



A Bibliometric Analysis of Vocational School Keywords Using VOSviewer

Dwi Novia Al Husaeni, Asep Bayu Dani Nandiyanto*

Universitas Pendidikan Indonesia, Bandung, Indonesia

* Correspondence: E-mail: nandiyanto@upi.edu

ABSTRACTS

A vocational school is a secondary education institution that prepares students to work in their fields of study. The goal of this study was to combine mapping analysis with VOSviewer software to conduct bibliometric engineering research at a vocational school. VOSviewer and Publish or Perish were the applications used in this study. "Vocational School" is the research's keyword. Based on the findings of a search of 990 relevant articles published between 2017 and 2021. According to the findings, research on vocational schools decreased from 2017 to 2020 before increasing in 2021. The importance of bibliometric analysis in providing data analysis about what phenomena occur is demonstrated in this study. It is hoped that this research will assist and serve as a reference for researchers in conducting and determining the research theme to be pursued.

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1. INTRODUCTION

Vocational is a term that refers to a specific skill or set of skills (Allais, 2012). A school is a place where students or pupils are taught under the supervision of educators or teachers. To create students who are progressing after experiencing the process through learning, most countries have a formal education system that is generally mandatory. As a result, a vocational school is a secondary education institution that prepares students to work in their fields of study.

Improvements to vocational schools can be made by enhancing existing infrastructure, hiring qualified educators in their fields, and raising the quality of graduates (Maryanti *et al.*, 2020). According to the needs of the field of interest, vocational schools have five elements of competence: community needs, workplace needs, professional needs, future generations' needs, and knowledge (Schaap & de Brujin, 2018).

The goal of establishing a vocational school is to prepare students to enter the workforce and compete in the future. Furthermore, vocational schools serve as "acculturation" (adjustment) and "enculturation" centers (carrier of change). As a result, vocational education must not only be adaptable to change but also proactive.

Research on Vocational School has been done by many previous researchers. These studies include research on how to prepare vocational students for entrepreneurship conducted by Apriana *et al.* (2019), research on curriculum development in science education in vocational schools by Maryanti and Nandiyanto (2021), research on the urgency of online learning media during a pandemic in vocational schools in Indonesia by Huwaidi *et al.* (2021), research on learning media in vocational schools by Prasasti *et al.* (2019); Saputra *et al.* (2018); and Prastiyo and Purnawan (2018), research on results obtained from vocational schools by Newhouse and Suryadarma (2011), research on how to understand Archimedes' law for secondary vocational school students with hearing loss by Hidayat *et al.* (2020), research on how to improve vocational school students' understanding of heat transfer by Nandiyanto *et al.* (2020), research on e-modules for making briquettes from melinjo shells for vocational school students by Nandiyanto *et al.* (2020) and other studies that have been carried out by previous researchers. However, a bibliometric analysis of vocational schools is still lacking in the many studies on vocational schools that have been conducted by many researchers, particularly research conducted using the VOSviewer software as a tool in conducting mapping analysis. This analysis is critical for determining a term's quantity and current status.

This study aims to conduct bibliometric vocational school engineering research by combining mapping analysis using VOSviewer software. This research is expected to help and become a reference for researchers in conducting and determining the research topics to be taken, especially those related to vocational school.

2. METHODS

The article data used in this study was research data from articles that have been published in journals that have been indexed by Google Scholar. In this study, we used Google Scholar because Google Scholar can be accessed for free, in contrast to Scopus which is paid so that readers cannot access it freely. However, we continue to use the Scopus database in our future research. The research data was obtained from the manager's reference application, namely, Publish or Perish (PoP). PoP was used in conducting a literature review on the theme that we take. Every article data must be indexed by Google Scholar. Detailed information about VOSviewer and library search has been described in the research conducted by Al Husaeni and Nandiyanto (2022).

In this study, each article was carefully selected and we only took articles related to heat transfer. We search for data in PoP by entering the keyword “Vocational School” according to the title, keywords, and abstract criteria. Thus obtained 990 articles assessed according to the chosen topic. The articles used in this study are articles published in the range of 2017 – 2021. The collected articles are then saved in *.ris format. Next, we use the VOSviewer application to visualize and analyze trends in the form of a bibliometric map. We mapped the article data from the database sources that had been prepared. Data mapping consists of three types, namely network visualization, density, and overlay. In addition, we also filtered the terms that will be included in the VOSviewer network mapping visualization.

3. RESULTS AND DISCUSSION

3.1. Research Developments in the Field of Vocational School

Figure 1 depicts the trajectory of vocational school research from 2017 to 2021. According to **Figure 1**, the growth of research on vocational schools has slowed over the previous four years, from 2017 to 2020. The reduction is visible due to the downward curve's form. According to the figures, there were 229 articles published in 2017. In the next year, 2018, the number of articles dropped by 24 to 208. In 2019 and 2020, the number declined even further. It declined by 13 articles in 2019 and 19 articles in 2020 compared to the previous year's number of articles published. This drop, however, did not continue in 2019, as the number of articles published on vocational schools climbed by 6 from the previous year to 182.

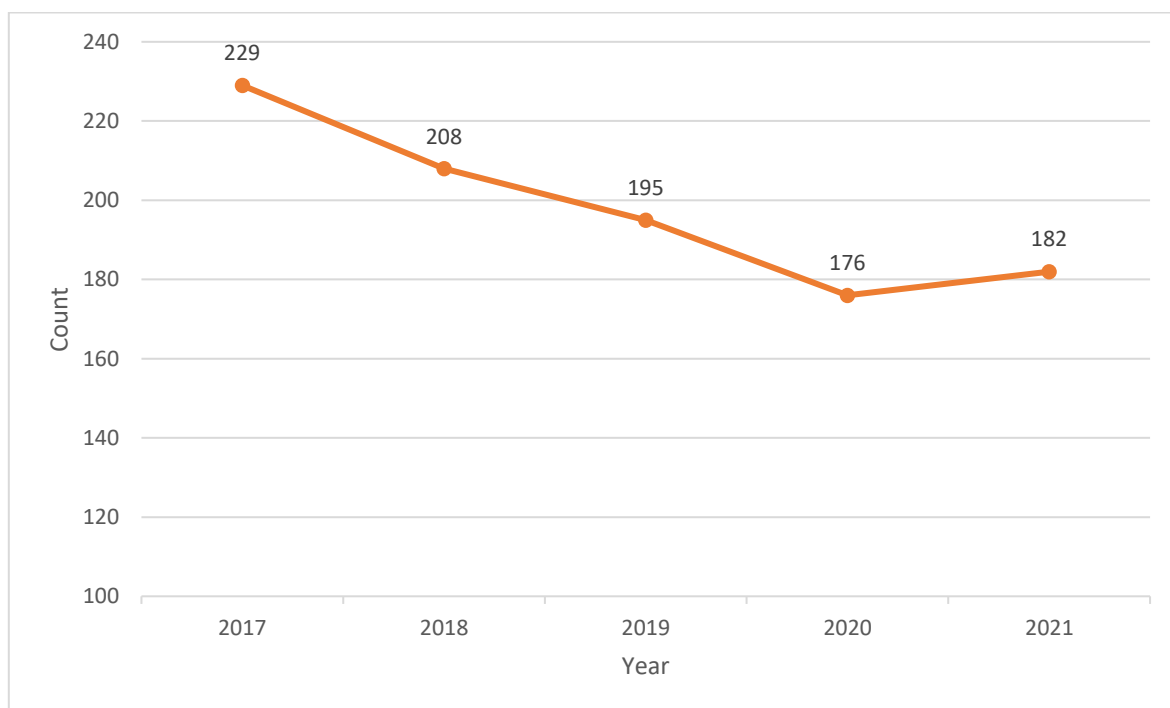


Figure 1. Developmental level of research on vocational school.

middle school, parent, participant, perception, person, physical activity, population, primary school, relationship, respondent, risk, sample, secondary school, survey, total, type, university, vocational high school student, vocational school, vocational student, and year. **Figure 3** shows one of the items in cluster 2, namely vocational school.

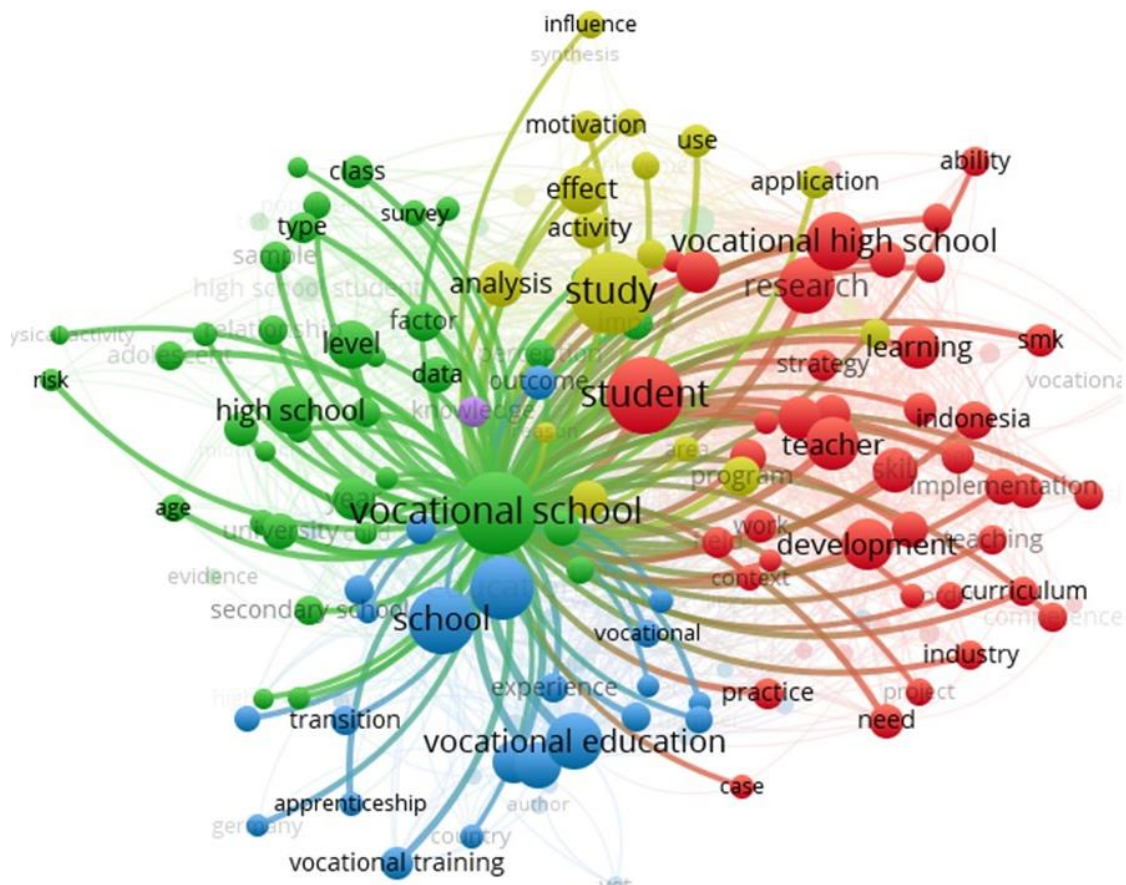


Figure 3. Network Visualization of Vocational School term in cluster 2.

3.2.3. Cluster 3

Cluster 3, which is marked in blue, consists of 37 items, the 37 items are apprenticeship, article, aspect, author, career, challenge, change, comparison, construction, country, course, difference, education, experience, form, Germany, group, importance, interview, number, outcome, paper, part, school, secondary vocational school, system, term, training, transition, turkey, upper secondary school, vet, vocational, vocational college, vocational education, vocational training, and young person. **Figure 4** shows one of the items in cluster 3, namely vocational school.

3.2.5. Cluster 5

Cluster 5 which is marked in purple consists of 1 item the one item is knowledge. **Figure 6** shows one of the items in cluster 5, namely knowledge. Knowledge has relations to the student, vocational school, vocational high school, school, vocational education, teacher, level, and development, as well as study.

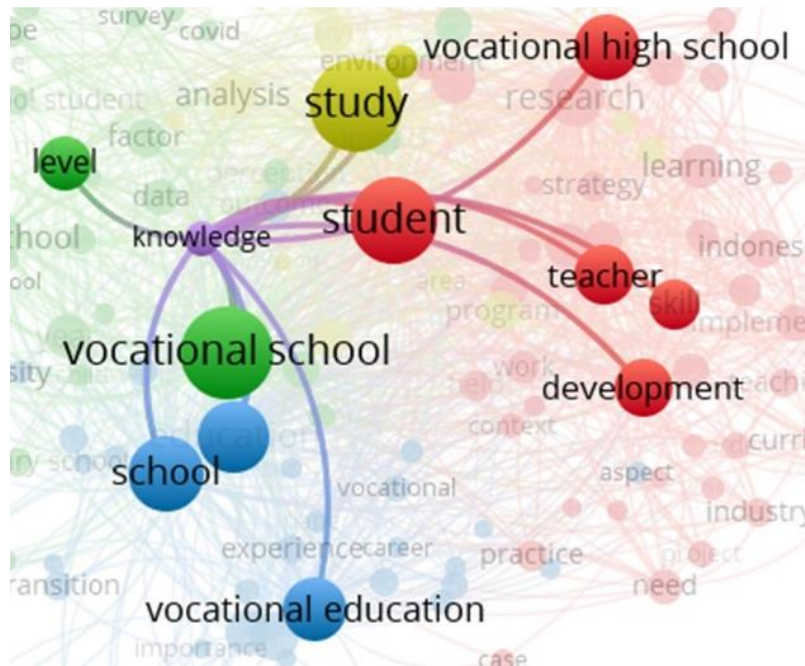


Figure 6. Network Visualization of Knowledge term in cluster 5.

3.3. Visualization Vocational School Topic Area using VOSviewer

According to [Al Husaeni and Nandiyanto \(2022\)](#), the minimum number of relationships between terms in the VOSviewer is regulated by 2 terms. VOSviewer can display bibliometric mapping in three different visualizations, namely: network visualization (**Figure 7**), overlay visualization (**Figure 8**), and density visualization (**Figure 9**) ([Nandiyanto & Al Husaeni, 2021](#)). Each keyword is marked with a colored circle. The size of the circle is positively correlated with the occurrence of keywords in the title and abstract. Therefore, the size of the circle is determined by the frequency with which it appears. The more often the keyword is used, the bigger the circle will be.

Figure 7 shows the relationship between terms. Relationships in network visualization are described in a network or line that comes from one term to another ([Al Husaeni & Nandiyanto, 2022](#)). **Figure 7** shows the clusters in each of the researched topic areas. The keyword in this research, namely "Vocational School" is in cluster 2 which is marked in green which has 41 items. The keyword study "Vocational School" has 146 links. This keyword also has a total link strength of 2014.

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