



Uncovering Emerging Health Awareness Trends in Education: A Bibliometric Study

Iin Uswatun Hasanah^{1*}, Jumadi¹, Fauji Agusta¹, Rey Abraham²,
Siti Tsurayya Yaqutunnafis¹, Sri Bona Ayu¹

¹ Universitas Negeri Yogyakarta, Yogyakarta, Indonesia

² The University of Manchester, Manchester, United Kingdom



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ABSTRACT

Objective: The study aims to examine the development of research trends related to health awareness in schools or education. **Method:** Data were obtained from the Scopus database and analyzed using PRISMA analysis, VOSviewer assistance, and bibliometric analysis. **Results:** A total of 182 relevant articles with the keywords "health awareness" and "school" or "school environment" in the category of English articles in 2020-2024 were collected. The database was analyzed and visualized using the VOSviewer application. The results of this study provide insight into the development of health awareness as a trend in education. Data was obtained in the form of 1) trends in health awareness in schools or education, 2) countries that influence health awareness in schools or education, and 3) keywords that often appear. The results of this study can be used as a foundation for future research to better understand health awareness as a trend in school or education. **Novelty:** The novelty of this study lies in integrating health awareness in education, giving rise to a new trend regarding health awareness in schools or education, and providing researchers with an overview of future research opportunities related to health awareness and education through bibliometric analysis.

INTRODUCTION

Education is one of the important things needed to face world civilization. It can form a good mindset. Education aims to increase a person's intellectual, emotional, social, and moral capacities (Mulyono et al., 2024). Education is very important for a country's progress (Tarigan et al., 2023). Based on this, education is a priority that must always be considered (Putrantasa et al., 2024). Health is the supporter of a smooth education process. Health is a state of complete physical, mental, and social well-being. Based on this, the measurement of good health indicators includes three areas: physical health, psychological health (cognitive and emotional), and social health (Munir et al., 2021; Sokoya et al., 2022; Rautiainen et al., 2023). Good health will be achieved by having a high sense of health concern, especially one's health. According to the Ministry of Health (2019), a person's health status is determined by 40.00% environmental, 30.00% behavioral, 20.00% health service, and 10.00% genetic factors (heredity). Therefore, a caring attitude or behavior is important in maintaining health status. One type of self-awareness known is the self-care attitude. It is when a person is aware of their behavior or personality. Health awareness means the extent to which a person cares or is concerned about their health. A person aware and concerned about their health will be motivated to improve or maintain their quality of life and prevent ill health by behaving in a healthy and self-aware manner.

The theory of well-being states that a person will achieve happiness when their goals and needs are achieved. It is characterized by interconnected physical, mental, and

spiritual well-being. This theory is also based on the modern perspective on self-care, which considers self-care a responsibility that must be carried out towards oneself and society (Butler et al., 2019). Previous relevant research studies by Khadijah et al. (2019) state that a healthy lifestyle, such as diet and exercise, is a form of worship. Based on this description, good health awareness is one of the teachings everyone must appropriately own to support daily life's smooth running, including worship.

One application of the importance of health awareness is in the school. Habituation regarding good health awareness at school is one of the right ways for students. Because school is one of the places of learning activities, habituation can be appropriately applied in the learning process (Hasniar & Utama, 2023; Sutrisno et al., 2023; Indriyati & Siswadi, 2023). Practicing health awareness in schools is a trend toward the objectives of school education (Paul et al., 2023), namely, continuing healthy living habits and norms to students and providing health knowledge (Hamsyati et al., 2024). This study uses bibliometric mapping analysis to explore the emerging trend towards the importance of health awareness in education. Bibliometric analysis was used in this research to find trends in one of the research topics. By analyzing publication data, bibliometric studies can uncover emerging topics and declining areas in scientific research. This insight is crucial for researchers and institutions aiming to stay at the forefront of their fields (Ninkov et al., 2022; Passas, 2024). One of the quantitative research methods, bibliometric analysis, provides a systematic approach to describing the intellectual structure of a research field. This methodology makes it possible to find key research topics, spread research results across institutions and regions, and find research gaps.

This study aims to identify new trends in health and education, find underdeveloped areas, and suggest potential future research. It was conducted by analyzing existing literature on health awareness in education. This research significantly impacts education and health, one of the implementations of science education that promotes a health-caring attitude in every student. In addition, this study will identify challenges and potentials for future research. Based on the literature below, the research questions will be answered in the review paper below.

- Q1: Based on bibliometric analysis, what are the emerging trends in health awareness in school or education?
- Q2: Based on bibliometric analysis, which countries are the most influential in health awareness in school or education?
- Q3: According to bibliometric analysis, what keywords related to health awareness in school or educational settings vary across regions, institutions, or populations?

RESEARCH METHOD

This method section discusses data collection, data analysis procedures, the development of the research framework, and the identification of the research questions that have been determined. The following are the method steps and procedures that will be carried out.

Bibliometric Analysis

Bibliometric analysis is a quantitative research approach that offers a systematic approach to describing the intellectual structure of a research field. This method of analysis allows the identification of the main topics in a field of research, the

distribution of research results across different regions and institutions, and the identification of gaps in the research (Prahani et al., 2024; Prahani et al., 2022a; Prahani et al., 2022b; Prahani et al., 2022c; Prahani et al., 2022d). By analyzing the existing literature on school health and environmental care, this research seeks to uncover emerging trends in the field (Hallinger & Kovacevic, 2019).

PRISMA (Preferred Reporting Item for Systematic Review and Meta-Analysis) approach

The PRISMA approach is a set of instructions created by researchers and methodologists worldwide to help improve the reporting of systematic reviews and meta-analyses. Using the PRISMA approach in this study can improve the quality and transparency of systematic reviews and meta-analyses, thus enabling others to develop and replicate this study (Dini et al., 2024). The PRISMA approach makes it possible to identify articles based on Scopus data relevant to the research topic, and its systematic protocol ensures inclusivity and reproducibility. In this study, the inclusion criteria included the following.

- a. Publication type: Scopus, limited to research articles only.
- b. This research is limited to articles published from 2020-2024.
- c. Field of research: This research focuses on healthcare attitudes in the school environment.
- d. Language: English

To ensure the relevance and accuracy of this analysis, specific criteria were applied when selecting articles to be used in this bibliometric research. First, articles not directly related to the research topic were excluded. Second, articles that were not written in English were also excluded. Third, articles that do not have bibliometric information, such as the author's name and publication date, are also excluded to avoid data duplication. These criteria were used in the hope of refining and ensuring that the results of the data used were relevant to the research. The PRIMSA analysis procedure chart can be seen in Figure 1.

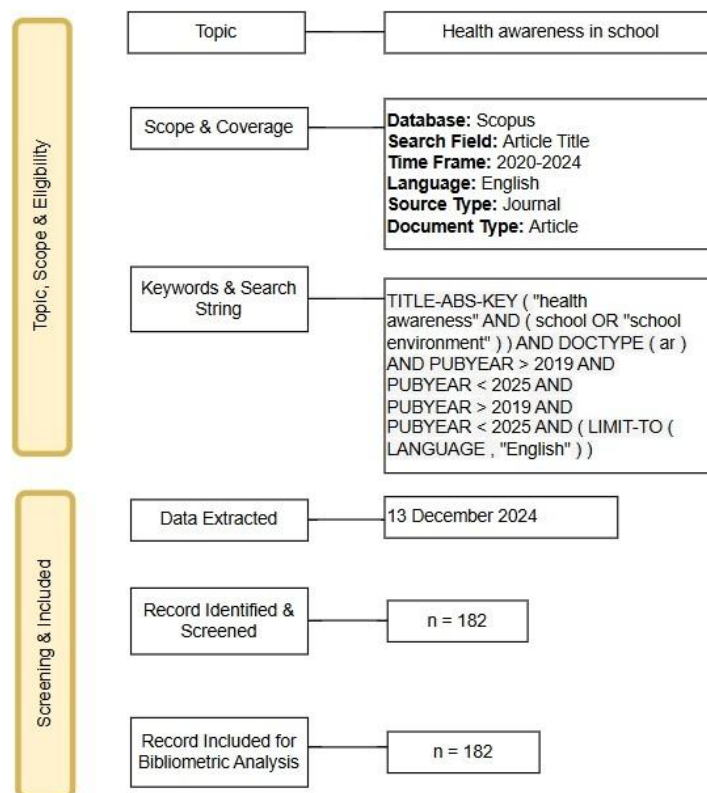


Figure 1. PRISMA flowchart.

VOS

VOS, or visualization of similarities, is a bibliometric analysis method used to visually represent the relationships between research publications. VOS helps discover key topics and ideas about health awareness in schools or education through various visualizations, such as citation networks, co-authorship networks, and networks. Overall, VOS is a valuable tool for improving understanding of the complex concepts and ideas involved in school health awareness.

RESULTS AND DISCUSSION

Results

A total of 182 articles retrieved from the Scopus database that met the criteria were included in this study using the PRISMA approach. Scopus was chosen for this study because it has a database recognized as accurate and high quality (Baas et al., 2020). The results found can be seen in Table 1. The results show that 24.73% were published in 2023, while 40 articles were published in 2024. This shows that in the last two years, there has been an increase in research in the field of health awareness in education, as shown by the increase in research from the previous years, namely 2020, 2021, and 2022. Table 1. shows the percentage of publications in 2020-2024.

Table 1. The annual progress on publication of health awareness in school or education.

Year Publication	Entire	Total articles (%)
2020	35	19.23
2021	27	14.84
2022	35	19.23
2023	45	24.73
2024	40	21.98

Based on 182 articles analyzed using bibliometric analysis, the top ten countries' productivity on health awareness in school or education from 68 countries were identified. The highest rank is in the United States, with 23 articles published. Followed by the United Kingdom in the second rank with a total of 21 articles, and the third rank is China with 16 published articles. The list of the top ten countries' productivity on health awareness in school or education can be seen in **Table 2**. The top ten countries' productivity on health awareness in school or education from 68 countries was spread across 182 articles analyzed.

Table 2. Top ten Countries Productivity on Health Awareness in school or education.

Country	Total Publications
United States	23
United Kingdom	21
China	16
Saudi Arabia	10
South Africa	8
Germany	7
Nigeria	6
Canada	4
Denmark	3
Poland	3

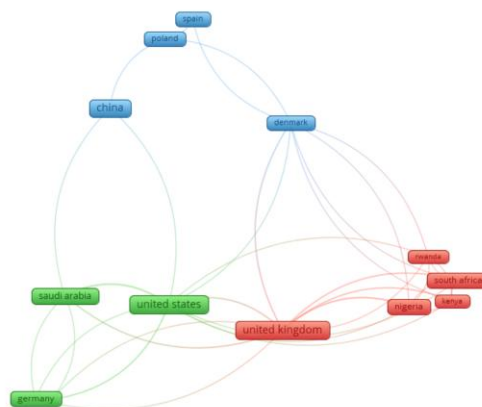


Figure 2. The VOSviewer visualization map of the top ten countries' productivity.

Based on bibliometric analysis, there are ten highest keywords in health awareness in school or education research. As can be seen in Table 3, the highest keyword is "human," with a total of 108 articles; second and fourth with "female" and "male," with 82 articles and 74 articles; sixth with the keyword "child," with 55 articles, and eighth with the keyword "awareness" with 46 articles. These findings suggest that researchers explore the importance of health awareness in school and educational settings.

Table 3. Top ten keywords on health awareness in school or education.

Keywords	Total Publications	Keywords	Total Publications
Human	108	Child	55
Female	82	Adolescent	49
Article	78	Awareness	46
Male	74	Questionnaire	39
Humans	67	Controlled Study	36



Q1: What are the emerging trends in health care in schools or education based on bibliometric analysis?

Year of Publication	Number of Articles
2020.0	35.0
2021.0	27.0
2022.0	35.0
2023.0	45.0
2024.0	43.0

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Apart from discussions about awareness or health, another trend found in this research was discussions about mental health and children. Mental health is an important health concern for everyone because it is one way humans achieve their goals (WHO, 2022). Mental health and children, based on content and the main keyword, namely mental, children, adolescents, and students (Hashem et al., 2021; Damerau et al., 2022; Almalki et al., 2024; Chakraborty et al., 2024; Le et al., 2024; Peuters et al., 2024; Almalki et al., 2024). The following is a table of titles discussing mental health and children, represented by two research titles each year.

Table 3. Title of the research about mental health and children.

Title	Author and Year Publication
Stunting and its determinants among governmental primary school children in Egypt: A school-based cross-sectional study	(Metwally et al., 2020)
Parent perspectives on children and young people's mental health services in Victoria - What is wrong and how to fix it: A multi-site qualitative study	(Hiscock et al., 2020)
Assessment of oral health awareness among residential and day school-going children in south Bengaluru: A questionnaire-based survey, 2021	(Siddaiah et al., 2021)
System Responsiveness to the Psychosocial and Mental Health Needs of Children in Ethiopian Primary Schools: The Case of Gondar City, Northwest Ethiopia Needs, 2021	(Wondie & Tadele, 2021)
Practice of menstrual hygiene among school-going adolescent girls in the rural areas of district Muzaffarnagar, 2022	(Nain et al., 2022)
Effects of food nutrition labels on the health awareness of school-age children, 2022	(Wang et al., 2022)
A Cluster Randomized Controlled Trial on the Effectiveness of the Building Educators' Skills in Adolescent Mental Health (BEAM) Program for Improving Secondary School Educators' Confidence, Behaviour, Knowledge, and Attitudes Toward Student Mental Health	(O'Dea et al., 2023)
Mental health awareness of secondary schools students: Mediating roles of knowledge on mental health, knowledge on professional help, and attitude towards mental health, 2023	(Lee et al., 2023)
Prevalence and correlates of internalizing and externalizing mental health problems among in-school adolescents in eastern Ethiopia: a cross-sectional study, 2024	(Hunduma et al., 2024)
School Safety and Mental Health Awareness: Recommendations from K-12 Texas Public School Teachers, 2024	(Gaal & Fuller, 2024)

Part of the health awareness trends based on this research is oral and dental health in school. Maintaining oral and dental health in students is important. Students' oral and dental health affects students' concentration and learning achievement (Çoğulu et al., 2023; Karam et al., 2024). For this reason, discussions about oral and dental health are a trend that needs to be developed in school health awareness research. About oral and dental health in school, based on content and primary keyword data in this research, is namely oral, knowledge, and primary (Parkar et al., 2023; Paul et al., 2024; Mukabizimana et al., 2024). Based on the findings of this study, future researchers can use the topic of oral and dental health and children as one of the research themes in one part of health awareness in school or education.

The increase in publications on health awareness in education can be attributed to several reasons. First, there is an increasing prevalence of health problems in school children (Arulmohi et al., 2021; Mulazimah et al., 2021). Second, the pandemic and health focus. The COVID-19 pandemic has significantly changed the order of life and resulted in new health problems. One of them is in the field of research collaboration in the health sector (Rohmayanti & Astuti, 2023; Priyana et al., 2024). Third, education's role in preventing long-term health problems (Munzirin & Afiani, 2023; Maccido, 2024; Junior et al., 2024). Fourth, there is pressure from international health organizations. One of WHO's strategies for health is to launch a health-promoting school (World Health Organization, 2020).

Q2: Which Countries Are The Most Influential in The Field of Health Care in The School or Education Environment, Based on Bibliometric Analysis?

Based on the analyzed data, the country with the highest number of publications based on the keyword "health awareness in school or education" in Scopus is the United States. Table 4 shows the publication titles from the United States (taken from the latest publications, 2024).

Table 4. Title of the research in the United States 2024.

Title	Author and Year Publication
School Safety and Mental Health Awareness: Recommendations from K-12 Texas Public School Teachers	(Gaal & Fuller, 2024)
Prevalence of complete edentulism among US adults 65 years and older: A Behavioral Risk Factor Surveillance System study from 2012 through 2020	(Mandapati et al., 2024)
Youth Mental Health First Aid (YMHFA): A Change Initiative in an Underresourced School	(Wachutka et al., 2024)
Cancer health awareness through screening and education: A community approach to healthy equity	(Vernon et al., 2024)
Sickle Cell Health Awareness, Perspectives, and Experiences (SHAPE) Survey: Perspectives of Adolescent and adult patients, caregivers, and Healthcare Professionals on the burden of Sickle Cell Disease	(Montalembert et al., 2024)
Awareness. Interaction. Direction. (A.I.D.): Evaluation of a novel mental health awareness training	(Laurene et al., 2024)

Based on Table 4, in 2024, six articles will be published on Scopus with the keywords provided. One of the articles is Fokus Pada School Safety and Mental Health Awareness (Gaal & Fuller, 2024). Some possible outcomes that could be raised in this study include the challenges faced by teachers, the lack of specific training for teachers to deal with student mental health, and the need for good school policies and programs to support school safety and mental health awareness (Gaal & Fuller, 2024).

The data show that the United States is more effective in implementing health awareness in schools or education than in other countries. This may be because the education system in the United States, as one of the developed countries, has a sound education system (Susilawati, 2019). Therefore, each school in each region has its policy in the education curriculum (Heinen et al., 2022; Tiako et al., 2025). However, other countries are also increasing their research output to keep pace with research in health awareness in schools or education. The emerging trends in this field indicate many

opportunities for researchers to research health awareness by integrating with attitudes, policies, curricula, learning methods, and others. This country analysis helps to identify the leading countries in research and development in health awareness in schools or education.

Q3: What Keywords Related to Health Care in Schools or Education Vary Across Regions, Institutions, or Populations According to Bibliometric Analysis

Based on this research, there are the most popular keywords used in 2024. The most popular keywords used in 2024 are "male," "female," "human," and "child." This allows further researchers to determine the theme based on the keyword. One is about the importance of health in males (Shand & Marcell, 2021), health problems in males (Baker, 2021), and others. That is the same for the "female" keyword. Future researchers can determine the problem topics related to "female." Mapping of the keyword "child" from 2020-2024 decreased in number but still dominates the top ten keywords in this research. The researchers can map the relationship between "child" and other aspects such as health, education, or social policy (Prasetyo et al., 2023; Anyanwu et al., 2024; Jardinez & Natividad, 2024; Sahoo & Pradhan, 2024). Researchers can also use dominant themes, such as child health, child education, child protection, and child development.

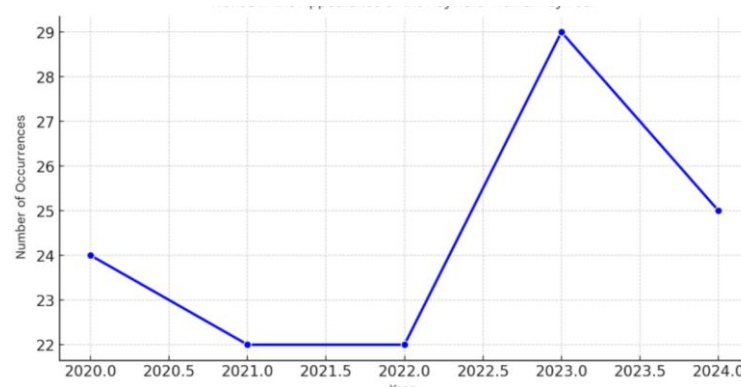


Figure 5. Trends in the appearance of the keyword "human" by year.

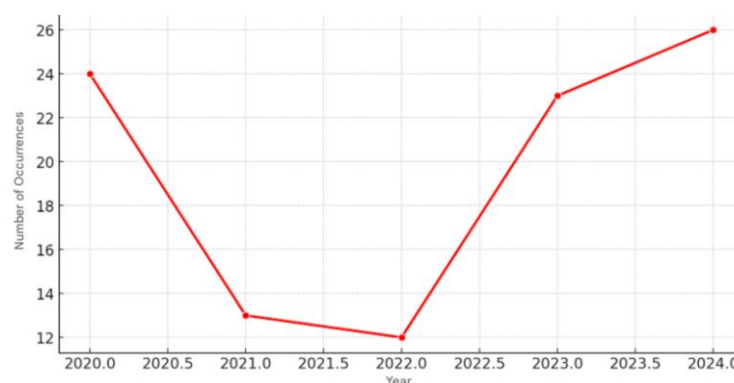


Figure 6. Trends in the appearance of the keyword "female" by year.

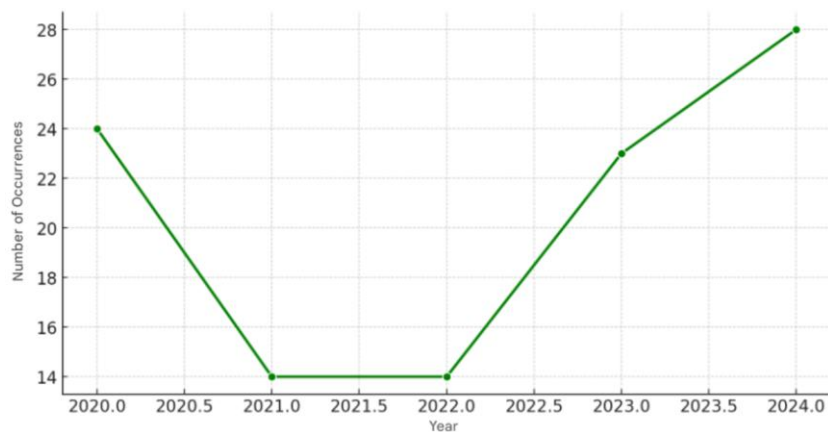


Figure 7. Trends in the appearance of the keyword “male” by year.

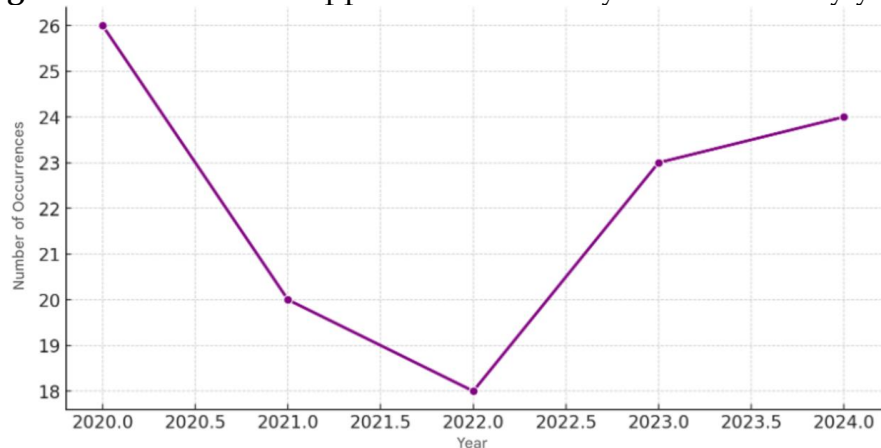


Figure 8. Trends in the appearance of the keyword “child” by year.

The keywords human, child, and awareness are likely to appear frequently in publications about health education or students in the school. The use of the keyword "human" refers to the fields of health communication and health research (Bauder et al., 2023; Parry & Barnes, 2024; Sattora et al., 2024) as well as in the field of education (Kurdi & Kurdi, 2021; Kaloko et al., 2025). as well as in the field of education (Kurdi & Kurdi, 2021; Kaloko et al., 2025). The use of the keyword "human" in the field of health in schools is indeed inseparable from the use of the keyword "child" as a subject and "awareness" as an action carried out by subjects or students in a school or educational environment.

CONCLUSION

Fundamental Finding: Based on the results of the research that has been conducted, it was found that research on health awareness has increased from 2020 to 2024, with the United States first ranking for the largest number of publications about "health awareness" in Scopus based on bibliometric analysis in VOSviewer. This research contributes fundamentally to the field of education, especially in implementing health promotion in schools. The existence of this research can be used as a reference for future research to find the trend of health awareness in education. **Implication:** Studying health awareness in education positively impacts the world's health level, and the WHO has launched a health promotion school program. For this reason, health awareness is one of the new trends found in education. Thus, this research on health awareness in education significantly impacts school education. **Limitation:** However, it should be noted that this study has limitations. Limited data and sources used are only

from scopus.com, a limited time span, namely 2020-2024, as well as limited language use in articles, namely only English. Based on the limitations of this research, future researchers can use other sources such as the Web of Science, PubMed, google Scholar, and others. Future researchers can also add a specific period to further research and add other languages to the lists used. Further research is needed into the gaps in implementing health awareness as a trend in education. **Future Research:** This research is one of the basic references for future research, especially in health awareness research. New trends found in health awareness research in school or education based on bibliometric analysis can be used as a reference for researchers who want to innovate and find new trends in the application of health awareness in education.

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***Iin Uswatun Hasanah (Corresponding Author)**

Department of Magister Science Education Faculty of Mathematics and Natural Science
Universitas Negeri Yogyakarta,
Jl. Colombo No.1, Karang Malang, Caturtunggal, Depol, Sleman Regency, Special Region of
Yogyakarta
Email: iinuswatun.2023@student.uny.ac.id

Jumadi

Department of Magister Science Education Faculty of Mathematics and Natural Science
Universitas Negeri Yogyakarta,
Jl. Colombo No.1, Karang Malang, Caturtunggal, Depol, Sleman Regency, Special Region of
Yogyakarta
Email: jumadi@uny.ac.id

Fauji Agusta

Department of Magister Science Education Faculty of Mathematics and Natural Science
Universitas Negeri Yogyakarta,
Jl. Colombo No.1, Karang Malang, Caturtunggal, Depol, Sleman Regency, Special Region of
Yogyakarta

Email: faujiagusta2023@student.uny.ac.id

Rey Abraham

Faculty Humanities, School of Environment, Education, and Development. Major Global
Development (Politics, Governance and Development Policy)
The University of Manchester

Email: rey.abraham@postgrad.manchester.ac.uk

Siti Tsurayya Yaqutunnafis

Department of Magister Science Education Faculty of Mathematics and Natural Science
Universitas Negeri Yogyakarta,
Jl. Colombo No.1, Karang Malang, Caturtunggal, Depol, Sleman Regency, Special Region of
Yogyakarta

Email: sititsurayya.2023@student.uny.ac.id

Sri Bona Ayu

Department of Magister Science Education Faculty of Mathematics and Natural Science
Universitas Negeri Yogyakarta,
Jl. Colombo No.1, Karang Malang, Caturtunggal, Depol, Sleman Regency, Special Region of
Yogyakarta

Email: sribona.2023@student.uny.ac.id
