FLIPPED CLASSROOM METHODOLOGIES IN ESL EDUCATION: A BIBLIOMETRIC ANALYSIS OF RECENT TRENDS

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Abstract:

The evolution of teaching methodologies in English as a Second Language (ESL) education has witnessed a paradigm shift with the integration of flipped classrooms. While the flipped classroom model has garnered attention for its potential to enhance language learning, there is a need for a systematic examination of the scholarly output in this domain. Identifying prolific authors, prevalent themes, and collaborative networks can provide insights into the current state of research and guide future investigations. We employed Scopus Analyzer to extract and analyze bibliographic data from publications from 2019 to 2023. Additionally, VOSviewer was utilized to map author keywords and prevalent themes in the literature. The analysis aims to spotlight key research clusters, potential collaborations, and the global impact of flipped classroom in ESL. The findings of this bibliometric analysis will contribute significantly to the ongoing discourse on flipped classroom in ESL. By unveiling trends, identifying influential authors, and mapping collaborative networks, this study provides a valuable resource for educators, researchers, and policymakers seeking to navigate the evolving landscape of ESL pedagogy. The multidimensional insights from this analysis aim to inspire further research, innovation and informed decision-making in flipped classroom methodologies in ESL education.

Keywords:

EFL, ESL, Flipped Classroom, Flipped Learning

Introduction

Traditional classroom instruction has been the cornerstone of language education for decades, but it is not without its drawbacks. In a traditional classroom setting, the instructor typically delivers lectures or presents instructional material during class time, leaving limited opportunity for interactive engagement or personalized support. This one-size-fits-all approach may not cater to the diverse learning needs and preferences of ESL learners, leading to disengagement, passive learning, and limited opportunities for skill application and real-world communication (Wilson 2017). Additionally, traditional classroom settings may inadvertently reinforce passive learning habits, as students may become accustomed to passively receiving information rather than actively engaging with and applying it (Singh and A 2022).

The Flipped Classroom model has emerged as a revolutionary influence that challenges traditional pedagogical norms in the ever-evolving language education landscape. Initially conceptualized in science education, the Flipped Classroom has transcended disciplinary boundaries, finding a particularly noteworthy niche in English as a Second Language (ESL) instruction (Kvashnina and Martynko 2016; Zain 2022). As we investigate the trends influencing research on the Flipped Classroom in ESL, it becomes evident that this pedagogical paradigm represents a transformative force, redefining traditional notions of teaching and learning. The Flipped Classroom model flips the conventional teaching dynamic, where direct instruction typically occurs in the classroom, and independent practice or homework occurs outside. In the Flipped Classroom, students are exposed to instructional content through pre-recorded videos or other resources outside class, allowing in-person class time to be dedicated to interactive, collaborative, and application-oriented activities (Bergmann 2017). This inversion of the traditional model has sparked a surge of interest in the ESL community, prompting educators and researchers to investigate its impact on language acquisition (Retnaningsih et al. 2022; Santhanasamy and Yunus 2022), learner engagement (Li and Li 2022a, 2022b), and overall instructional efficacy.

Scope

This study conducts a bibliometric analysis of scholarly output related to flipped classroom methodologies in English as a Second Language (ESL) education from 2019 to 2023. By utilizing Scopus Analyzer, bibliographic data are extracted and analyzed to identify prolific authors, prevalent themes, and collaborative networks within the field. Additionally, VOSviewer is employed to map author keywords and thematic clusters in the literature. The analysis aims to provide insights into the current state of research on flipped classrooms in ESL, shedding light on key research clusters, potential collaborations, and the global impact of this pedagogical approach.

Objectives

The primary objective of this study is to systematically examine the scholarly output surrounding flipped classroom methodologies in ESL education, with a focus on identifying trends, influential authors, and collaborative networks. Specifically, the study aims to achieve the following objectives:

1. To analyze bibliographic data from publications spanning from 2019 to 2023
2. To identify prolific authors and prevalent themes in flipped classroom research within the field of ESL education.
3. To map author keywords and thematic clusters in the literature, providing a visual representation of key research areas and emerging trends by utilizing VOSviewer.

4. To highlight potential collaborations among authors and institutions
5. To reveal collaborative networks and partnerships within the flipped classroom research community.
6. To elucidate the global impact of flipped classroom methodologies in ESL education by examining the geographical distribution of publications and citations.
7. To contribute significantly to the ongoing discourse on flipped classroom pedagogy in ESL education by providing multidimensional insights into the current state of research, guiding future investigations, and informing educators, researchers, and policymakers.

Through the fulfilment of these objectives, this study aims to serve as a valuable resource for stakeholders in ESL education, inspiring further research, innovation, and informed decision-making in flipped classroom methodologies. As researchers explore the Flipped Classroom's applicability across varied learner demographics, they uncover insights into how this model can be tailored to address the unique needs of English language learners (ELLs). Furthermore, integrating technology in language education has become an inseparable facet of the Flipped Classroom landscape. As educators leverage digital platforms and multimedia resources to deliver pre-class content (Lorenzo 2022), researchers are exploring the impact of technology-enhanced language learning experiences on ESL proficiency (Evseeva & Solozhenko, 2015; Kawinkoonlasate, 2019; Drozdikova-Zaripova & Sabirova, 2020;). The interplay between technology and language acquisition in the Flipped Classroom setting has become a focal point, with investigations into the optimal use of digital tools (Loizou 2022), the influence of multimedia content (Ortega et al. 2017; Louhab, Bahnasse, and Talea 2018; Lagunes-Reyes, Cruz-Ramos, and Sandoval-Sánchez 2022) and the role of online interactions (Alves Ribeirinha and da Silva 2021; Akti Aslan 2022; Wang and Yuan 2022; Diningrat et al. 2023) in fostering linguistic development.

Beyond its immediate impact on language acquisition, the Flipped Classroom model is increasingly recognized for its potential to cultivate higher-order thinking skills and foster learner autonomy. Research in this area delves into the cognitive processes activated during pre-class preparation and the role of in-class activities in promoting critical thinking, problem-solving, and collaborative communication (Ahmed and Indurkhya 2020; Shi et al. 2020). This trend highlights the broader implications of Flipped Classroom pedagogy in shaping language proficiency and the holistic development of learners. As we explore the patterns in research about the Flipped Classroom in ESL, it is evident that this pedagogical paradigm represents more than just a shift in instructional design. It signifies a pedagogical revolution, challenging educators to rethink traditional methodologies and embrace innovative approaches to meet the evolving needs of ESL learners. In the following segments of this article, we aim to offer comprehensive insight into the existing research landscape on the flipped classroom model in ESL. Through this exploration, we hope to contribute to the ongoing dialogue that shapes the future of ESL pedagogy and underscores the significance of the Flipped Classroom model in contemporary language education.

Literature Review

The flipped classroom model has gained significant attention in the ESL/EFL instruction field. In 2022, a systematic literature review was conducted using the flipped classroom approach for EFL/ESL instruction in higher education. The review meticulously chose 29 articles, scrutinizing their research designs, participant demographics, and instructional tools. The

investigation investigated the tangible instructional advantages of the flipped classroom model, addressed potential obstacles, and formulated pedagogical and research implications for future studies (Zain 2022). Moreover, a published chapter in 2023 explored the significance of integrating the flipped classroom model within an ESL classroom through the web-based platform Playposit. This chapter presented an outline of the advantages associated with the flipped classroom model, a detailed explanation of Playposit, and a sample lesson plan demonstrating the integration of the flipped classroom model with technology to elevate learners' engagement and success (Abobaker and Ali 2021). Conversely, a literature review aimed to provide a comprehensive insight into how the flipped classroom can positively impact the cultivation of students' critical thinking skills. This review synthesized the outcomes of 16 studies spanning from 2015 to 2020. It unveiled that the flipped classroom, employing diverse learning activities outside and inside the classroom, could engage students actively in the learning process. Additionally, it could be seamlessly combined with other teaching methods to enhance its efficacy in fostering students' critical thinking skills. (Nugraheni, Surjono, and Aji 2022).

Technology, such as web-based platforms, has also been emphasized to enhance the implementation of the flipped classroom model in ESL settings. Recent literature has highlighted the need for learning innovation by developing web-based flipped classroom models to create more effective, efficient, and exciting learning competencies for 21st-century students (Ambiyar et al. 2021). In addition, the study also aimed to determine the potential and needs of lecturers and students in studying computer network security to develop a web-based flipped classroom model in vocational education. The results indicated that lecturers and students need a learning environment that integrates technology to enable effective communication and access to information from various sources. This emphasis on technology integration aligns with the broader trend of incorporating the latest technology into instructional approaches to suit students' interests and create a more meaningful and collaborative interaction in the class. In relevance, a systematic literature review focused on implementing the flipped classroom for EFL/ESL instruction in higher education revealed practical instructional benefits and possible barriers to the model. The review discussed how the flipped classroom model extends classroom interaction, creates a different atmosphere, and accommodates meaningful and collaborative interaction in the class (Zain 2022). This underscores the importance of technology integration in creating an engaging and effective learning environment, particularly relevant to ESL settings. On another note, it is reported that the flipped group of tertiary level students in a comparative analysis of blended learning courses outperformed the online group based on the t-test results. This study indicated that flipped classrooms can be an effective pedagogy in teaching ESL. This is because the students could learn at their own pace and revisit the material as necessary, enhancing their understanding. The study suggests that flipped classrooms yield better learning outcomes (Kumar and Tamilarasan 2021).

These recent literature reviews highlight the potential benefits of the flipped classroom model in ESL/EFL instruction, including practical instructional advantages, pedagogical implications, and its positive effects on developing students' critical thinking skills. Technology, such as web-based platforms, has also been emphasized to enhance the implementation of the flipped classroom model in ESL settings.

Research Question

1. What are the research trends of flipped classrooms in ESL according to the year of publication?
2. Who writes the most cited articles?
3. How much research has been published on flipped classrooms in teaching ESL according to countries?
4. Who are the top ten authors based on citation by research?
5. What are the most used keywords in papers related to flipped classrooms in ESL research?
6. How does the pattern of co-authorship among countries contribute to the landscape of flipped classroom research in ESL?
7. What insights can be gained from the co-citations and connections between influential authors?

Methodology

Bibliometrics involves integrating, organizing, and analyzing bibliographic data extracted from scientific publications (Verbeek et al. 2002; Alves, Borges, and De Nadae 2021; Assyakur and Rosa 2022). In addition to basic descriptive statistics, such as the publication journal, year of publication, and primary author classification (Wu and Wu 2017), it encompasses sophisticated techniques like document co-citation analysis. Conducting a successful literature review requires an iterative approach involving the identification of relevant keywords, literature searching, and thorough analysis to construct a comprehensive bibliography and generate reliable results (Fahimnia, Sarkis, and Davarzani 2015).

In this context, the literature on ESL Flipped Classroom around the world was searched using SCOPUS database on December 23rd, 2023. To ensure the credibility of the data, the study exclusively relied on the SCOPUS database for data collection (di Stefano, Peteraf, and Veronay 2010; Khiste and Paithankar 2017; Al-Khoury et al. 2022). Notably, Elsevier's Scopus, renowned for its extensive coverage, facilitated the collection of publications spanning from 2019 to December 2023 for subsequent analysis. The query restricted the language on English only as its coverage shall conform to ESL education. Furthermore, to guarantee the inclusion of high-quality publications, only articles published in rigorously peer-reviewed academic journals were considered, deliberately excluding books and lecture notes(Gu et al. 2019). Publication year, language, journal, title, author, affiliation, keywords, document type, abstract, and the number of citations were exported to CSV format for all papers that met the criteria. Then, Cooccurrence, Citation, Co-citation, and themes were examined using VOSviewer (version 1.6.19).

Data Search Strategy

This study employed a screening sequence to determine the search terms for article retrieval. It was initiated by querying the Scopus database with online TITLE-ABS-KEY ("flipped classroom" OR "flipped learning" OR flip*) AND (esl OR efl OR english) thereby assembling 1041 articles. Afterward, the query string was revised so that the search terms "flipped classroom" OR "flipped learning" should be focused on teaching English as a second or foreign language. This process yielded 781 results, which were additionally scrutinized to include only research articles in English, and reviews were also excluded. The final search string AND (LIMIT-TO (PUBYEAR , 2019) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2022) OR LIMIT-TO (PUBYEAR , 2023

)) AND (LIMIT-TO (DOCTYPE , "cp") OR LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English") refinement included 573 articles which was used for bibliometric analysis. As of December 2023, all articles from the Scopus database relating to flipped classroom in ESL were incorporated in this study.

Table 1: The Selection Criterion Search String

Criterion	Inclusion	Exclusion
Language	English	Non-English
Timeline	2019 – 2023	< 2019
Literature Type	Journal(Article), Conference Paper	Conference, Book Review
Publication Stage	Final, In Press	-

Data Analysis

VOSviewer is a sophisticated computer program developed by Nees Jan van Eck and Ludo Waltman at Leiden University. It is designed to facilitate the visualization and analysis of bibliometric networks. Its primary function lies in providing researchers with a powerful tool to explore intricate patterns, relationships, and structures within large sets of scholarly data. This program is widely utilized in scientometrics and bibliometrics, where understanding the connections between various entities such as authors, journals, or keywords is crucial for gaining insights into the dynamics of academic research. The core function of VOSviewer is to visualize bibliometric networks effectively. By taking input data, often in the form of a matrix representing relationships between entities, the software generates visual maps where entities are depicted as nodes, and the links between them symbolize the strength or frequency of the relationships. This approach gives researchers a holistic view of collaboration or association patterns within a specific research domain.

Moreover, VOSviewer excels in analyzing co-occurrence data, an essential aspect of bibliometrics. Through visual representations, it provides a clear and intuitive portrayal of the structure and dynamics of a research field. The two-dimensional spatial arrangement of nodes allows entities with stronger relationships to be positioned closer to each other, aiding researchers in understanding the intricate web of connections within a given scientific domain.

In analyzing the data, the data sets comprising the publication year, publication title, author name, journal, citation, and keywords in PlainText format were obtained from the Scopus database, spanning the period from 2019 to December 2023. These datasets were then analyzed using VOSviewer software version 1.6.19. The application of VOSviewer involved analysis and map creation through VOS clustering and mapping methods. VOSViewer is an alternative to the Multidimensional Scaling (MDS) approach (van Eck and Waltman 2010) and shares similarities with MDS in its objective. Both approaches aim to position items in a low-dimensional space, accurately reflecting the relationship and similarity between any two items through their distance (Appio, Cesaroni, and Di Minin 2014). Unlike MDS, which concentrates on computing similarity measures like Jaccard indexes and cosine, VOS employs a more appropriate technique for normalizing co-occurrence frequencies (Van Eck and Waltman 2007) such as the association strength (ASij) and it is calculated as:

$$ASij ¼ Cij$$

$$Wiwj$$

which is proportional to the ratio between the observed number of co-occurrences of items i and j and the expected number of co-occurrences under the assumption of statistical independence between i and j, VOSviewer utilizes an index to position items on a map by minimizing the weighted sum of squared distances between all item pairs (van Eck and Waltman 2010). Implementing LinLog/modularity normalization, as suggested by (Appio et al. 2016), further refines this process. Visualization techniques in VOSviewer applied to the dataset revealed patterns grounded in mathematical relationships, enabling keyword co-occurrence, citation analysis, and co-citation analysis. Exploration of the development of a research area over time can be achieved through keyword co-occurrence analysis (Zhao 2017). Citation analysis, on the other hand, proves valuable in identifying key research issues, trends, and techniques, along with delving into the historical relevance of a discipline's primary focus (Allahverdiyev and Yucesoy 2017). Document co-citation analysis, a frequently employed bibliometric method (Fahimnia et al. 2015; Liu et al. 2015; Appio et al. 2016), relies on network theory to map the relevant data structure (Liu et al. 2015).

Result and Finding

### *What are the Research Trends of Flipped Classroom in ESL According to the Year of Publication?*
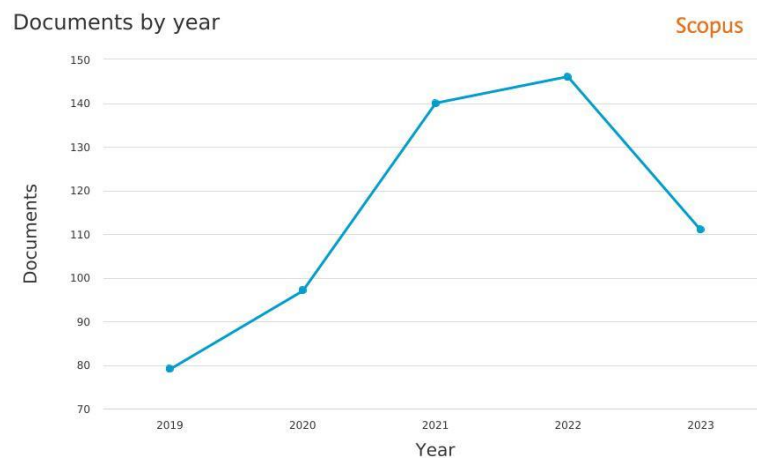
Figure 1: Research Trends of Flipped Classroom in ESL

The graph shows a slight upward trend in the number of documents published in the journal from 2019 to 2023. There is a slight dip in the number of documents published in 2020, followed by an increase in 2021 and 2022. The number of documents published in 2023 is on track to be slightly higher than the number published in 2022.

There are a few possible explanations for this trend. One possibility is that the journal is becoming more popular and is attracting more submissions. Another possibility is that the field of research that the journal covers is growing. It is also possible that there is a combination of factors at play.

Who Writes The Most Cited Articles?
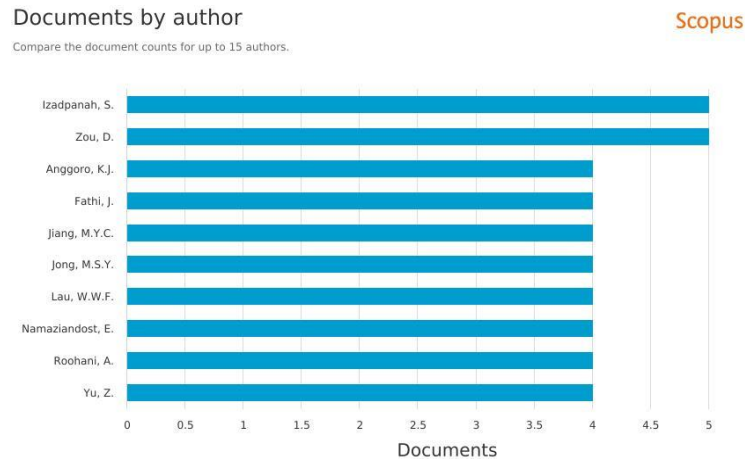
**Figure 2: Key Authors and Publication Count**

The bibliometric analysis of the flipped classroom in teaching English as a Second Language (ESL) presents a compelling snapshot of prolific authors contributing significantly to this research area. The figure, generated through Scopus Analyzer, highlights several key authors and their respective publication counts. This information allows for a nuanced exploration of scholarly contributions and potential focus areas within the field.

Izadpanah, S., and Zou, D. emerged as the leading authors with five publications each. Their extensive contributions suggest a sustained commitment to exploring the flipped classroom model in ESL education. Analyzing the content of their publications can offer valuable insights into the specific aspects of flipped classroom implementation, instructional strategies, and potential impacts on ESL learning outcomes. Following closely with four publications each are Anggoro, K.J., Fathi, J., Jiang, M.Y.C., Jong, M.S.Y., Lau, W.W.F., Namaziandost, E., Roohani, A., and Yu, Z. This group of authors represents a diverse range of expertise, and their collective output underscores the multidisciplinary nature of research on the flipped classroom approach in ESL instruction.

Examining the themes and methodologies employed by these authors could reveal commonalities and differences in their research approaches. It may be interesting to explore whether certain authors focus on specific aspects of flipped classroom implementation, such as technology integration, pedagogical strategies, or assessment methods. Furthermore, the data prompts questions about potential collaborations among these prolific authors. Are there co-authorships or collaborative networks evident in the publications? Investigating collaborative patterns can provide insights into the social structure of the research community studying the flipped classroom in ESL, fostering a better understanding of how ideas and expertise are shared within this academic domain.

How Much Research has been Published on Flipped Classroom in Teaching ESL according to Countries?
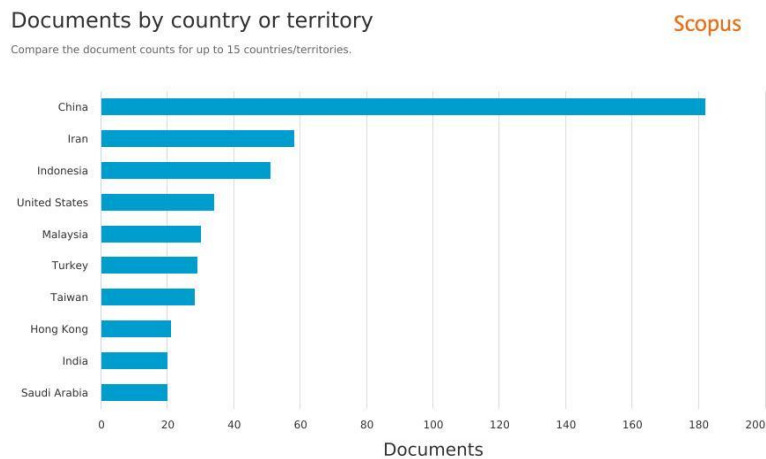
Figure 3: Publication Count by Countries

The analysis reveals a notable distribution of research publications across different countries and territories. The data, generated using the Scopus analyzer, highlights the global interest and engagement in exploring the implications of the flipped classroom model in ESL education. China emerged as the leading contributor with 182 publications, signifying a robust research output and a keen interest in the flipped classroom approach within the Chinese educational context. The high number of publications from China suggests a significant investment in exploring innovative pedagogical methods, particularly in the ESL domain. Iran follows as the second-highest contributor with 58 publications. The substantial number of publications from Iran underscores the country's commitment to advancing ESL education by investigating the flipped classroom model. This reflects a growing interest in alternative instructional strategies to enhance language learning outcomes.

With 51 publications, Indonesia holds a noteworthy position in the landscape of flipped classroom research in ESL. The relatively high number of publications from Indonesia indicates a proactive approach to incorporating technology-enhanced teaching methods in ESL education, aligning with global trends in educational innovation. The United States, with 34 publications, is a notable contributor to the flipped classroom literature in ESL. While the number of publications is lower compared to some other countries, it reflects the ongoing interest and engagement of American scholars in investigating the effectiveness of the flipped classroom model in language education. Malaysia, Turkey, and Taiwan also contribute substantially, with 30, 29, and 28 publications. Hong Kong, India, and Saudi Arabia each contribute around 20 publications, highlighting a consistent interest in exploring innovative teaching methodologies within these regions. The relatively balanced distribution across these diverse locations suggests a widespread recognition of the potential benefits of the flipped classroom in ESL education.

In summary, the bibliometric analysis underscores the research's global reach and impact on the flipped classroom in teaching ESL. This international collaboration in exploring the flipped classroom model contributes to a rich and diverse body of literature that can inform educators and researchers worldwide.

Who are the Top Ten Authors Based on Citation by Research?

**Table 2: Top 10 Most Cited Authors in Flipped Classroom Research**

Authors	Title	Year	Source Title	Cited by
Turan Z.; Akdag-Cimen B.	Flipped classroom in English language teaching: A systematic review	2020	Computer Assisted Language Learning	151
Namaziandost E.; Çakmak F.	An account of EFL learners' self-efficacy and gender in the Flipped Classroom Model	2020	Education and Information Technologies	80
Zou D.; Xie H.	Flipping an English writing class with technology-enhanced just-in-time teaching and peer instruction	2019	Interactive Learning Environments	63
Amiryousefi M.	The incorporation of flipped learning into conventional classes to enhance EFL learners' L2 speaking, L2 listening, and engagement	2019	Innovation in Language Learning and Teaching	63
Zainuddin Z.; Habiburrahim; Muluk S.; Keumala C.M.	How do students become self-directed learners in the EFL flipped-class pedagogy? A study in higher education	2019	Indonesian Journal of Applied Linguistics	62
Haghighi H.; Jafarigohar M.; Khoshsima H.; Vahdany F.	Impact of flipped classroom on EFL learners' appropriate use of refusal: achievement, participation, perception	2019	Computer Assisted Language Learning	60
Zou D.	Gamified flipped EFL classroom for primary education: Student and teacher perceptions	2020	Journal of Computers in Education	57
Wu W.-C.V.; Yang J.C.; Scott Chen Hsieh J.; Yamamoto T.	Free from demotivation in EFL writing: the use of online flipped writing instruction	2020	Computer Assisted Language Learning	51
Kumar A.; Ahuja K.; Vadapalli R.; Talukdar P.	Syntax-guided controlled generation of paraphrases	2020	Transactions of the Association for Computational Linguistics	51
Andujar A.; Salaberri-Ramiro M.S.; Martínez M.S.C.	Integrating flipped foreign language learning through mobile devices: Technology acceptance and flipped learning experience	2020	Sustainability (Switzerland)	48

The provided data on the number of citations for research articles on the flipped classroom model in teaching English as a Second Language (ESL) offers insights into the impact and recognition of these studies within the academic community.

- Turan and Akdag-Cimen's systematic review is a cornerstone in flipped classroom research. Published in 2020, it offers a comprehensive overview of the flipped classroom approach in English language teaching. With a remarkable 151 citations, this work has become an essential resource for scholars, educators, and researchers seeking a deeper understanding of the implications and effectiveness of the flipped classroom model.

- Namaziandost and Çakmak's study explores self-efficacy and gender dynamics in the flipped classroom. Published in 2020, it has garnered 80 citations, indicating its significance in discussions surrounding learner attitudes and perceptions within the flipped learning environment.

- Zou and Xie's research, published in 2019, investigates the use of technology-enhanced strategies in flipping an English writing class. With 63 citations, this work highlights the growing interest in interactive and technology-driven pedagogies in ESL education.

- Amiryousefi's study, published in 2019, focuses on enhancing language skills and engagement through flipped learning. With 63 citations, it underscores the impact of innovative teaching methods on language proficiency and student engagement.

- This collaborative study, published in 2019, examines the development of self-directed learning skills in the flipped classroom. With 62 citations, it contributes significantly to discussions on fostering learner autonomy in higher education settings.

- Haghighi and colleagues investigate the impact of the flipped classroom on learners' refusal skills, focusing on achievement, participation, and perception. Published in 2019, this study, with 60 citations, sheds light on the multifaceted effects of flipped learning on language proficiency and communicative skills.

- Zou's work, published in 2020, explores the gamification of the flipped classroom in primary education. With 57 citations, this study underscores the significance of incorporating gamified elements into the flipped learning environment, particularly in primary ESL education.

- Wu, Yang, Chen Hsieh, and Yamamoto's research, published in 2020, focuses on mitigating demotivation in EFL writing through online flipped instruction. With 51 citations, this study addresses the crucial aspect of maintaining student motivation in language learning.

- Kumar and team's work, published in 2020, explores syntax-guided paraphrase generation. With 51 citations, this study brings a computational linguistics perspective to the flipped classroom, offering insights into language generation and variation.

- Andujar, Salaberri-Ramiro, and Martínez's study, published in 2020, focuses on integrating flipped foreign language learning through mobile devices. With 48 citations, this work explores the acceptance of technology and the overall flipped learning experience in the context of language education.

In summary, these highly cited articles collectively contribute to shaping the research landscape on the flipped classroom in ESL. They address various topics, from systematic reviews and self-efficacy to integrating technology and gamification, providing valuable insights for researchers, educators, and practitioners. The diverse perspectives reflected in these studies highlight the multidimensional nature of flipped classroom research in ESL education.

***What are the Most Commonly Used Keywords in Papers Related to Flipped Classroom in ESL Research?***
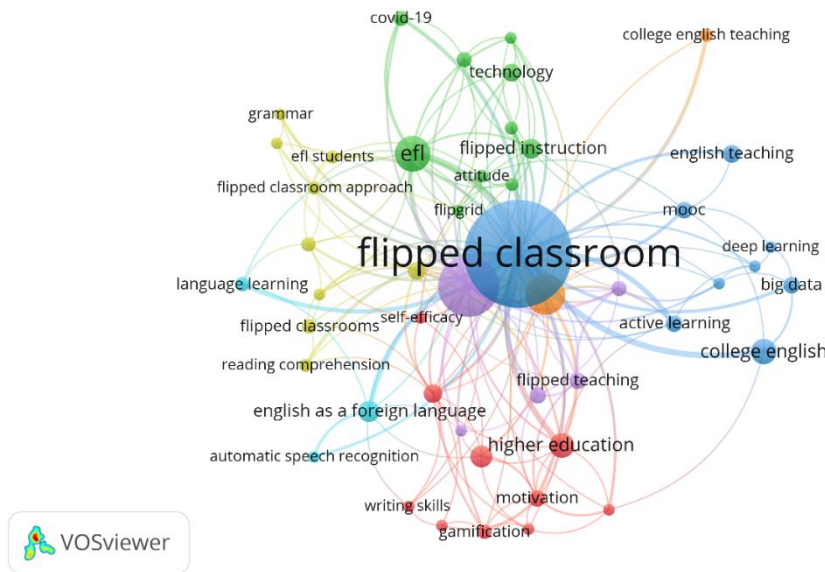
Figure 4: Network Visualization Map of Keywords' Co-Occurrence

Using VOSviewer, the author keywords were mapped based on five minimum numbers of occurrences (see Figure 4). The figure shows a network map of author keywords that co-occurred in a set of articles on the topic of flipped classrooms in English teaching. The nodes in the map represent the author's keywords, and the edges between the nodes represent the co-occurrence of the keywords. The most prominent keywords in the map are "flipped classroom," "college English teaching," "technology," "grammar," "efl students," "flipped instruction," "attitude," "flipgrid," "mooc," "deep learning," "language learning," "big data," "flipped classrooms," "self-efficacy," "active learning," "reading comprehension," "college English," "flipped teaching," "english as a foreign language," "automatic speech recognition," "higher education," "writing skills," "motivation," and "VOSviewer."

The keywords that co-occurred most frequently with "flipped classroom" are "college English teaching," "technology," "flipped instruction," "attitude," "flip grid," "MOOC," "deep learning," and "language learning." This suggests that these are some of the most critical topics discussed in the literature on flipped classrooms in college English teaching. The figure also shows some clusters of keywords that are related to each other. For example, the keywords "grammar," "EFL students," and "English as a foreign language" are all related to the topic of teaching English to speakers of other languages. Overall, the figure provides a valuable overview of the research on flipped classrooms in English teaching. It shows that this is a broad and complex topic being addressed from various perspectives. For instance, the use of technology is a central theme in the research on flipped classrooms in college English teaching. This is evident from the prominence of keywords such as "technology," "flipgrid," "mooc," and "deep learning" in the figure. The research on flipped classrooms is also concerned with the impact of this teaching approach on student learning. This is evident from the prominence of keywords such as "attitude," "self-efficacy," "active learning," and "reading comprehension" in the figure. There is a growing interest in using flipped classrooms to teach English to

speakers of other languages. This is evident from the presence of keywords such as "EFL students" and "English as a foreign language" in the figure.

How Does The Pattern Of Co-Authorship Among Countries Contribute To The Landscape Of Flipped Classroom Research In ESL?
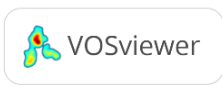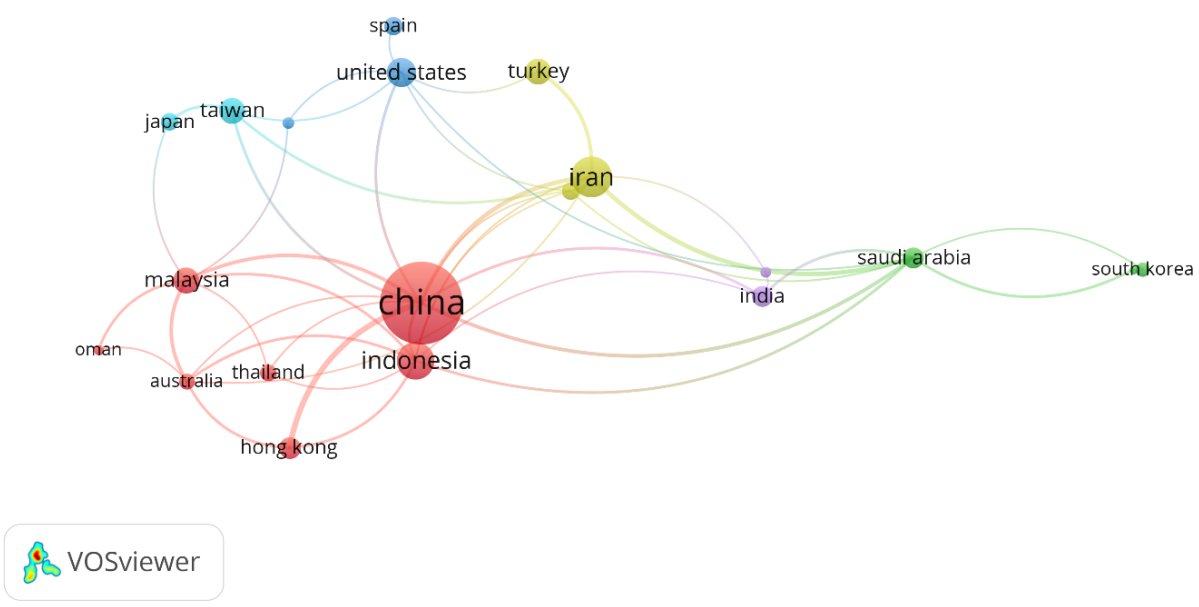
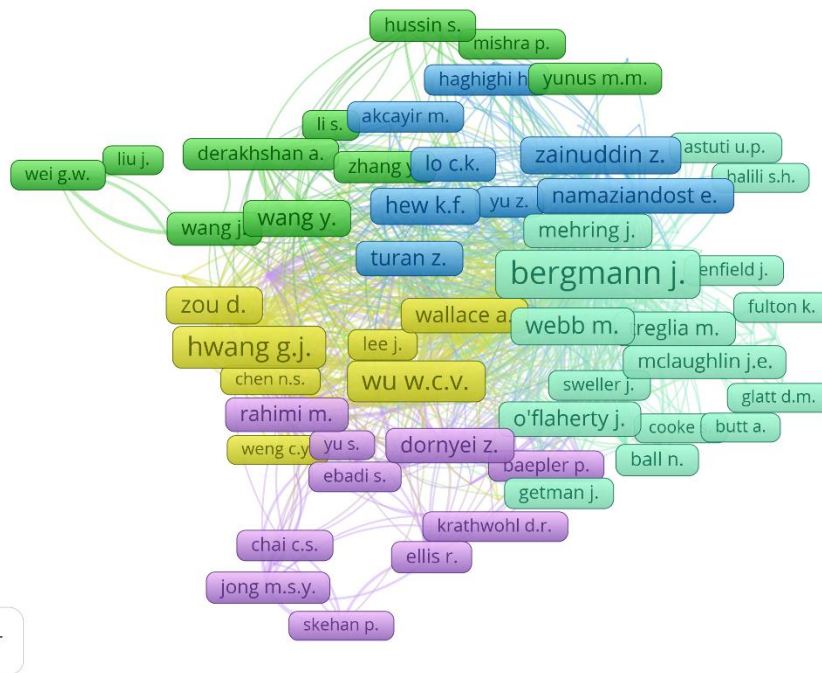**Figure 5: Network Visualization Map of Countries Co-Authorship**

The figure indicates the countries which authors collaborate on flipped classroom. It shows a network map of countries that have co-authored research papers together. The nodes in the map represent the countries, and the edges between the nodes represent the co-occurrence of the countries in the same research paper. The size of a node is proportional to the number of research papers the country has co-authored, and the thickness of an edge is proportional to the number of research papers that the two countries have co-authored together.

A striking feature is the presence of several prominent collaborators, evidenced by larger nodes in the network. These likely include countries like China, Malaysia, Saudi Arabia, South Korea, and India. This suggests a strong focus on flipped classroom methodologies in these regions. However, the network also reveals a significant player emerging from Southeast Asia: Indonesia, represented by a sizeable node. This indicates that Indonesia is actively contributing to and likely collaborating with other countries on flipped classroom research in ESL. Furthermore, the visualization hints at distinct clusters of collaboration. One such cluster might connect geographically proximate countries like China, Malaysia, Saudi Arabia, South Korea, and India. This could indicate a regional focus on flipped classroom research, with researchers sharing best practices and expertise within their vicinity. Another cluster appears to encompass a more geographically diverse group, including Indonesia, Thailand, Australia, and Oman. This suggests a potential focus on flipped classrooms in Southeast Asia and Oceania. The presence of a large node for Indonesia within this cluster highlights its potential role as a central participant in research efforts focused on flipped classrooms within this region, which boasts a significant population of ESL learners. Additionally, a separate cluster consisting of Hong

Kong, Taiwan, and Japan might reflect a focus on flipped classrooms within the East Asian educational sphere.

Interestingly, China occupies a central position within the co-authorship network. This implies that China has collaborated extensively with numerous countries on flipped classroom research in ESL. This could be due to China's growing prominence in educational research or its active role in fostering international research collaborations. Similarly, Indonesia might also have a significant number of collaborations with other countries, although potentially not to the same extent as China. In conclusion, the co-authorship network visualization unveils a vibrant and collaborative landscape for flipped classroom research in ESL. The presence of prominent collaborators, distinct clusters of collaboration, and a central player like China all paint a picture of a dynamic research field.

What Insights Can be Gained from the Co-Citations and Connections between Influential Authors?

Figure 3: Network Visualisation Map of Co-Citation by Cited Authors Collaboration

The figure shows a network map of cited authors in the field of flipped classrooms in teaching ESL based on co-citation data. The map includes nodes representing the most frequently cited authors and edges connecting nodes when two authors are cited together in the same body of research. The node size corresponds to the number of times the author is cited, and the thickness of an edge indicates the frequency of co-citation between two authors.

Central Authors and Research Themes:
- Hussin S.: The central position of Hussin S. suggests their work is foundational to the field. Their research might explore the theoretical underpinnings of flipped classrooms in ESL or investigate its effectiveness in specific contexts.

- Mishra P.: Another central figure, Mishra P., likely focuses on the pedagogical aspects of flipped classrooms, potentially delving into instructional design strategies or teacher training methods.
- Haghighi H., Yunus M.M., Lis. Akcayir M.: This cluster around Hussin S. might represent research on applying flipped classrooms in specific ESL contexts, such as online language learning or primary/secondary education.

 Other Key Areas:
- Liu J., Derakhshan A., Zhang L.C.K., Zainuddin Z.: This group near Mishra P. could be investigating the impact of flipped classrooms on student outcomes, such as language proficiency, engagement, or motivation.
- Wei G.W., Halili S.H.: This smaller cluster might explore the use of technology in flipped classrooms, potentially focusing on specific tools or platforms.
- Wang J., Wang Y., Mehring J.: The authors form a bridge between the central clusters, potentially indicating research that combines theoretical grounding with practical application.

Overall, the figure highlights Hussin S. and Mishra P.'s central role in flipped classrooms in ESL teaching. It reveals various research themes, including theoretical foundations, pedagogical approaches, impact on student outcomes, and technology integration. Smaller clusters suggest ongoing exploration of flipped classrooms in specific contexts and the potential for further interdisciplinary research.

For better overview of the findings, the table below, which encapsulates key findings derived from the bibliometric analysis focused on the utilization of flipped classroom methodologies within ESL (English as a Second Language) education is presented.

Table 3: Summary of Findings

Research Question	Findings
1. What are the research trends of flipped classrooms in ESL according to the year of publication?	2019: 79, 2020: 97, 2021: 140, 2022: 146, 2023: 111.
2. Who writes the most cited articles?	Izadpanah, S., and Zou, D: 5, Anggoro, K.J., Fathi, J., Jiang, M.Y.C., Jong, M.S.Y., Lau, W.W.F., Namaziandost, E., Roohani, A., and Yu, Z: 4.
3. How much research has been published on flipped classrooms in teaching ESL according to countries?	China:182, Iran: 58, Indonesia: 51, United States: 34, Malaysia: 30, Turkey: 29, Taiwan: 28, Hong Kong: 21, India: 20, Saudi Arabia: 20.
4. Who are the top ten authors based on citation by research?	1. Turan Z.; Akdag-Cimen B. (Turan and Akdag-Cimen 2020) 2. Namaziandost E.; Çakmak F (Namaziandost and Çakmak 2020) 3. Zou D.; Xie H. (Zou and Xie 2019) 4. Amiryousefi M (Amiryousefi 2019)

	5. Zainuddin Z.; Habiburrahim; Muluk S.; Keumala C.M. (Zainuddin et al. 2019) 6. Haghighi H.; Jafarigohar M.; Khoshsima H.; Vahdany F. (Haghighi et al. 2019) 7. Zou D. (Zou 2020) 8. Wu W.-C.V.; Yang J.C.; Scott Chen Hsieh J.; Yamamoto T. (Wu et al. 2020) 9. Kumar A.; Ahuja K.; Vadapalli R.; Talukdar P. (Kumar et al. 2020) 10. Andujar A.; Salaberri-Ramiro M.S.; Martínez M.S.C. (Andujar, Salaberri-Ramiro, and Martínez 2020)
5. What are the most used keywords in papers related to flipped classrooms in ESL research?	1. College English teaching 2. Technology 3. Flipped instruction 4. Attitude 5. Flip grid 6. MOOC 7. Deep learning 8. Language learning
6. How does the pattern of co-authorship among countries contribute to the landscape of flipped classroom research in ESL?	Cluster collaborations 1. China, Malaysia, Saudi Arabia, South Korea and India 2. Indonesia, Thailand, Australia and Oman 3. Hong Kong, Taiwan and Japan
7. What insights can be gained from the co-citations and connections between influential authors?	Research themes: Theoretical foundations, pedagogical approaches, impact on student outcomes, and technology integration.

Discussion and Conclusion

The bibliometric analysis reveals intriguing trends in the research landscape of flipped classrooms in teaching English as a Second Language (ESL). The upward trajectory in the number of documents published from 2019 to 2023 suggests a growing interest in the field, with a temporary dip in 2020, possibly attributed to external factors such as the global pandemic. Two plausible explanations for this growth are proposed: the increasing popularity of the journal and a broader expansion of the ESL research domain. The prolific authors Izadpanah, S., and Zou, D., stand out with five publications each, sparking curiosity about the commonalities and differences in their research approaches. This insight could pave the way for further exploration into their methodologies and potential collaborations.

China emerged as a leading contributor with 182 publications, showcasing a robust research output and a keen interest in the flipped classroom approach. This signifies a significant investment in innovative pedagogical methods and reflects the global trend of incorporating technology in ESL education. Indonesia's noteworthy position with 51 publications

underscores a proactive approach to embracing technology-enhanced teaching methods, aligning with global educational innovation trends. The analysis of highly cited articles provides a snapshot of the impact and recognition of studies on the flipped classroom model. These articles, with varying citation counts, contribute significantly to discussions on learner attitudes, technology-driven pedagogies, language proficiency, and student engagement. Furthermore, the VOSviewer analysis unveiled the interconnected network of author keywords, shedding light on prevalent themes in the literature. The identified clusters of related keywords point to critical topics in flipped classroom research, such as college English teaching, technology, attitude, and deep learning. This analysis has achieved its objective of identifying trends, prolific authors, key countries of contribution, and prevalent themes in flipped classroom research. Additionally, the analysis of highly cited articles and prevalent keywords offers a snapshot of impactful research areas and themes within the flipped classroom domain. The insight into prevalent themes can guide future research directions and help educators and policymakers stay abreast of developments in ESL pedagogy.

While the bibliometric analysis offers a comprehensive overview and valuable insights, it is important to acknowledge its limitations. The study's reliance on existing literature and citation data may overlook emerging or non-traditional sources of knowledge. Consequently, the analysis is limited to published works and may not capture ongoing research or unpublished findings.

In conclusion, the bibliometric analysis has successfully mapped the research landscape of flipped classrooms in ESL education, providing valuable insights for educators, researchers, and policymakers. By highlighting trends, prolific authors, and key research areas, this study contributes to the ongoing dialogue on innovative pedagogical approaches in ESL education.

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