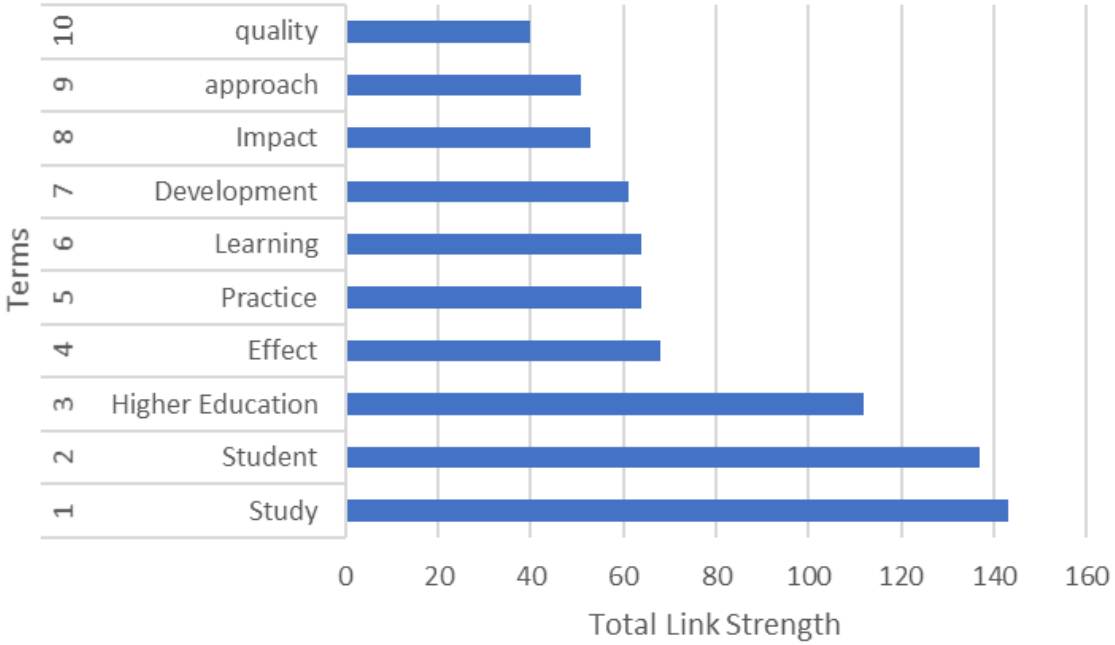

Figure 4. Total link strength term education and the other terms.

4. CONCLUSION

The purpose of this study was to conduct a bibliometric analysis of research in the field of education using mapping analysis and VOSviewer software. The reference manager application is used to collect research data. Data was compiled using search results for the phrase "education". We identified 993 items in search results published between 2017 and 2021. According to our findings, there were 232 studies in 2017, 263 in 2018, and then a steady decline from 2019 to 2021. Research on education was divided into 7 clusters. The term education is included in cluster 3. There are several terms related to education, namely study, student, high education, effect, practice, learning, development, impact, approach, and quality. The term "Education" has the highest relationship with the term "Study".

DOI: http://dx.doi.org/10. 17509/xxxx.xxxx
p- ISSN 2776-6101 e- ISSN 2776-6152

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

6. REFERENCES

Al Husaeni, D. F., and Nandiyanto, A. B. D. (2022). Bibliometric using Vosviewer with Publish or Perish (using google scholar data): From step-by-step processing for users to the practical examples in the analysis of digital learning articles in pre and post Covid-19 pandemic. *ASEAN Journal of Science and Engineering*, *2*(1), 19-46.

Al Husaeni, D. F., and Nandiyanto, A. B. D. (2023a). Mapping visualization analysis of computer science research data in 2017-2021 on the google scholar database with vosviewer. *International Journal of Informatics Information System and Computer Engineering*, *3*(1), 1-18.

Al Husaeni, D. N., and Nandiyanto, A. B. D. (2023b). A bibliometric analysis of vocational school keywords using vosviewer. *ASEAN Journal of Science and Engineering Education, 3*(1), 1-10.

Al Husaeni, D. N., and Nandiyanto, A. B. D. (2023c). Bibliometric analysis of high school keyword using VOSviewer indexed by google scholar. *Indonesian Journal of Educational Research and Technology*, 3(1), 1-12.

Bergdahl, N., and Nouri, J. (2021). Covid-19 and crisis-prompted distance education in Sweden. *Technology, Knowledge and Learning*, *26*(3), 443-459.

Bhardwaj, A. (2016). Importance of education in human life: A holistic approach. *International Journal of Science and Consciousness*, *2*(2), 23-28.

Chakraborty, P., Mittal, P., Gupta, M. S., Yadav, S., and Arora, A. (2021). Opinion of students on online education during the COVID-19 pandemic. *Human Behavior and Emerging Technologies*, *3*(3), 357-365.

Chang, T. Y., Hong, G., Paganelli, C., Phantumvanit, P., Chang, W. J., Shieh, Y. S., and Hsu, M. L. (2021). Innovation of dental education during COVID-19 pandemic. *Journal of Dental Sciences*, *16*(1), 15-20.

Duanxian, W. (2021). The internal examination of ideology and politics education in colleges and universities under the perspective of social subject research method. *Journal of Educational Theory and Management*, *5*(2), 96-98.

Hamidah, I., Sriyono, S., and Hudha, M. N. (2020). A Bibliometric analysis of Covid-19 research using VOSviewer. *Indonesian Journal of Science and Technology*, *5*(2), 209-216.

Mulyawati, I. B., and Ramadhan, D. F. (2021). Bibliometric and visualized analysis of scientific publications on geotechnics fields. *ASEAN Journal of Science and Engineering Education*, *1*(1), 37-46.

Nandiyanto, A. B. D., Al Husaeni, D. N., and Al Husaeni, D. F. (2021). A bibliometric analysis of chemical engineering research using vosviewer and its correlation with covid-19 pandemic condition. *Journal of Engineering Science and Technology*, *16*(6), 4414-4422.

DOI: http://dx.doi.org/10.17509/xxxx.xxxx
p-ISSN 2776-6101 e-ISSN 2776-6152

Nandiyanto, A. B. D., and Al Husaeni, D. F. (2021). A bibliometric analysis of materials research in Indonesian journal using VOSviewer. *Journal of Engineering Research*. *9*(ASSEEE Special Issue), 1-16.

Shaturaev, J. (2021). Financing and management of islamic (madrasah) education in Indonesia. *Zeszyty Naukowe Politechniki Częstochowskiej Zarządzanie*, *42*(1), 57-65.

Sullivan, A. M., Lakoma, M. D., and Block, S. D. (2003). The status of medical education in end-of-life care. *Journal of General Internal Medicine*, *18*(9), 685-695.

Van Eck, N. J., and Waltman, L. (2013). VOSviewer manual. *Leiden: Univeristeit Leiden*, *1*(1), 1-53.

DOI: http://dx.doi.org/10. 17509/xxxx.xxxx
p- ISSN 2776-6101 e- ISSN 2776-6152