Bibliometric Analysis Using VOSViewer with Publish or Perish of Metacognition in Teaching English Writing to High School Learners

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A B S T R A C T

The purpose of the research was to analyze the research trends in exploring metacognition in teaching English writing to high school students. The methods used in this research were bibliometric analysis methods with VOSviewer analysis. The data were collected from research articles from the Google Scholar database, published between 2018 and 2024. According to the research results, the total documents found during the period were 199 articles. It was found that there was a decrease in the number of articles in 2019, but then it increased in 2022. However, the amount of research articles dropped in 2024. Mapping article data creates three forms of visualization; including network, overlay, and density visualization. The result of mapping reveals that research on metacognition in teaching English writing needs to be carried out, especially regarding teaching to high school students. This research concluded that the trend of research investigating metacognition in teaching English writing to high school students is decreasing, nevertheless its importance in assisting English language pedagogy.

A R T I C L E I N F O

1. INTRODUCTION

Metacognition has been considered as one of the most important factors that help develop individuals, cognitive abilities. Metacognition is a multidimensional and general domain ability (Briška & Siliņa-Jasjukeviča, 2022; Vukić *et al.*, 2020). Metacognition can be defined as the ability to think as well as the executive processes that are used to optimize cognitive abilities as learners. Metacognition refers to the ability to think and the executive functions that are employed to maximize the cognitive capacities of learners (Aghdar *et al.*, 2020; Rivas *et al.*, 2022). In terms of learning writing, students who use metacognitive strategies can write more effectively by expressing concepts. Several previous studies have confirmed that metacognition contributes to the quality of student writing. The student's academic writing abilities are impacted by the metacognition instructions, which also improve the writing quality (Ramadhanti & Yanda, 2021).

In many previous studies on language teaching, instructors and lecturers focus too much on grammatical content and frequently overlook some facets of linguistic proficiency, such as writing, speaking, reading, and listening (Danh & Quan, 2021; Yunus, 2020). Metacognitive techniques are necessary for pupils to develop strong writing abilities. Based on the present study, the availability of bibliometric analysis related to teaching writing is still very limited though the mapping for the discussion-related writing is quite crucial for some important motives. Since writing is not an easily mastered skill, especially for those who use English as a second language, metacognitive strategies are also very important in the process of writing to discuss in publications and practices (Aripin & Rahmat, 2021). It has also been asserted that the process of writing in a second language at the high school level is more challenging, moreover for those who use English as a foreign language.

To investigate the current state of the art of metacognition in teaching English writing to high school learners and to guide emerging trends. A database search of research articles from the Google Scholar database, published between 2018 and 2024, has been carried out in this study. This investigation is essential to provide useful information for further research on teaching and learning writing especially related to metacognition. The data was visualized using VOSviewer with Publish or Perish.

2. METHOD

This study applied bibliometrics analysis as a research method. Bibliometrics analysis is the statistical analysis of published works. It has concentrated on the complicated quantitative study of citations and citation counts. Metacognition in teaching English writing to high school learners is needed to analyze trends and make judgments because it is complicated and specialized. Bibliometrics data is required to identify research trends and relationships between clusters and items. There are several stages of bibliometric analysis. Collecting article data is the first step in conducting literature research using bibliometric analysis. At this stage, published research articles related to the topic of metacognition in teaching English writing were collected. Google Scholar was used as the database for this bibliometric investigation of metacognition in teaching English writing published between 2018 and 2024. Article data is collected via the Publish or Perish application. The results of collecting article data using Publish or Perish resulted in 199 articles for analysis. The collected research article data were saved in (*.csv) format so that they could be analyzed using Microsoft Excel software, and (*.ris) format to be analyzed and visualized using the VOSviewer application. After data collection, article data was filtered to see the completeness of components (such

as year). Next, the article data was analyzed using Ms. Excel and visualized using VOSviewer (Al Husaeni & Nandiyanto, 2022).

3. RESULTS AND DISCUSSION

3.1. Development of Metacognition in Teaching English Writing to High School Learners Publication 2018-2024

The data shown in **Table 1** reveals the annual report on research on "metacognition in teaching English writing to high school learners" which has been published in several international journals. Based on the data, it is obvious that the total documents found over the last 7 years are 199 articles. Details of the number of research articles regarding metacognition in teaching English writing to high school learners consist of 2018 as many as 32 articles, 2019 as many as 25 articles, 2020 as many as 34 articles, 2021 as many as 37 articles, 2022 as many as 39 articles, 2023 as many as 26 articles, and 2024 as many as 6 articles. According to the number of research documents each year shown in **Figure 1**, it is recognized that there is a decrease in research publications regarding metacognition in teaching English writing to high school learners from 2018 to 2019. Then, the amount of research publications will rise in 2022. However, the number of research publications will fall in 2024.

Table 1. Annual report research on metacognition in teaching english writing to high school learners.

Year	Documents
2018	32
2019	25
2020	34
2021	37
2022	39
2023	26
2024	6
Total	**199**
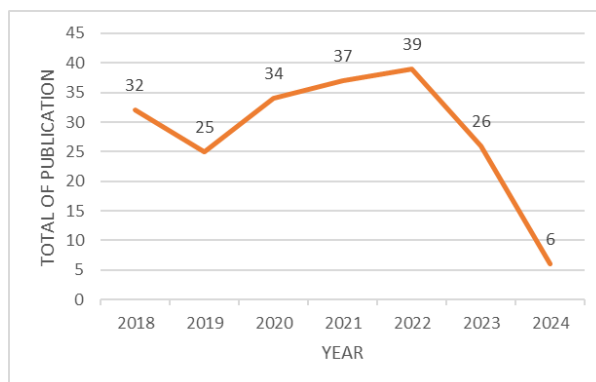
Figure 1. Research developments regarding metacognition in teaching english writing to high school learners' publications 2018-2024.

3.2. Trend of Metacognition in Teaching English Writing to High School Learners Research Citation 2018-2024

In this research, we present 20 articles regarding Metacognition in Teaching English Writing to High School Learners that have the highest number of citations. **Table 2** presents

some metadata from articles with the highest number of citations. It can be seen in **Table 2** that most articles focus on metacognition, language learning strategies, and undergraduate students. When considering the number of citations of those articles, the article written by Lestari and Wahyudin (2020), titled With Language Learning Strategies which is directly related to metacognition, has the highest citation with 1365. On the other hand, the article titled Students' Metacognitive Reading Awareness and Academic English Reading Comprehension in EFL Context written by Darjito (2019) was cited with the lowest citation of 55. Other articles discussed improving undergraduates' metacognitive strategies in writing (Baresh, 2022; Anggarista & Wahyudin, 2022; Ratminingsih *et al.*, 2018; Teng, 2020). Siagan *et al.* (2019) and Warni *et al.* (2018) developed instructional innovation, namely using technology and a teaching approach based on metacognition to support students' writing competencies.

Table 2. Articles of metacognition in teaching English writing to high school learners with the most citations.

No	Cites	Title	Year	Cites Per Year	Cites Per Author	Ref
1	1365	Language learning strategies of undergraduate EFL students	2020	341.25	683	Lestari & Wahyudin (2020)
2	882	Developing libyan undergraduates' writing skills through reflective journaling: A critical literature review	2022	441	882	Baresh (2022)
3	273	A correlational study of language learning strategies and english proficiency of university students at efl context	2022	136.5	137	Anggarista & Wahyudin (2022)
4	243	Development of learning materials oriented on problem-based learning model to improve students' Mathematical problem-solving ability and metacognition ability	2019	48.6	81	Siagan *et al.* (2019)
5	174	A journey into the metacognitive learning strategies.	2019	34.8	87	Mitsea & Drigas (2019)
6	145	The effect of metacognitive strategies implementation on students' reading comprehension achievement.	2020	36.25	29	Muhid *et al.* (2020)
7	142	Scaffolding genre knowledge and metacognition: Insights from an L2 doctoral research writing course	2018	23.67	71	Negretti & McGrath (2018)
8	126	Self-Assessment: The effect on students' independence and writing competence.	2018	21	42	Ratminingsih *et al.* (2018)
9	121	Context-based learning and metacognitive prompts for enhancing scientific text comprehension	2018	20.17	30	Dori *et al.* (2018)
10	120	Identifying teachers' supports of metacognition through classroom talk and its relation to growth in conceptual learning.	2019	24	30	Zepeda *et al.* (2019)

Table 2 (Continue). Articles of metacognition in teaching English writing to high school learners with the most citations.

No	Cites	Title	Year	Cites Per Year	Cites Per Author	Ref
11	104	The relationships among writing skills, writing anxiety and metacognitive awareness	2018	17.33	104	Balta (2018)
12	87	Exploring the effect of metacognitive strategy instruction on metacognitive awareness and listening performance through a process-based approach	2020	21.75	44	Maftoon & Fakhri Alamdari (2020)
13	80	Tertiary-level students' English writing performance and metacognitive awareness: A group metacognitive support perspective	2020	20	80	Teng (2020)
14	78	The use of technology in English as a foreign language learning outside the classroom: An insight into learner autonomy	2018	13	26	Warni *et al.* (2018)
15	74	Poor reading comprehension issue in EFL classroom among Indonesian secondary school students: Scrutinizing the causes, impacts and possible solutions	2020	18.5	37	Nanda & Azmy (2020)
16	67	Metacognitive awareness and critical thinking abilities of pre-service EFL teachers.	2018	11.17	67	Çakici (2018)
17	66	EFL Learners' Metacognitive Awareness of Reading Strategies.	2018	11	66	Al-Mekhlafi (2018)
18	64	Exploring Students' Learning Strategies and Gender Differences in English Language Teaching.	2018	10.67	32	Mahmud & Nur (2018)
19	59	The impact of expanding advanced level secondary school students' awareness and use of metacognitive learning strategies on confidence and proficiency in foreign …	2018	9.83	30	Forbes & Fisher (2018)
20	55	Students' Metacognitive Reading Awareness and Academic English Reading Comprehension in EFL Context.	2019	11	55	Darjito (2019)

3.3. Visualization of Research Data Mapping Metacognition in Teaching English Writing to High School Learners

Data mapped using VOSviewer produces 3 forms of visualization, namely network visualization (**Figure 2**), overlay visualization (**Figure 3**), and density visualization (**Figure 4**). Network visualization reveals that the terms generated from the abstract and keywords that are considered to correspond to the keywords used when collecting data are divided into 5

clusters with a total of 30 items. Each item has a different link, total link strength, and occurrences. Overall, based on network visualization, the total link strength is 186 while the total number of links is 137. The following is a more detailed explanation of each cluster.

i)   Cluster 1 marked in red consists of 9 items, namely effectiveness, EFL, English language, impact, investigation, metacognitive strategies, motivation, second language, and text.

ii)   Cluster 2 marked in green consists of 9 items, namely article, English writing, high school, metacognitive skill, performance, problem, senior high school, student metacognitive awareness, and writing skill

iii)   Cluster 3 marked in blue consists of 7 items, namely EFL student, English teacher, metacognitive, practice, secondary school, teacher, and teaching English

iv)   Cluster 4 marked in yellow consists of 4 items, namely context, development, English language teaching, and language
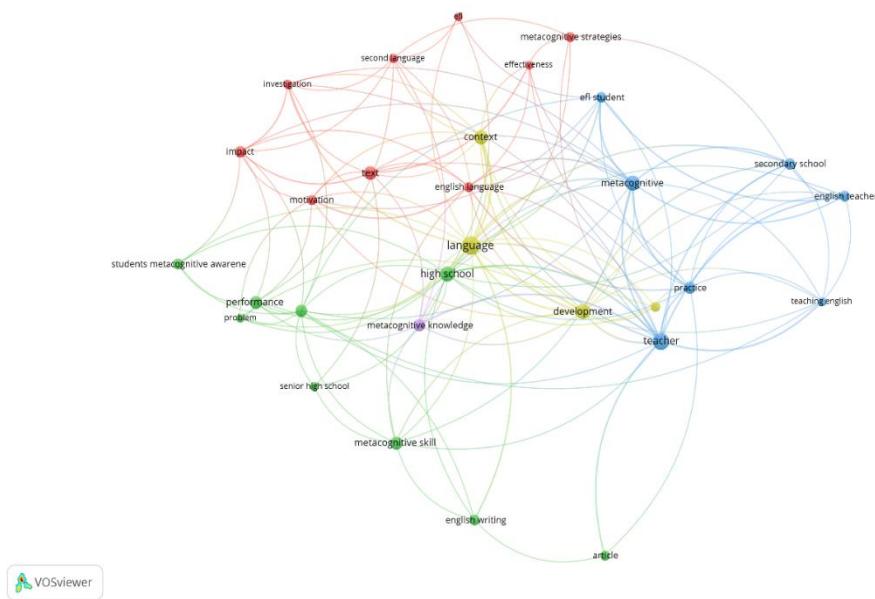
Figure 2. Network visualization based on co-occurrence of terms.
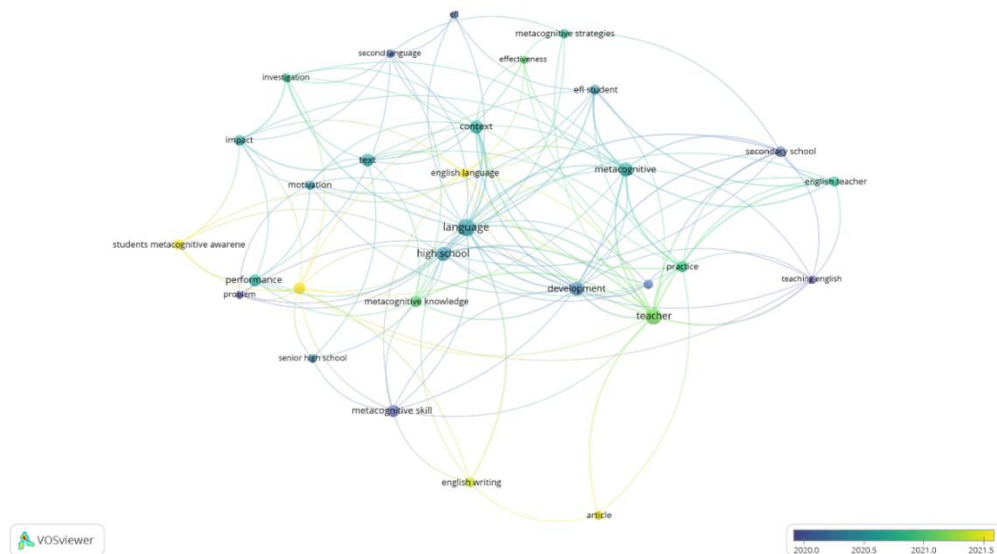
Figure 3. Overlay visualization based on co-occurrence of terms.
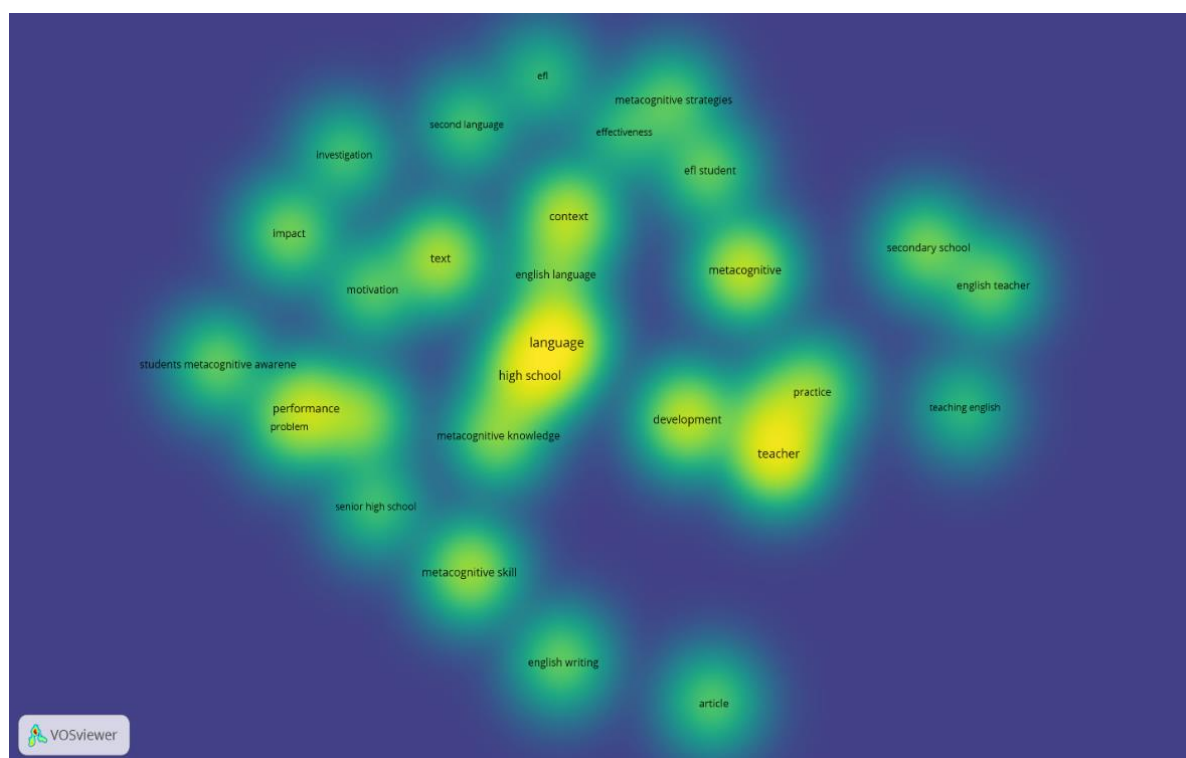
Figure 4. Density visualization based on co-occurrence of terms.

4. CONCLUSION

The number of publications regarding "metacognition in teaching English writing to high school learners" during the last 7 years (2018-2024) was 199 articles. The development of research regarding" metacognition in teaching English writing" has increased in some years but for the whole period, it has decreased. In 2018 there were 32 articles; then, it dropped to 25 articles in 2019. Yet, the number of articles reached 34 and 37 in 2020 and 2021 respectively. By the time 2022 ended, the number of articles rose to the highest number of publications; that was 39 articles. In addition, the terms used as keywords used in the mapping stage using the VOSviewer application produce 30 items which are divided into 4 clusters marked with different colors. Each cluster has a different number of items and each item has a different number of occurrences, links, and total link strength (although it does not rule out the possibility that there are the same number of items). Terms that are often used both as keywords and as abstracts in research articles related to keywords such as metacognition, teaching English writing, and high school.

5. AUTHORS' NOTE

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

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