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# Global Research Trends on Student Moral Intelligence: A Bibliometric Review (2003-2023)

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#### **Abstract**

Educational institutions have a responsibility to provide students with moral understanding to be able to face moral problems in society. Researchers worldwide make various efforts to discover the best strategies and formulate them into a framework for building the moral intelligence of students. This study provides a bibliometric overview of articles published in the Scopus database with the keywords 'moral intelligence' and 'students. 'The bibliometric review was conducted using data processing tools, VOSviewer and Publish or Perish (PoP). The obtained data consisted of 17 articles, following five stages of the bibliometric review process: defining search keywords, determining initial search results, refining search results, compiling statistical data, and conducting analysis. The results of the bibliometric review indicate that the publication trends related to the moral intelligence of students globally are still lacking. Iran is the country with the highest number of Scopus-indexed articles on the theme of students' moral intelligence, totaling ten articles. Meanwhile, the most significant citation trend for articles occurred in 2010, with a total of 26 citations. The limited amount of research conducted on the theme of students' moral intelligence presents an opportunity for researchers to explore novelty aspects.

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## **INTRODUCTION**

In the course of life, humans must pay attention to morality as a behavior when interacting with society. Morality is a set of values highly esteemed in behavior by an individual (Ardi et al., 2018). There is a shared consensus regarding the values that should be demonstrated or behaviors that should not be engaged in. The importance of rules and institutions regulating individual

behavior is reflected in morality; essentially, humans desire a condition of safe, peaceful, and prosperous living. Therefore, morality is a principle that involves the distinction between right and wrong actions or good and bad (Gui et al., 2020).

The various moral issues in contemporary life indicate the ineffectiveness of the moral value transformation process as a mission in education. The prevalence of student clashes, drug abuse, alcohol consumption, bullying, and sexual assault are forms of juvenile delinquency that should be anticipated through the transformation of moral values. The number of cases of juvenile delinquency in various countries is currently very worrying (Syafi'ah & Said HM, 2023). As many as 4,000 teenagers aged 14-17 are imprisoned every year in Argentina. Additionally, juvenile delinquent behavior can be found in almost every school in Kenya. In 2017, the United States government even struggled to handle juvenile delinquency, with 4,600 cases reported per day. Through the transformation of moral values, it is hoped that it will be able to increase students' moral intelligence because this is an individual's ability to think and feel in understanding and determining right and wrong and is used as a basis for ethical beliefs in behaviour (Aisyah, 2018).

The moral values within a person essentially represent the aspiration for the concept of a perfect human, requiring efforts towards the transformation into the ideal form of a human being. Education as the vanguard of human civilization development, has programs aimed at transforming knowledge and moral values (Badrudin, 2022). Transforming knowledge and moral values certainly have fundamental differences in their implementation. Imparting knowledge to students results in outcomes that can be quickly assessed through measurement in the form of tests/ exams/ summative assessments. However, transforming moral values in the education process requires a considerable amount of time as it is associated with activities of habituation, observation, and seeking exemplars, prompting students to reflect on determining moral values in their lives. Therefore, teachers must be capable of providing various stimuli to support the development and growth of individuals in school (Khaironi, 2017). In providing stimulus, many teachers still do not provide adequate guidance and teaching, so a comprehensive analysis is needed (Dewi, 2022). Then the lack of innovation in learning models used by teachers is another reason why moral messages and values are not conveyed to students (Ratnada et al., 2020).

One effort to improve the process of transforming moral values in education is through research conducted by practitioners and academics by exploring supporting data, presenting facts and influencing factors, and providing solutions, strategies, approaches, and policies. Currently a research challenge in the field to explore alternative uses of scientific study analysis methods (Kurdi & Kurdi, 2021). With the rapid development of technology, a bibliometric analysis method has emerged to optimize the use of technology in educational research. This method is a quantitative statistical analysis tool that is usually used to analyze existing publications (Wicaksono et al., 2023). The research results from various parts of the world are compiled in a database to facilitate researchers in obtaining data as references for relevant development research. Researchers can also identify knowledge gaps that are important for further research, prepare better research plans, and provide information regarding changes in relevant research trends (Sitorus, 2022). Therefore, bibliometric reviews have an important role as a reference in order to have research directions that are relevant, current, and able to make a significant contribution to the progress of research on students' moral intelligence. In line with these objectives, this writing study formulates research questions (RQ) as follows:

- RQ1: What are the global research trends related to the moral intelligence of students?
- RQ2: How are the contributions of authors, countries, and journals in the publication of research on the moral intelligence of students?
- RQ3: How are the current main research topics and potential future areas that exhibit novelty?

#### **METHODS**

The bibliometric review in this research is conducted through an analytical method, involving activities to measure, evaluate the impact of research performance, and identify global research trends and patterns. Therefore, bibliometric data is sourced from scholarly works published in reputable indexed journals and proceedings, such as those indexed by institutions like Scopus (Saregar et al., 2022). In principle, bibliometric analysis is a method of mapping knowledge that emphasizes the boundaries of knowledge (Tranfield et al., 2003). Therefore, bibliometric reviews should be based on systematic and explicit methods (Garza-Reyes, 2015). Bibliometric analysis methods are commonly used in disciplines that focus on quantitative studies of journal papers, books, or other types of written media (Heersmink et al., 2011). The research method is conducted in five stages based on analysis by Tranfield, Denyer and Smart and has been adopted and developed by several earlier researchers using the same method and study (Donthu et al., 2021; Hasumi & Chiu, 2022; Muhammad et al., 2022).



Fig. 1 Five-step method bibliometric analysis (Tranfield et al., 2003)

## Step 1: Defining search keywords.

The first step involves defining the scope to establish the boundaries and coverage of a theme based on bibliometric analysis methods. The theme's scope should generally be broad enough to ensure a comprehensive bibliometric analysis since the analysis is designed to handle a large amount of bibliometric data (Ramos-Rodríguez & Ruíz-Navarro, 2004). A literature data search using the keyword "moral intelligence" was conducted in November 2023. The selected data source was the Scopus database, which is the largest and most reputable aggregator of scientific data. Only journals meeting the qualifications are indexed, ensuring their quality (Arbi et al., 2022). Additionally, not everyone can access various article collections in the Scopus database, which is another consideration in determining the data review source.

## Step 2: Determining initial search results

The search for articles in the Scopus database using the keyword "moral intelligence" aimed to find the relevance of document titles, abstracts, or keywords on the www.scopus.com website

with search codes as listed in Table I. The results obtained included a total of 97 document articles published from 1994 to 2023. These documents were divided into several source types: 76 journal articles, 11 books, five book series, and five conference proceedings. Regarding language, there were 85 documents in English, 7 in Persian, 3 in German, 1 in Korean, and 1 in Slovenian.

Table 1. The Scopus Syntax

| Syntax/ Search query                                                                                                                                                                           | Searching area                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| (TITLE-ABS-KEY("moral intelligence") AND TITLE-ABS-KEY("student")) AND ( LIMIT-TO ( DOCTYPE, "ar" ) OR LIMIT-TO ( DOCTYPE, "cp" ) ) AND ( LIMIT-TO ( LANGUAGE, "English" ) ) from 2010 to 2023 | Title,<br>abstact and<br>keyword |

Step 3: Refining of search results

After obtaining the initial data of 97 document articles, the next step is to select or filter documents to limit the bibliographic analysis data for practicality and efficiency. This is intended as a refinement step to achieve more accurate results needed (Saregar et al., 2022). The researcher chose only document articles based on the publication year criteria within the last 20 years, so the specified years are from 2003 to 2023. Then, the source type became a criterion in selecting document articles by choosing only journals and proceedings as the data source type to be reviewed based on bibliometric analysis. The last criterion is the language aspect, where only document articles in English were chosen by the researcher as the international language. Finally, to obtain more specific data, the researcher added the search keyword in the title, namely the word "student." The detailed filtering process based on these criteria is outlined in Table II. The data selection and filtering process results were then downloaded and saved in RIS and CSV file formats. This file is needed for further analysis at the next step using Harzing's Publish or Perish and VosViewer applications. The Publish or Perish application was employed to facilitate the analysis of statistical data related to publication years, document types, publishers, and publications. Meanwhile, the VOSviewer application visualizes networks and overlay mapping to optimize data analysis.

Table 2. The Selection Process of Documents

| Search screening                                                    | Number<br>of<br>documents | Total of remaining documents (n=97) |
|---------------------------------------------------------------------|---------------------------|-------------------------------------|
| Not in the period of 2003-2023                                      | 4                         | 93                                  |
| Not in English                                                      | 12                        | 81                                  |
| Source type not from journal and proceeding                         | 16                        | 65                                  |
| There are no keywords "moral intelligence" & "student" in the title | 48                        | 17                                  |

Step 4: Compiling statistical data

The next step in bibliometric analysis involves using Harzing's Publish or Perish, also known as PoP, an application developed by Professor Anne-Wil specifically for analyzing academic

citations from various databases. The presentation of the analysis results processed by this application consists of easily understandable and operable citation metrics (Chui Lam & Habil, 2021). In the PoP application, the downloaded data file in RIS format displays initial data statistics such as publication years, document types, publishers, and publications. The working principle of the PoP application is to create a citation information list through exporting RIS data files downloaded from databases such as Scopus, Google Scholar, and others (Baneyx, 2008). Subsequently, the collected data can provide a summary of descriptive analysis, including the number of publications, total citations, citations per year, citations per publication, citations per author, documents per author, authors per document, h-Index, and g-Index.

# Step 5: Analyzing

Data analysis is the final stage in bibliometric review. The analysis is conducted to break down a topic into several parts for better understanding (Saregar et al., 2022). Additionally, the assistance of other media, such as network visualization and overlay mapping, will optimize data analysis. In this stage, the researcher uses the VOSviewer application, a computer program developed to create, visualize, and explore bibliometric science maps (van Eck & Waltman, 2010). The visualizations created by this application cover various perspectives, including scientific journals, researchers, institutions/publishers, and countries of origin (Sampaleng, 2023). And the parameters of the VOSviewer application in obtaining article metadata include: 1) type of analysis (co-occurrence analysis), 2) unit of analysis (all keywords), 3) counting method (full counting), and 4) minimum number of document authors (Jeong & Koo, 2016).

## RESULT AND DISCUSSION

RQ1: Global Research Trends on Student Moral Intelligence

Understanding global research trends on student moral intelligence is considered very important by exploring research data that has been carried out by practitioners and academics, showing facts and influencing factors, as well as providing solutions, strategies, approaches and policies to be able to transform moral values in education. The initial findings of document searches using the keyword "moral intelligence" in the Scopus database amounted to 97. There was a drastic decrease when the researcher conducted four rounds of filtering based on publication year criteria, presented languages, source types, and the addition of keywords in the search titles. A total of 79 articles were eliminated, reducing the initial data of document searches by around 81.4%. The number of eliminated documents was significantly high when the researcher narrowed the search more specifically by adding the keyword "student." The final data acquisition, stored in RIS format, allowed the researcher to compare metric data with the initial search data file using Harzing's Publish or Perish application. A detailed comparison of descriptive analysis is presented in Table 3.

Table 3. Comparisson Metrics

| Metrics data | <b>Intial search</b>         | Refinement search    |
|--------------|------------------------------|----------------------|
| Keywords     | "Moral Intelligence"         | "Moral Intelligence" |
|              |                              | &                    |
|              |                              | "Student             |
| Language     | English, Persia,<br>Germany, | English              |

|                          | Slovenia, Korea      |                      |
|--------------------------|----------------------|----------------------|
| Source type              | Journal, Proceeding, | Journal & Proceeding |
| 20111 JF 1               | Book,                |                      |
|                          | & Book series        |                      |
| <b>Publication Years</b> | 1994-2023            | 2003-2023            |
| <b>Total Publication</b> | 97                   | 17                   |
| Citations                | 705                  | 62                   |
| Cites/year               | 24.31                | 4.77                 |
| Cites/paper              | 7.27                 | 3.65                 |
| Cites/author             | 468.47               | 25.37                |
| Papers/author            | 53.32                | 7.86                 |
| Author/paper             | 2.61                 | 3.35                 |
| h-index                  | 13                   | 3                    |
| g-index                  | 24                   | 7                    |

The final number of documents after the screening process is 17, and it appears that not every year has articles that meet the above screening criteria. The trend of publications related to the moral intelligence of students globally tends to be fluctuating, there are decreases and increases in certain years. Furthermore, the data on the number of articles published yearly does not exceed three. In fact, in 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2012, and 2016, no articles met the screening criteria. A similar situation is observed in the graph of article citations, which fluctuates each year. The highest number of article citations was recorded in 2010, with a total of 26 citations. The data on the number of articles and citations per article each year are summarized in Figure 2.

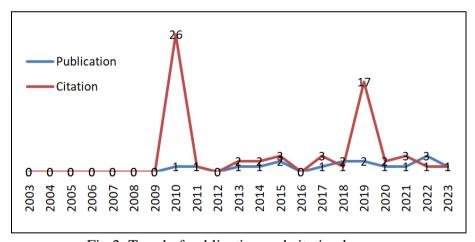


Fig 2. Trend of publication and citation by year

The final number of documents after the screening process is 17, and it appears that not every year has articles that meet the above screening criteria. The trend of publications related to the moral intelligence of students globally tends to be fluctuating. Furthermore, the data on the number of articles published yearly does not exceed three. In fact, in 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2012, and 2016, no articles met the screening criteria. A similar situation is observed in the graph of article citations, which fluctuates each year. The highest number of article citations was recorded in 2010, with a total of 26 citations. The data on the number of articles and citations per article each year are summarized in Figure 2.

RQ2: Contributions of Authors/Researchers, Countries, and Journals in the Publication of Research on Students' Moral Intelligence.

A total of 55 authors have contributed to the publication of research on students' moral intelligence globally. Out of this total, only two authors, Monir Nobahar and Nayyereh Raiesdana, have published more than 1 article, while the remaining 53 authors have each published only 1 article. Regarding the contribution of articles with the highest number of citations, the article titled "Validation of the moral competency inventory measurement instrument: Content, construct, convergent and discriminant approaches," written by Daniel E. Martin and Benjamin Austin, holds the top position. This article has become a reference for authors worldwide, accumulating a total of 26 citations. The complete ranking of articles with the highest number of citations is presented in Table 4.

Table 4. Top Five Cited Articles

|    | Table 4. Top Five Cited Articles |                                                 |       |  |
|----|----------------------------------|-------------------------------------------------|-------|--|
| No | Author                           | Title                                           | Cites |  |
| 1  | Daniel E. Martin &               | Validation of the moral competency Inventory    | 26    |  |
|    | Benjamin Austi                   | measurement instrument: Content, construct,     |       |  |
|    |                                  | convergent and discriminant approaches          |       |  |
| 2  | Narges Eskandari,                | Explaining the relationship between moral       | 10    |  |
|    | Farzaneh Golaghaie,              | intelligence and professional self-concept with |       |  |
|    | Maryam Aghabarary,               | the competency of nursing students in           |       |  |
|    | Mohammadreza                     | providing spiritual care to promote nursing     |       |  |
|    | Dinmohammadi,                    | education                                       |       |  |
|    | Hamidreza Koohestani,            |                                                 |       |  |
|    | Mojtaba Didehdar,                |                                                 |       |  |
|    | Leila Dehghankar &               |                                                 |       |  |
|    | Moh. Abbasi.                     |                                                 |       |  |
| 3  | Alkharusi,                       | Modelling parenting styles, moral intelligence, | 7     |  |
|    | Ibrahim Al-Harthy,               | academic self-efficacy and learning motivation  |       |  |
|    | Marwa Alrajhi,                   | among adolescents in grades 7–11                |       |  |
|    | Hafidha AlBarashdi.              |                                                 |       |  |
| 4  | Sima Pourteimour,                | Moral intelligence, clinical                    | 3     |  |
|    | Monir Nobahar,                   | placementexperience and professional            |       |  |
|    | & Nobahar M.;                    | behaviors among Iranian undergraduate nursing   |       |  |
|    | Nayyereh Raiesdana,              | students in a baccalaureate nursing program: A  |       |  |
|    |                                  | descriptive correlational study                 |       |  |
| 5  | Samer A. Abdel-Hadi              | The level of moral competence and its           | 3     |  |
|    |                                  | relationship with the variables of, gender,     |       |  |
|    |                                  | specialization and academic year among Al       |       |  |
|    |                                  | Falah University students in Dubai              |       |  |

From the 17 articles obtained, the researcher presents data on countries' contribution to publishing articles with the keywords "moral intelligence" and "student" based on the Scopus database in Table 5. Seven countries contributed to the publication of these articles. Iran has the highest number of published articles, totaling 10. However, uniquely, this quantity does not make Iran the country with the highest number of citations. The United States stands out as the leader in terms of citations, with a total of 33. Another unique aspect is that there is 1 article from Colombia with a substantial number of citations, as much as 26, surpassing the citation count of articles from

Iran, which only has 24 citations. Detailed data on the articles with the highest citations are presented in Table 5.

| No | Country           | Total<br>Publication | Total<br>Citation | h-<br>index | g-<br>index |
|----|-------------------|----------------------|-------------------|-------------|-------------|
| 1  | China             | 1                    | 0                 | 0           | 0           |
| 2  | Colombia          | 1                    | 26                | 1           | 1           |
| 3  | Hong Kong         | 1                    | 1                 | 1           | 1           |
| 4  | Iran              | 10                   | 24                | 3           | 4           |
| 5  | Slovenia          | 1                    | 2                 | 1           | 1           |
| 6  | Uni Arab Emirates | 1                    | 3                 | 1           | 1           |
| 7  | US                | 2                    | 33                | 2           | 2           |

Table 5. Countries That Contributed to The Publication

Another uniqueness is found in the analysis of the document source titles obtained, indicating that out of the 17 articles obtained, each comes from a different source. This implies that none of the sources, whether a journal or proceeding in the Scopus database, has more than 1 article using these keywords.

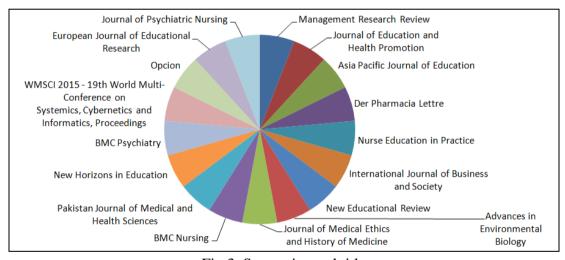


Fig 3. Source journal title

# RQ3: Main and Potential Future Research Topics with Novelty

Bibliometric analysis, apart from being used for classification, can also be used to identify current and future events (Utami, 2023). The VOSviewer application is utilized to visualize bibliometric maps using Network Visualization, Overlay Visualization, and Density Visualization to identify main and potential future research topics with novelty. Network analysis is employed to explore existing or forthcoming relationships among topics in a research field, focusing on the written content of publications (Donthu et al., 2021). Network analysis in this research uses the full counting method with a minimum co-occurrence of two keywords, and based on publication titles, there are 20 terms appearing in the VOSviewer network map on the left in Figure 4. The analysis results confirm that the 20 terms are distributed into 3 clusters, forming 131 links with a total link strength of 230.

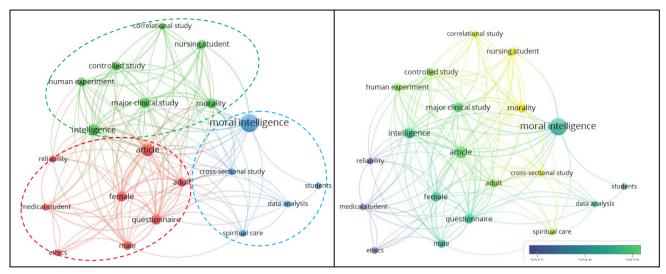


Fig 4. Network Visualization and Overlay

Bibliometric analysis, apart from being used for classification, can also be used to identify current and future events (Utami, 2023). The VOSviewer application is utilized to visualize bibliometric maps using Network Visualization, Overlay Visualization, and Density Visualization to identify main and potential future research topics with novelty. Network analysis is employed to explore existing or forthcoming relationships among topics in a research field, focusing on the written content of publications (Donthu et al., 2021). Network analysis in this research uses the full counting method with a minimum co-occurrence of two keywords, and based on publication titles, there are 20 terms appearing in the VOSviewer network map on the left in Figure 4. The analysis results confirm that the 20 terms are distributed into 3 clusters, forming 131 links with a total link strength of 230.

Cluster 1, represented by a red-colored cluster symbol, includes eight terms: adult, article, ethics, female, male, medical student, questionnaire, and reliability. Cluster 2, marked by a green-colored cluster symbol, comprises seven terms: a controlled study, correlation study, human experiment, intelligence, major clinical study, morality, and nursing student. The last cluster, symbolized by a blue-colored cluster, contains five terms: a cross-sectional study, data analysis, moral intelligence, spiritual care, and student. Each term in the cluster has different occurrences and link strengths, as detailed in Table 6.

The overlay is illustrated on the right in Figure 4, describing the years in which these terms appeared. The yellow connecting lines indicate the publication period from 2021 to 2023, signifying that these topics have recently become research themes. The terms during this period include morality, cross-sectional study, nursing student, correlational study, and spiritual care. Meanwhile, the green connecting lines explain the publication period from 2019 to 2020, encompassing terms such as article, intelligence, major clinical study, controlled study, human experiment, adult, and spiritual care. On the other hand, the remaining terms with blue connecting lines explain the appearance period of terms before 2019. Based on the visualization of network data, a research theme of novelty can be determined. Through network visualization, terms that are not connected by lines to other terms present an opportunity for researchers to discover elements of novelty. For instance, there might not be connecting lines between the terms "moral intelligence" and "ethics".

Table 6. Hierarchical Clustering Of Term

| Cluster    | Term                                             | Occurrence   | Link<br>strength |
|------------|--------------------------------------------------|--------------|------------------|
|            | Adult<br>Article                                 | 3            | 26               |
| 1<br>(red) | Ethics<br>Female                                 | 6 2          | 49<br>7          |
|            | Male<br>Medical Student                          | 4 3          | 33<br>24         |
|            | Questionnaire<br>Realibility                     | 2<br>4<br>2  | 16<br>33<br>10   |
|            | Controlled Study                                 | 3            | 25               |
| 2          | Correlation Study Human Experiment               | 2 3          | 17<br>25         |
| (green)    | Major Clinical Study Intelligence                | 4<br>5       | 32<br>41         |
|            | Morality Nursing Student                         | 6 3          | 33<br>25         |
|            | Cross-sectional Study<br>Daya Analysis           | 2 2          | 16<br>9          |
| 3 (blue)   | Moral Intelligence<br>Spiritual Care<br>Students | 11<br>2<br>2 | 28<br>9<br>2     |

Table 6 explains that the most frequent occurrence is observed in the blue cluster, with the term "moral intelligence" appearing 11 times. This means that the term "moral intelligence" appears in no more than 11 different papers. Meanwhile, the term "Intelligence" appears most frequently in the green cluster, a total of 5 times. This implies that the term "Intelligence" appears in no more than five different papers. Additionally, the term "article" is most frequently present in the red cluster, occurring six times. This indicates that the term "article" appears in no more than six different papers. In general, among the three clusters, "moral intelligence" is the term that appears most frequently. This is supported by the VOSviewer application data processing results through density visualization in Figure 5. The image displays data visualization in the form of yellow density levels for each term obtained from the network map. A very high density level indicates that the area has been frequently chosen as a research theme. Conversely, an area with a low density of yellow color indicates that the term is still rarely chosen as a research theme. Therefore, research themes related to moral intelligence that can be further explored and potentially contain novelty include correlation studies, ethics, cross-sectional studies, and spiritual care.

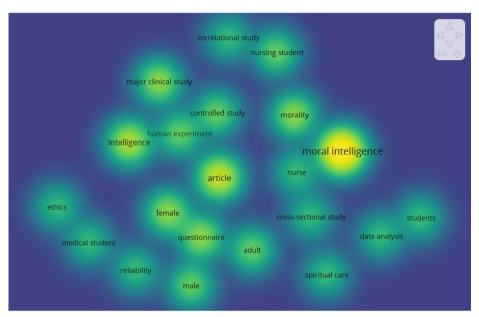


Fig. 5 Density Visualization

Based on the research data findings, there are potential implications for educational practice and policy. The moral problems of children in everyday life must be realized by educational practitioners that learning values and morals is not only the task of social subject teachers but also all elements of the school in educating children curricularly and non-curricularly. Collaboration between government institutions is another potential implication because the education sector has an important influence on other areas of life such as social, industrial and health sectors. The development of technological knowledge is increasingly rapid and unstoppable, and the government must be aware of this in determining education policy regulations that are able to balance current conditions. Moral intelligence is needed by children to be able to control themselves when using technology, so that they can differentiate between error and truth and be wise in dealing with the knowledge they have just acquired.

#### CONCLUSIONS

The articles were retrieved through the Scopus database accessed directly on the website <a href="https://www.scopus.com">www.scopus.com</a> with the keywords "moral intelligence of students". A screening process was conducted to obtain relevant articles based on the criteria: 1) Language: English; 2) Source types: Journal & Proceeding; and 3) Publication years: 2003-2023. The retrieval of 17 articles through the screening process indicates a scarcity of scientific studies related to the moral intelligence of students, and its development has not been significant, as the number of published articles each year does not exceed 3, with a gap in publications on this theme for nine years. There is a research gap that can be used as a reference to examine the importance of conducting further studies and the potential for novelty related to the moral intelligence of students, particularly in correlation studies, ethics, cross-sectional studies, and spiritual care.

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## CONFLICTS OF INTEREST STATEMENT

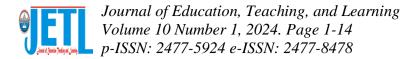
The authors have no conflicts of interest to declare. All co-authors have seen and agree with the contents of the manuscript and there is no financial interest to report. We certify that the submission is original work and is not under review at any other publication.

#### **AUTHOR CONTRIBUTIONS**

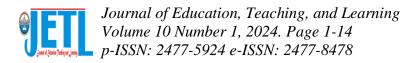
Angger Saloko and Aim Abdulkarim conceived of the presented idea. Angger Saloko developed the theory and performed the computations. Sapriya and Kokom Komalasari verified the analytical methods. Sapriya encouraged Angger Saloko to to investigate moral intelligence research trends globally (in 2003-2023) and monitor the findings of this work. All authors discussed the results and contributed to the final manuscript.

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