Trends and developments in online collaborative writing: a bibliometric review

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Abstract

The digital era has revolutionized educational practices, with online collaborative writing emerging as a pivotal approach in fostering student engagement, critical thinking, and communication skills. This bibliometric study aims to analyze the trends and developments in research on online collaborative writing over the past decade, highlighting key contributions, research methodologies, and thematic focuses within the field. By employing bibliometric tools such as VOSviewer and Bibliometrics, the study examines publications from leading academic databases, offering insights into the evolution of this pedagogical method. The findings reveal significant growth in the number of studies, with a particular surge during the COVID-19 pandemic. The analysis also uncovers a predominance of quantitative research designs, particularly quasi-experimental studies, while identifying gaps in qualitative research. This review provides a comprehensive overview of the current state of online collaborative writing research, suggesting future directions for investigation and emphasizing the relevance of this practice beyond educational settings in an increasingly digital and collaborative world.

Keywords: online collaborative writing, bibliometric study

INTRODUCTION

The digital age has brought significant transformations to the educational landscape, particularly in the way students engage with writing tasks. Online collaborative writing has emerged as a critical pedagogical approach, allowing students to work together on writing projects in real-time, regardless of their physical location. This approach leverages digital tools and platforms, such as Google Docs, wikis, and other collaborative software, to enable students

to co-construct knowledge, develop writing skills, and engage in meaningful peer interactions. The shift from individual to collaborative writing has been widely recognized as a means of enhancing critical thinking, creativity, and communication skills, which are essential for success in the 21st century.

The increasing adoption of online collaborative writing in educational settings has sparked a growing body of research aimed at understanding its effectiveness, challenges, and potential for innovation. Scholars have explored various aspects of online collaborative writing, including its impact on student engagement, the dynamics of group interaction, and the role of digital tools in facilitating the writing process. However, as the field continues to evolve, there is a need for a comprehensive review of the trends and developments in this area to provide a clear picture of the current state of research and identify future directions.

A bibliometric review offers a systematic approach to analyzing the body of literature on online collaborative writing. By examining patterns in research output, citation trends, and the most influential publications and authors, a bibliometric analysis can provide valuable insights into the evolution of the field. This type of review can help identify key research areas, highlight gaps in the literature, and suggest potential avenues for further investigation. Moreover, it can serve as a benchmark for educators and researchers seeking to integrate collaborative writing practices into their curricula.

The importance of online collaborative writing extends beyond the classroom. In a globalized and increasingly digital world, the ability to collaborate effectively across distances is a vital skill. As businesses and organizations adopt remote working models, the need for strong collaborative writing abilities has become more pronounced. Thus, the research on online collaborative writing is not only relevant to educators but also to professionals and policymakers interested in fostering a workforce equipped with the necessary digital communication skills.

This study aims to conduct a bibliometric review of the literature on online collaborative writing to map the key trends, developments, and gaps in the field. By analyzing the research published over the past decade, this study will provide a comprehensive overview of the current state of knowledge and contribute to the ongoing discourse on the role of digital tools in enhancing collaborative writing practices.

METHODS

This study employs a bibliometric analysis to examine the trends and developments in online collaborative writing research. The bibliometric approach involves the systematic collection, analysis, and interpretation of publication data to identify patterns and trends in the literature. The analysis will focus on key bibliometric indicators such as the number of publications, citation counts, co-authorship networks, and the most influential authors, journals, and institutions in the field. This method allows for a quantitative assessment of the research landscape and provides a comprehensive overview of the field's evolution.

The data for this study will be sourced from major academic databases, such as Scopus, Web of Science, and Google Scholar, covering publications from 2010 to 2023. The selection criteria will include peer-reviewed journal articles, conference papers, and book chapters that specifically address online collaborative writing in educational settings. The data will be processed using bibliometric software tools, such as VOSviewer and Bibliometrix, to visualize trends and relationships among the selected publications. These tools will enable the identification of research clusters, co-citation patterns, and collaboration networks.

In addition to the quantitative analysis, this study will also include a qualitative review of the most cited and influential works in the field. This qualitative component will provide a deeper understanding of the key themes and findings that have shaped the research on online collaborative writing. By combining both quantitative and qualitative approaches, this study aims to offer a comprehensive and nuanced analysis of the trends and developments in this important area of educational research.

RESULTS AND DISCUSSION

Results

Number of publications

The number of publications of articles indicates how often the research was conducted in a certain period. Alluding to the graph shown in Figure 1, articles reviewing critical thinking skills can be found since 2018.

Publication of Articles on online collaborative writing in the 5 last years
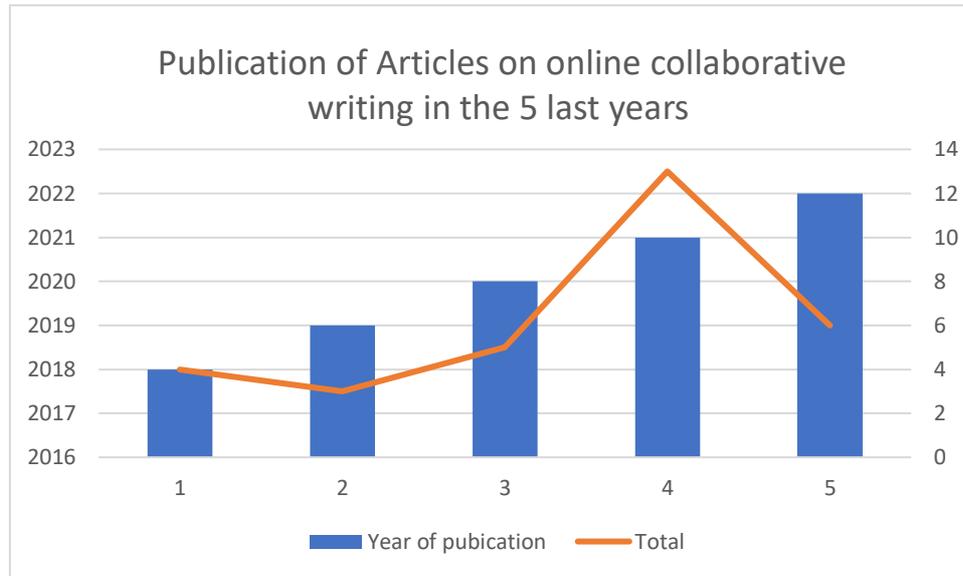
From the above data, it can be concluded that the most research on online collaborative writing was conducted in 2021. This is possible because in that year there was a Covid-19 outbreak so that the role of online collaborative writing increased significantly in that year.

Types of research

The type and design of the research determines the focus of the research. Based on Figure 2, quantitative research is the most dominant design used by researchers to investigate online collaborative writing. The larger number of quantitative studies compared to other types of research is in line with several previous studies which reported that researchers prefer quantitative research designs to conduct research in the field of education, rather than qualitative research (Goktas et al., 2012; Uzunboylu & Asiksoy, 2014) . In addition, the qualitative approach is considered relatively new to educational research (Sharma, 2013). However, the trend of qualitative design has shown to be increasing (Shakouri, 2014) and targeting social research, including several educational issues (Mohajan, 2018). Such conditions are closely related to the advantages of a qualitative approach to define a phenomenon in detail and comprehensively. Therefore, the lack of existence of qualitative research has become a good opportunity for future researchers to use a qualitative design and focus their research on research on online collaborative writing.
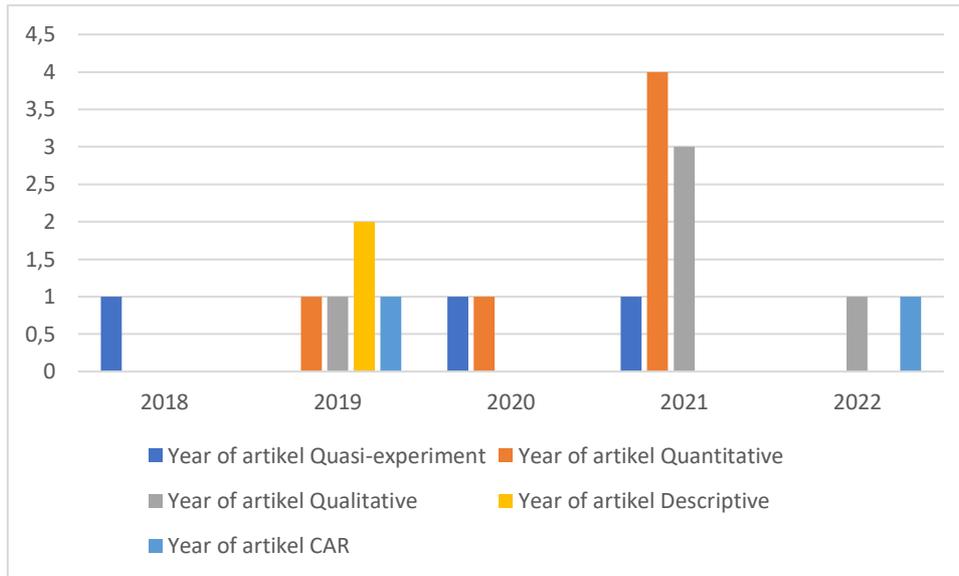
In addition to the types of research, this study also aimed at revealing the distribution of quantitative researches that had been chosen by most researchers. Based on Figure 3, quasi experimental design signified the most common experimental research about critical thinking skill. The high frequency of quasi-experimental use than other designs of experimental research explicated that the researchers had to choose the one that best fitted their educational concern (Randler & Bogner, 2008). Compared to other experimental designs, pre-experimental design was the rarest (Knapp, 2016) and only found in two publications. On the other hands, true experimental design, which was said as the most difficult design to apply for educational issues, was not found, at all, in publications that highlighted critical thinking skill.

In quasi-experimental research, the researchers attempt to compare which one is the most effective treatment for critical thinking skill empowerment. The most remarkable characteristic of this type of research is that the researchers are allowed to involve the whole students in classroom as control group, while appointing another group of students in another classroom (or more) as experiment group. By applying different treatment and formulating hypotheses, the researchers are allowed to sum up which of the treatments worked more significantly for empowering students' critical thinking skill. In this sort of research, the researchers do not need to take into account true-experimental design for it demands them to complete certain requirement, for instance, the participants are randomly selected and randomly assigned (Martella, Nelson, Morgan, & Marchand-Martella, 2013). In fact, true-experimental design cannot be implemented in researches since most educational institutions must have set their students into several classes; and therefore, the researchers are only allowed to choose

which classes to be involved. In addition, the researchers cannot reselect the students and re-divide them into some classes randomly, too.

Subject of study

In 2018 there were 3 articles related to online collaborative writing, the first article was entitled (Dian Pertiwi, N.Ngadiso, Nur Arifah Drajati No. 2, 2018)"The Influence of Diktobang Techniques on Students' Writing Ability". The sampling used in this study was cluster random sampling. The researchers took two classes of four classes of eleventh graders as samples. One class is an experimental group taught using Dictogloss and the other class is a control group taught using Direct Instruction. The study was conducted over eight meetings, with four meetings for each class.

In 2018 there were 3 articles related to online collaborative writing, the third article was titled "(Daniel R. Bailey, Christopher Judd No. 2, Summer 2018)The Effects of Online Collaborative Writing and TOEIC Writing Test-Preparation on L2 Writing Performance" Participants We recruited 65 students attending South Korean universities of middle to upper level. Convenience sampling was used for the OCW group which originally consisted of 36 dual majors of Business/South Korean English who attended the L2 Multimedia English class but was reduced to 33 because three students did not complete pre- and post-writing assignments.

In 2018 there were 3 articles related to online collaborative writing, the third article was titled "(Daniel R. Bailey, Christopher Judd No. 2, Summer 2018)The Effects of Online Collaborative Writing and TOEIC Writing Test-Preparation on L2 Writing Performance" . Participants were twenty-eight Finnish students (26 female and 2 male; ages 20-42) enrolled in educational psychology courses as part of their master's studies. The students are divided into nine groups of 2-4 people to perform collaborative online writing tasks.

In 2019 there were 3 articles related to online collaborative writing, the four articles were titled (Elis Homsini Maolida, Vina Aini Salsabila No. 1 of 2019)" Integrating a process-genre approach with the Ibunka project to improve students' English writing skills" The participants of this study were 46 students attending two writing classes (Class A and Class B) for one semester.

In 2019 there were 3 articles related to online collaborative writing, the four articles were entitled (Rully Agung Yudhiantara No. 1 March 2019)" Promoting mobile collaborative language learning in Islamic universities" The subjects are 110 second-year students in the

Department of English Language Education, Faculty of Tarbiyah and Teacher Training, State Islamic University (UIN) Sunan Gunung Djati Bandung. There are three classes and all students take the Translation Course II. This course aims to equip them with the theory, knowledge, and skills to translate Indonesian texts into English.

In 2019 there are 3 articles related to online collaborative writing, the four articles are titled, namely Lidwina Sri Ardiasih No. 2, Summer 2019)" Online Collaborative Writing Techniques Using Wikis: How Effective Is It to Improve Students' Essay Writing?" The implementation of OCWT was carried out asynchronously for a week by involving a group of 29 students from the UT English Language Education Study Program and who were enrolled in the PBIS4313 / Writing III Course which discussed genre-based essay writing, including narrative essays, descriptive essays, and argumentative essays.

In 2020 there were 3 articles related to online collaborative writing, the four articles were titled (Merinda Fiana Tasri No. 1; February 2020)" The Influence of Online Collaborative Writing through Edmodo on Students' Writing Ability in MA Masyhudiyah Giri" The population is 10th grade students from MA Masyhudiyah Giri, with 56 students. This research sample was taken from class X MIPA 1 as an experimental group and X MIPA 2 as a control group with 28 students from each class

In 2020 there were 3 articles related to online collaborative writing, the four articles were titled, namely Hlaviso Motlhaka No.4 2020)" Blackboard Collaborated-Based Instruction in an Academic Writing Class: Sociocultural Perspectives of Learning" The sample included eight first-year students between the ages of 18 to 25 enrolled in the Academic Literacy module at the School of Human and Social Science at a rural university in South Africa. Sampling is purposive and convenient to use because of the qualities that respondents have in terms of diverse cultural and linguistic backgrounds drawn from their Sepedi first language.

In 2020 there were 3 articles related to online collaborative writing, the four articles were titled, namely Marcus Sundgren & Jimmy Jaldemark No. 5, 2020)" Visualizing online collaborative writing strategies in higher education group tasks" The design of this study builds on Conversation Analysis to explore the visua¬lization of Google Docs revision history of online collaborative writing documents . Documents from 25 groups of students are the basis of the analysis. The visualizations used in this project are produced with the DocuViz Chrome extension

In 2021 there are 9 articles related to online collaborative writing, the four articles are titled (Chen, Si Ouyang, Fan Jiao, Pengcheng No.1 2022)" Promoting student engagement in online collaborative writing through student-facing social learning analysis tools" This course focuses on academic writing on topics that arise in ocean engineering research. Twenty-194 CHEN ET AL. eight undergraduate students (10 female, 18 male) from Ocean College are enrolled in this course.

In 2021 there are 9 articles related to online collaborative writing, the four articles are entitled (Rizki Anugrah Putri Rahayu No. 1, January 2021)" The Influence of Collaborative Writing Combined with Online Learning Blogs on the Writing Skills of EFL Indonesia Students Across Motivation" The research respondents were classified into an experimental group consisting of 31 students at random and a control group consisting of 30 students.

In 2021 there are 9 articles related to online collaborative writing, the four articles are entitled (Susilo, Andi, Mufanti, Restu Fitriani, Aries No. 3 of 2021)" Promoting Critical Thinking and Voicing Themselves of EFL Students through CIRC Techniques in Academic Writing Courses" This research was conducted at a State Islamic Institute based in East Java, Indonesia. The setting of this research was deliberately chosen and considered appropriate because research on the use of innovative pedagogical techniques in Islamic-based higher education institutions is limited. Two groups of learners of 68 students were invited to participate. They are second-year students majoring in the Department of English Language Education, aged between 19 and 21.

In 2021 there are 9 articles related to online collaborative writing, the four articles are titled (Jitlada Moonma No. 4, 204-215, 2021)" Comparing Collaborative Writing Activity in EFL Classroom: Face-to-Face Collaborative Writing versus Online Collaborative Writing Using Google Docs" Purposive sampling was used to select 32 second-year English majors (19 women, 13 men) from northern Thai institutions to participate in argumentative writing.

In 2021 there were 9 articles related to online collaborative writing, the four articles were titled (Khoiriyah No. 2, Summer 2021)" Students' Perceived Comfort in Using Google Docs for Online Synchronous Collaborative Writing "This study used purposive-convenience sampling from 37 first-year students of the English Language Education Department who took the "Sentence Building" course during the 2019/2020 academic year. These students are mainly classified with intermediate writing skills. Furthermore, this research took place at one of the leading universities in Indonesia located in East Java, Indonesia.

In 2021 there were 9 articles related to online collaborative writing, all four articles titled, (Emil F. Ubaldo No. 3, 2021)" Synchronous Web-Based Collaborative Writing: Attitudes of Learners toward Working in Pairs and Small Groups" All participants were enrolled in one whole class at a public university in the Philippines and took the same set of courses for second-year pre-service teachers during data collection. Forty-two learners agreed to participate in the project, but only 31 were able to complete three study sessions all conducted outside of their regular class time. Eight students missed one of the sessions while three did not show up at all.

In 2021 there are 9 articles related to online collaborative writing, the four articles are entitled (Anselmus Sudirman, Adria Vitalya Gemilang, Thadius Marhendra Adi Kristanto no. 2, 2021)" The Power of Reflective Journal Writing for University Students from the EFL Perspectiv" This research was carried out at the Department of English Language Education, Universitas Sarjanawiyata Tamansiswa Yogyakarta, Indonesia. The interview with 15 participants took place online using learning media.

In 2021 there are 9 articles related to online collaborative writing, the four articles are entitled (Rahmadania Putri Ferdianawati Iskandar, Muhammad Reza Pahlevi No. 2, August 2021)" Students' emotional involvement in online collaborative writing through google documents" This site is located at SMAN 1 Cikarang Barat which is located in Telaga Harapan, Cikarang Barat, Bekasi. The study was conducted within three weeks. The study participants were four science majors in the second grade of SMAN 1 Cikarang Barat. The four participants were based on two groups and each group consisted of two members. Detailed participant information will be informed in the participant's demographic information.

In 2021 there are 9 articles related to online collaborative writing, the four articles are titled (Suksan Suppasetseree, Nakhon Kitjaroonchai No. 6, November 2021)" Online Collaborative Writing via Google Docs: Case Studies in the EFL Classroom" The participants were six EFL first-year students selected from 18 students enrolled in a semester-long English composition course at an international university in central Thailand.

In 2022 there are 3 articles related to online collaborative writing, the four articles are entitled (Ani Susanti1, Utami Widiati, Bambang Yudi Cahyono, Tengku Intan Suzila Tengku Sharif No. 2, 2022)" Examining Episodes in the Verbalization Process of Collaborative Writing of EFL Studens" Twenty Indonesian EFL students paired with teachers from the English Department of a leading private university in Yogyakarta, Indonesia, participated in the study.

In 2022 there are 3 articles related to online collaborative writing, the four articles are titled (Jarjani Usman, Mawardi No. 2, 2022)" Evoking Metaphors from the Narrative of Collaborative Experiences with Teachers in Textbook Writing" Fifteen elementary school teachers who teach English at their school took part as teacher-collaborators in the CAR textbook development project in collaboration with two lecturers-collaborators..

In 2022 there are 3 articles related to online collaborative writing, the four articles are titled (Aini Akmar Mohd Kasim, Norizul Azida Darus, Noor Azli Affendy Lee, Asha Latha Bala Subramaniam, Junaidah Januin No. 3, 2022)" Online Collaborative Performance in Group-Based Tasks among Learners of Higher Education" A total of 348 (68.5%) female respondents and 160 (31.5%) male respondents responded to the survey. Among them, 355 (69.9%) are undergraduate students, 85 (16.7%) are pre-diploma students, and the remaining 68 (13.4%) are diploma students. A total of 182 (35.8%) respondents each came from the faculties of Business and Management, as well as Science and Technology. While 83 (16.3%) other respondents came from the faculty of Fine Arts and Humanities and the remaining 61 (12.0%) respondents came from the faculty of Social Sciences. Students from four faculty clusters were selected to facilitate monitoring and management of data collection

Selected English Topics when Conducting Studies

Communication Tools

Tools for Collaborative Writing Collaborative tools can serve as a knowledge platform for practice communities where communities can share their knowledge with groups, post information, work to get, and discuss issues critically (Cattafi & Metzner, 2007). The use of collaborative tools is characterized by several fundamental elements for the practice community, including an online presence, a wide range of interactions, communication, participation, relevant content, and re-lationships to a broader area of subject interest. Collaborative tools can be used to facilitate com-puter-supported collaborative learning, i.e., collaboration development through technology-nology to enhance learning. In addition, collaborative tools can improve peer interaction and group work, facilitating the sharing and distribution of knowledge and information among the learner community (Lipponen, 2002). Finally, an important element of collaborative learning is that learners should be encouraged to reflect on their knowledge. Collaborative tools allow this reflection to be carried out collaboratively, moving closer to the mode of fully social constructivist learning.

Collaborative Writing with Google Docs and EtherPad

Google Docs and EtherPad

A set of Web 2.0 applications is a collaborative writing tool, where several people collaborate on generating a document or a set of documents over the Web. Common applications are blogs and wikis. A sequential blog, sharing content based on posts and comments displayed in reverse chronological order, but the wiki allows multiple users to edit each other's content (Bell, 2009). However, to change a wiki page, the user must enter edit mode and then save a new version of the page (Bell, 2009), so that the wiki also has a chronological structure. Thus edits are made to documents previously written by other authors. This can cause problems because users may feel reluctant to edit other people's works and edit their own works by others (Blau & Caspi, 2009). Alternative collaborative authoring apps allow synchronous editing and allow users to collaborate in real time. Examples are GD and EP. GD provides a suite of applications consisting of word processors – having most of the features found in standard word processors – spreadsheets, presentation tools, databases, and survey tools. EPs are less full-featured, but are notoriously easy to use (Hoya, 2010). Both apps are free. However they differ in that GD asks users to have an account, while EPs are open to anyone. EP automatically gives each author a unique highlight color and updates the edited document continuously, that is, every half a second (EtherPad, 2008). Both GD and EP provide automatic saving and also allow authors to save at any time. Each store generates a new document revision. Track-ing such revisions is a powerful feature also provided by the wiki. All three systems also offer a means for written metacommunication, in the form of separate discussion pages on wiki and chat fields (see Figure 1) in GD and EP.

Writing Process

For a task-focused approach to collaborative writing, a text editor that conveys a conversational space is recommended and used (Figure 1). This type of co-authoring application enables work modes and processes including synchronous and asynchronous co-location activities, as well as synchronous and asynchronous distributed activities. The author can communicate by writing using artifacts, that is, the editor (see A in Figure 1) and the conversation room (see B in Figure 1), as well as aurally. Understanding can come from direct communication and interaction through shared artifacts (Figure 2). With reference to the conceptual model of cooperation (a, b, c, d, h) by Miles, McCarthy, Dix, Harrison, and Monk (1993), we expanded this model to include collaborative writing and communication through chat integrated in the tools (e, f, g):

a) Direct communication between participants.

b) Interaction of participants with the document in the editor.

c) Indirect communication between participants through documents in the editor.

d) Co-formation of participants of various ways to refer to artifacts in the editor. (e) Participant interaction with other participants in the chat box.

e) Online communication in the chat box or through the chat log.

f) Co-formation of participants from different ways to refer to artifacts in the chat box.

g) A general understanding of interactions through shared artifacts.
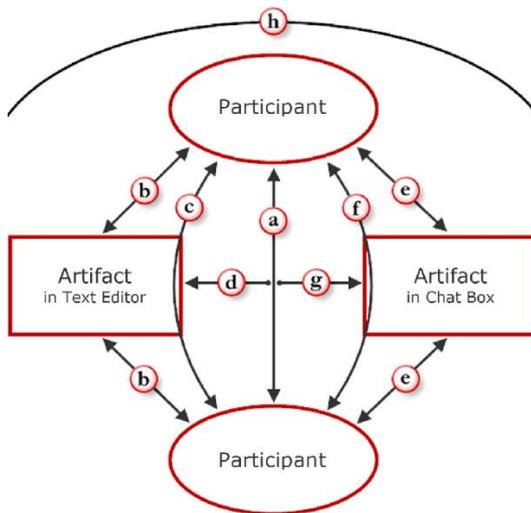
Collaborative writing using GD and EP is based on this model and is used depending on the needs and learning styles of us-ers in real educational situations.

Data Collection Instruments

In conducting research, researchers need an instrument to help them collect data. Students' critical thinking skill could be measured by means of numerous instruments developed by previous researchers.
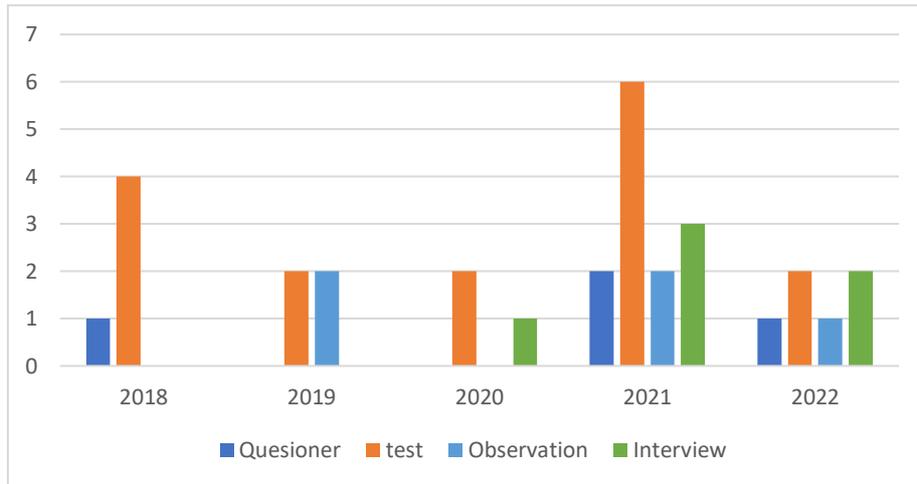
Data Analysis Methods
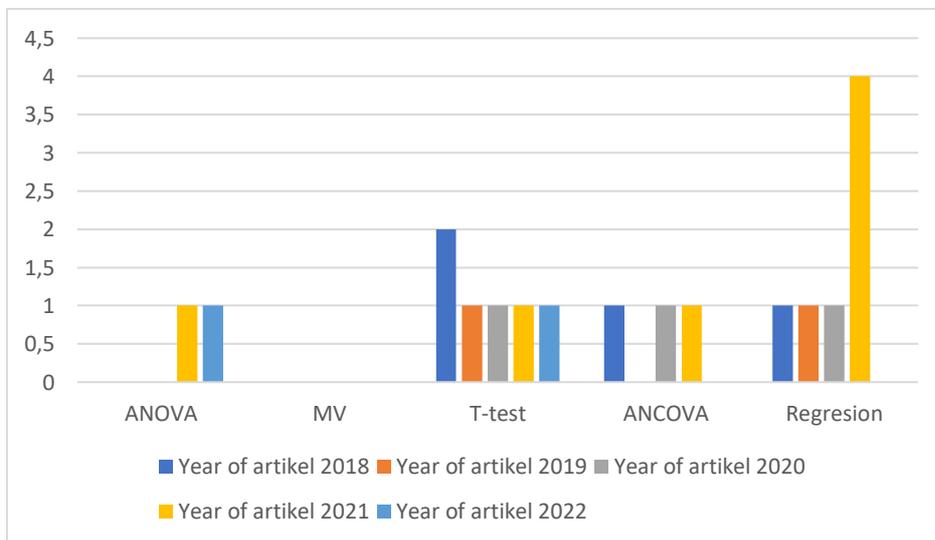
ANCOVA is highly recommended particularly when the researchers attempt to choose quasi-experimental design, where they could not select students one by one as their research subjects (only students in the determined class were possible to be chosen).

Discussion

The results of this bibliometric analysis reveal significant insights into the trends and patterns of research on online collaborative writing from 2018 to 2022. The number of publications indicates a notable increase in research on this topic, especially during the COVID-19 pandemic in 2021. The surge in publications during this period is likely attributed to the global shift towards online education, where online collaborative writing became a critical tool for educators and students. This finding underscores the importance of adapting research to

respond to emerging educational needs and challenges, as seen in the rapid response to the pandemic.

In terms of research design, quantitative research has dominated the field, aligning with previous studies that highlight the preference for quantitative methods in educational research. The dominance of quasi-experimental designs within this category suggests that researchers are particularly interested in comparing the effectiveness of different instructional methods on students' writing skills. However, the limited use of true experimental designs highlights the challenges of applying such rigorous methods in educational settings, where random assignment of participants is often impractical. This gap presents an opportunity for future research to explore the application of more robust experimental designs in studying online collaborative writing.

Qualitative research, although less prevalent, has shown an increasing trend, reflecting a growing recognition of its value in capturing the complexities of educational phenomena. The detailed, contextual insights that qualitative research provides are particularly relevant in understanding the dynamics of online collaborative writing, where social interaction and individual experiences play a crucial role. The gradual rise in qualitative studies suggests a shift towards a more comprehensive exploration of online collaborative writing, where the focus extends beyond measurable outcomes to include the processes and experiences of learners.

Finally, the selection of collaborative tools, such as Google Docs and EtherPad, illustrates the technological advancements that have facilitated online collaborative writing. These tools enable synchronous and asynchronous collaboration, allowing students to work together in real-time or at their own pace. The use of such tools reflects the evolving nature of educational practices, where technology plays an increasingly central role. This shift towards technology-enhanced learning environments presents both opportunities and challenges, particularly in ensuring that students are equipped with the necessary digital literacy skills to engage effectively in online collaborative writing.

CONCLUSION

The bibliometric analysis of research on online collaborative writing from 2018 to 2022 highlights significant trends and developments in the field. The increase in publications during the COVID-19 pandemic underscores the importance of adapting research to address emerging educational challenges. The dominance of quantitative research, particularly quasi-experimental designs, reveals a focus on comparing instructional methods, while the gradual

rise in qualitative studies suggests a growing interest in exploring the complexities of online collaborative writing. The use of collaborative tools like Google Docs and EtherPad reflects the technological advancements that have shaped educational practices, emphasizing the need for ongoing research to explore the impact of these tools on student learning and engagement.

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