Bibliometric analysis on writing and learning outcome research around the world

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Abstract
This study uses bibliometric analysis to assess the most relevant themes linked to Writing Learning Outcomes, allowing readers to gain a holistic understanding of WLO and the most recent developments in the field. Publication data from Scopus is employed since it is considered as the gold standard for Bibliometric analysis, allowing for the visualization of information concerning the network of nations, keywords, authors, and trends. On September 14, 2022, this study examined 1,053 files spanning the years 1980 until 2022. The findings revealed that the quantity of published works on WLO generally increased, albeit with some years showing a modest decline. Analysing search terms for "Writing Learning Outcomes" (WLO) reveals a central interest in topics including learning goals, assessment, and instructional strategies. Important WLO publications are also discussed in the study. This study presented bibliometric analysis on the relationship between the most prominent themes in WLO research and classroom practice to be used for finding novelty in the area of WLO research.

Keywords
bibliometrics analysis
learning outcome
writing
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Introduction

In order for a researcher to identify new things in a field of research, a researcher must first undertake an extensive search of the relevant literature to determine what is already known and what knowledge gaps still require clarification. In-depth familiarity with the field will have a significant impact on the novelty of researches. As a result of the growing amount of research outcomes, many high-impact journals are currently on the hunt for material that is extremely recent to publish.

In the field of research, bibliometric analysis is also essential for demonstrating the originality of research results (also known as Research Novelty) in order to present the most recent maps pertaining to the subject of writing and learning outcomes. Finding anything novel can be accomplished by familiarizing oneself with the mapping of previously published papers and previous attempts that have been tracked back to various sources, research databases, or scientific publications.

Based on my inquiry, the availability of bibliometric analysis related to learning outcome and writing is still very limited though the mapping for the discussion related Learning Outcome and Writing is quite crucial for some important motives. As Learning Outcome (LO) can be utilized to concentrate the course's assignments, activities, and resources, and curriculum (Print, 1993; Saylor et al., 1981; Ulla & Winitkun, 2017) therefore, LO will also can assist students in focusing on the learning goals (Cuevas et al., 2010; Willis & Edwards, 2005). In order to accomplish the learning goals, it is also suggested to conduct frequent reviews and studies on the LO including the LO in writing courses. Learning outcomes (LO) are the primary competencies from the course that students must master (McCourt & Millis, 2007). It must be adequately planned in order to determine whether the graduates have competences that have been developed at the appropriate educational level (Colthart et al., 2008). Since writing is not an easily mastered skill, especially for those who use English as a second language, learning outcomes are also very important in the process of learning to write and to discuss in publications and practices. It has also been asserted that the process of writing in a second language is more challenging, moreover for the ones who use English as a foreign language (Brown, 2004; Weigle, 2009; Westwood, 2005; Zemach & Rumisek, 2009).

To investigate the current state of the art of Writing Learning Outcome (WLO) and to provide guidance on emerging trends in studies related to Learning Outcomes (LO) and Writing (W), a database search of the Scopus 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 its learning outcomes.

The data was visualized using VOSviewer 1.6.17, OpenRefine, Tableu, and Micro Excel. Thus, this study reviews (1) the bibliometric information regarding publications about WLO in Scopus including the number of yearly publications, country contributions, and keywords, (2) the most influential publications in the field of WLO and (3) the trends in WLO research.
Method

This study applied bibliometrics analysis. Bibliometrics analysis is the statistical analysis of published works. It has concentrated on the complicated quantitative study of citations and citation counts. Knowledge and experience are needed to analyse trends and making judgments because it is complex and specialized. Bibliometrics data is needed in order to identify research trends and assess scientific or institution or country research production (Akhavan et al., 2016; Tian et al., 2008).

Scopus was used as the database for this bibliometric investigation of Writing and Learning Outcome which includes academic journals, conference proceedings, books, and other relevant publications. The main reasons selecting Scopus is because it has the biggest databases, with quite high citation indexes. The other fundamental reason is because the journals published in Scopus are valued worldwide publications. The Journals or scientific papers registered with Scopus also have undergone a rigorous evaluation procedure. As a result, journals or other scientific works indexed by Scopus have a high reputation and are renowned which includes academic journals, conference proceedings, books, and other relevant publications (Baas et al., 2020).

This study was managed with some RQs after the documentation of some keywords gain from data mining. Thus, sample documents were first strictly extracted under the condition [TITLE-ABS-KEY (“Writing” AND “Learning Outcome”) (Figure 1).

There were 1,053 documents were obtained with 705 Articles, 235 Conference Paper, 56 Book Chapters, 39 Reviews, 8 Books, 7 Conference Reviews, 2 Notes, and 1 Erratum. The data then exported with citation data, bibliographic data, abstract and keywords, and other statistics. The data then filtered with the Open Refine application. Open Refine is a powerful Java-based tool designed to work with muddled data and fix it. With Open Refine, the data then cleaned up by merging some keywords that have the same meaning and removing unrelated data.

Sample documents were examined for information on authors, titles, years, citations, author keywords, index keywords, publishers, document types, and so on during the data selection process. The example documents then were uploaded to Excel.
During the data-processing stage; VOSviewer 1.6.17, Excel, and Tableu were used to carry out the bibliometric examination to see and to depict the emerging trends and research gaps as shown in Figure 2.


**Bibliometric Analysis** using VOSviewer, Openfire, Tableu

**Data Analysis and Discussions** of Author, Countries, Periodic, Keywords, Trends in Writing Learning Outcome

Figure 2. The steps and analysis criteria

**Results and Discussion**

**Yearly Publications**

Figure 3 depicts a linear increase in the quantity of WLO articles published in Scopus from 1981 to around midway through the year 2022. WLO was gaining readers in 2012, scientists were finally starting to take it seriously. There was a changing curve depicted in papers published on this topic between 2012 and 2018. The number of articles published on WLO subjects increased steadily in the beginning of 2018 and peaking in 2021 with six times as many articles published as in 2004.

![Year of Distribution](image)

Figure 3. Yearly publication

**Country Contributions**

Sample records totalled 1,053 from Scopus between 1980 and 2022 and were related with 103 different nations, illustrating the widespread nature of interest in WLO around the world. The United States has created 439 documents and contributed about 5,000 citations between 1980 and 2022, making it the leader in this category (Table 1). The United Kingdom is in second place, having published about 63 publications with around 1400 citations. At the moment, Canada and Australia are ranked third and fourth, respectively. Whereas, the total number of documents published in relation to WLO in the Netherlands is low at 19, the total
number of citations is rather high at 583, placing the country in the top five in terms of total citations. The sixth-placed country, Germany, has contributed 32 documents to the database, for a grand total of 32 citations. On the other hand, China is among the top 10 countries with the most citations, with 297 citations spread among 40 articles created in China.

Table 1. This is the title of your table

<table>
<thead>
<tr>
<th>Country</th>
<th>Documents</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>430</td>
<td>4993</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>63</td>
<td>1438</td>
</tr>
<tr>
<td>Canada</td>
<td>35</td>
<td>817</td>
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<tr>
<td>Australia</td>
<td>82</td>
<td>625</td>
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<tr>
<td>Netherlands</td>
<td>19</td>
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<tr>
<td>Germany</td>
<td>32</td>
<td>519</td>
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<tr>
<td>Finland</td>
<td>16</td>
<td>464</td>
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<tr>
<td>China</td>
<td>40</td>
<td>397</td>
</tr>
<tr>
<td>Japan</td>
<td>15</td>
<td>346</td>
</tr>
<tr>
<td>Taiwan</td>
<td>33</td>
<td>260</td>
</tr>
</tbody>
</table>

The top regions that contribute to the production of publications in this field are depicted in Figure 4. Of the total number of publications about WLO generated between 1980 and 2022, 765 or 72.65% publications were produced in these countries. As the shades of blue deepen, so do the total citations and publications for each country depicted. In contrast to countries like the United States, United Kingdom, and Canada where English is either the native or first language, countries in ASEAN and Africa just begun participating in national partnerships in a small number of publications in WLO (Figure 4).
Co-authorship among countries is shown graphically in Figure 5, which depicts ongoing cooperation. The United States, Malaysia, Saudi Arabia, and South Korea were all connected in a linear chain of authors. However, the shared map indicated a predisposition for narrowing attention. Examples of countries that collaborated with Australia are Germany, Finland, and Italy. Nevertheless, China's primary partners in WLO publications were Hong Kong and Taiwan. There is a necessity for cooperation among states to conduct WLO study around the globe for further investigations.

![Figure 5. Country link distributions](image)

**Keywords Analysis**

This study performs a keyword analysis to double-check the expansion of Writing Learning Outcome (WLO) research. In order to identify commonalities among the papers, an analysis was conducted. The author determined potential areas of study by gleaning relevant keywords from the text. A total of 2,476 keywords were found during the WLO-related keyword analysis, but only 82 (3.3% of the total) met the threshold of 5 joint occurrences.

The Figure 6 implies that there was a big number of keywords with a high frequency, which is symptomatic of the character of WLO studies which are relevant to many areas of the teaching of languages. The list follows contains some of the most widely used terms, many of which are also commonly related to one another: “Learning Outcome”, “writing”, “critical thinking”, “pedagogy”, “education”, “writing to learn”, “reading”, “teaching”, “feedback”, “competence”, “attitude”, “evaluation”, “outcomes”, “scaffolding”, “motivation”, “reflection”, “curriculum”, “science education”, “multimedia”, “technology”, “technical writing”, dan “peer feedback”.

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It is indicated that there are clusters associated to WLO displayed by VOSviewer regarding the keywords that were utilized by the writers in their research. The size of the sphere also provides an indication of the number of times the keywords were used in the publications. The proximity of one sphere to another sphere can also be interpreted as an indication of the link between the two. The greater the proximity, the stronger the connection. We can see in the red colour that there is a strong connection between the red dots keywords regarding WLO. The phrases "learning," "assessment," "rubrics," "critical thinking," "academic writing," "literacy," "vocabularies," and "metacognition" are among the frequently occurring keywords. These phrases refer to components that are associated with writing-related skills learning objectives and evaluation.

Assessment is one or several processes of identifying, collecting and preparing the data along with the evidence for evaluation process in order to fulfill the Learning Outcome. Assessment of student learning processes and outcomes includes evaluation principles; assessment techniques; mechanism or assessment procedures; and implementation of the assessment. The instrument used for process assessment can be in the form of a rubric and for the assessment of results can be used portfolio or design work. Assessment of the attitude domain is carried out through observation, self-assessment, assessment between students, and assessment of personal aspects that emphasize the aspects of soft skills. On the other hand, assessment of knowledge domains through various forms of written tests. While assessment of skill areas through performance evaluation can be held through practicum, practice, simulation, field practice, and others that allow students to be able to improve their skills.

The bibliometric analysis is useful for seeing the learning outcomes assigned to courses. These course learning outcomes when passed down to lesson learning are called lesson learning outcomes. The learning outcome is the final ability that is planned at each stage of learning, because it is related to the graduate qualification level, measurement, and achievement. When compiling learning outcomes and writing, the teacher can pay attention to the keywords that appear in the bibliometrics. If they appear obviously in the bibliometrics, it means that these keywords have been widely discussed and used in research before 2021. It means, teacher or researcher can find insights and the gap by reading those works.

Yellow colour cluster is more relevant to the studies regarding learning strategies and outcomes. The learning strategies can be defined as the method used to facilitate student learning activities that are oriented towards predetermined learning outcomes. Learning methods developed for each topic or learning stage of a course are adjusted to the learning outcomes of the topic. Learning outcomes are written in the form of final abilities expected to internalize students. Thus, learning methods in writing can be multi-method depending on the learning orientation. The form and
method of learning are chosen according to the characteristics of the writing course that is being taught to achieve certain abilities specified in the writing course in a series of fulfilment of learning outcomes. The Bibliometric shows us there are some publications related teaching methods such as blended learning, game based learning, and collaborative learning related to WLO.

The green cluster also focuses mostly on the features of the curriculum that are linked to WLO. This cluster includes "Higher Education," "Teaching and Learning Strategies," "Curriculum Development," "Distance Education," and "Active Learning." While, the blue cluster has wider topics such as keywords such as "Curriculum", "Experiential Learning," "Students," and "Reflection.". On the other hand, the green cluster talks more about the technology.

In the interim, the investigation of the co-occurrence of keywords is of utmost significance. It is possible to reflect the opinions of fundamental academic works, and it might be of use to researchers who are trying to keep up with the latest research trends in a certain field (Li et al., 2016; Shoaib et al., 2021). In short, those keywords appeared in the bibliometrics because they indicated, to some extent, the most promising areas of research in the field of WLO in Scopus up until the year 2022.

**Most Influential Publications in The Field of WLO**

Figure 7 displayed the four documents cited the most. Only four of the 1053 documents have been cited more than 250 times, and those five documents are recurrent. The oldest publication was written by Tynjälä (1999) cited 263 times, the title is “Towards expert knowledge? A comparison between a constructivist and a traditional learning environment in the university”. This research investigated the potential of constructivist learning settings for building the prerequisite skills and knowledge necessary for expert knowledge while students were enrolled in higher education. An experiment was carried out in a class, drawing on new ideas of the formation of expert knowledge and on the constructivist view of learning. The major objective of the research was to examine the differences in the learning outcomes achieved by students who were exposed to the course material in a constructivist learning setting as opposed to students who were taught and studied the material in the conventional fashion. Students who were exposed to a constructivist learning environment were able to acquire a wider range of knowledge.
The other highly-cited work was written Shumway and Harden (2003). Learning outcomes for the competent and reflective physician is the topic of this research. Teachers can perform a better job of assessing their students if they have a firm grasp on the assessment procedure, an awareness of the learning outcomes to be evaluated, and an awareness of the most suitable instruments for doing so. The chosen assessment instruments should be legitimate, reliable, practical, and have a meaningful impact on students’ learning. The desired outcome determines the optimal method of evaluation. There will most likely be a written exam, a performance exam in which the student's competency is assessed in a simulated environment, and an evaluation of the student's conduct in practice over time, based on reports from instructors and student portfolios. Each student can have an individual evaluation profile created that details which learning outcomes have been met and which have not been met. Collaboration across the education continuum is necessary for the production of tests that accurately reflect learning outcomes and the implementation of a competence-based assessment strategy, both of which are important for reasons of education and economics.

Weaver (2006) published her work with the topic whether or not college students actually take feedback into consideration. There are over 400 citations to it. It has more citations than any other WLO-related documents. She mentioned that student feedback was a neglected area of study with little published empirical research examining students' perspectives. The purpose of this research was to investigate how students interpreted written feedback and whether or not it reflected a learner-centered pedagogy. Respondents were surveyed using a mixed-methods design that included both qualitative and quantitative data collection and analysis. Student replies indicate that feedback was appreciated, yet many students felt that tutor remarks could be improved. The results of the survey suggest that students could benefit from some instruction on how to interpret and implement feedback. According to a content study of student responses and feedback samples, there are four basic themes of feedback that are not beneficial for improving learning: remarks that are too general or ambiguous, lack guidance, focus on the negative, or are irrelevant to evaluation criteria. Tutors could considerably improve the value of feedback by focusing on messages given by their students' writing, offering feedback set in the context of assessment criteria and learning aims, and ensuring that it is timely.

Another significant publication in WLO study was written by Genesee et al. (2006). The book title is Educating English Language Learners: A Synthesis of Research Evidence. It tells the scientific studies on the academic success of students in the United States who speak English as a second language. Studies involving students in grades K-12 are discussed. The core chapters cover topics including the students' language acquisition in English, their literacy growth in English, instructional challenges in teaching literacy, and their academic accomplishment. The study quality, design characteristics, and statistical analysis are the primary foci of the reviews and analyses. Detailed information on each study is provided in a series of tables throughout the book. This information includes complete citations, information about the students who participated in the studies, the methods used to evaluate their performance, and the outcomes. The final chapter provides a brief overview of the main points and suggests directions for future study.

In conclusion, there were only four documents cited more than 250 times and published before 2007. This shows that there has been no significant publication affecting the discussion of WLO issues since 2006.
Trend Analysis

The relative timing of the several themes has shifted, as shown in Figure 8. When it comes to the issue being discussed, the more bright the colour is, the more novel the study is. People conducted research on Writing Learning Outcomes in 2014, focusing on topics such as learning, teaching learning processes, evaluation, and LO in higher education, distance education, and peer assessment. The year after that, various publications were released in connection with WLO that were relevant to critical thinking, collaborative learning, curriculum, and education. The notion of learning outcomes has become increasingly associated with writing, active learning, and collaborative learning as we head towards 2017. WLO publications have, over the course of their existence, gradually begun to broach such topics as learning analytics, reading, vocabulary acquisition, experiential learning, social media, students' perspectives, and the writing processes.

![Figure 8. Visualisation of trend in WLO](image)

After reading this visualization of trends regarding WLO, we can recognize that WLO topics related to evaluation, WLO in the context of Higher Education, and literacy have long been discussed by researchers around 2014. Discussions on these topics have been relatively long and out of date, but researchers can use these publications as a reference for WLO research development and to find research gaps. In 2018 and 2022, researchers began to associate WLO with vocabulary, reading and speaking. The Genre Based Learning at WLO is also relatively new. WLO in the writing process can also be used as a research topic because it turns out that the topic still has updates and has not been widely researched. Although the relationship with collaborative learning is quite far, it turns out that there are also researchers who associate WLO with Collaborative Learning in recent times.
Conclusion

This research uses bibliometric analysis to evaluate the most important topics associated with Writing Learning Outcomes, giving readers a comprehensive view of WLO as well as the most current advancements in the field. Scopus is used for its publication data since it is the industry standard for Bibliometric analysis, enabling the mapping of networks across countries, keywords, authors, and trends. The results showed that the total number of works published on WLO rose throughout time, with some years showing a slight decrease. Writing-related skills, learning goals, assessment, and instructional methodologies are all prominent in the top search results for "Writing Learning Outcomes" (WLO). It also discusses some of the most significant WLO publications. This research provided bibliometric analysis of the connection between the most prevalent themes in WLO research and classroom practice, which can be utilized to identify areas of innovation in WLO studies. However, bibliometric analysis is a technique for reviewing the literature that makes use of massive amounts of data and technology rather than synthesized theme analysis. The data were aggregated and analysed in their totality using the program. As a result, the precision of this kind of analysis relies heavily on the precision of the program.

References


