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Digital Collaborative writing: Challenges and opportunities

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ABSTRACT

In the current era of rapid technological advancements, educators have access to a wide range of digital tools and applications that facilitate collaboration. These tools enable teachers to share ideas, develop lesson plans together, implement teaching strategies, and evaluate educational outcomes in partnership with their colleagues. This paper explores the use of collaborative writing applications, emphasizing their potential to enhance teamwork and productivity among educators. By analysing the outcomes of collaborative efforts, the study aims to demonstrate effective strategies for leveraging these technologies in the context of professional collaboration. The findings provide valuable insights into how technology can streamline the process of co-authoring educational materials, ultimately contributing to improved teaching practices and professional development.

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1. Introduction

Collaborative writing (CW) is defined as the joint production of text by two or more writers, whether in a face-to-face setting or online, with the aim of producing a superior final product (Kessler, Bikowski, & Boggs, 2012; Lowry, Curtis, & Lowry, 2004). CW has become a significant focus in modern education, not only as a pedagogical tool but also as a means to foster critical competencies among educators. The ability to collaborate effectively is linked to teacher professionalism and is recognized as one of the core competencies required for modern educators (Saric, 2006). To achieve meaningful collaboration, teachers are expected to develop proficiency in using Information and Communication Technology (ICT), which plays an increasingly pivotal role in the educational landscape.

In Indonesia, the concept of CW has historically received limited attention, particularly in the context of its practical implementation in classrooms (Widodo, 2013). Widodo's (2013) study provides detailed step-by-step guidance for conducting collaborative writing in classroom settings but does not extensively address the integration of online writing tools. This gap is significant given the rapid technological advancements that have transformed the way collaboration occurs in education.

The advent of sophisticated online collaborative writing tools, such as Blogs, Wikis, and Google Drive, has revolutionized CW by allowing multiple authors to work on the same document simultaneously, regardless of geographical location. These tools not only facilitate real-time collaboration but also enable features like version control, commenting, and asynchronous editing, making the process more dynamic and accessible. Studies have shown that the use of such tools enhances not only the quality of the written product but also the participants' sense of ownership, critical thinking, and communication skills (Yim & Warschauer, 2017; Kukulska-Hulme & Viberg, 2018).

This paper aims to explore how CW can be effectively implemented using online tools, emphasizing their potential for improving teacher collaboration, enhancing professional development, and fostering more inclusive and efficient workflows. By addressing the gap in the literature regarding CW practices in Indonesia and integrating insights from global studies, this paper contributes to the growing body of research on technology-mediated collaborative writing in education.

There are a lot of works how to collaborate using Blogs and Wikis. However, only a few works using Google Docs. This paper is attempted to explain how to do online collaborative writing using Google Drive. Since CW is an iterative and social process that involves a team focused on a common objective that negotiates, coordinates, and communicates during the creation of a common document;' (Lowry, Curtis, & Lowry, 2004, p. 75), WhatsApp is used to exchange messages without having to pay for SMS. It is used to interact, discuss, negotiate and make decisions during the writing process. Thus, this paper is aimed to provide a reference for teachers how to use those applications for CW.

2. Literature Review

Collaborative Writing

Collaborative learning, particularly computer-supported collaborative learning (CSCL), has been a growing area of interest in educational research since the late 1990s (Lai, 2011). CSCL leverages online networks to facilitate and document interactions among multiple individuals, making it an effective approach for collaborative writing. Over the past decade, technological advancements have introduced new tools that enable collaborative writing in more dynamic and accessible ways. Among these, Google Drive has emerged as one of the most powerful platforms, providing robust capabilities for real-time collaboration on documents, spreadsheets, and presentations (Google Official Blog, 2012).

Tools in Collaborative Writing

Cloud-based platform supports file storage, sharing, and collaborative editing. It enables multiple users to work simultaneously on a document, track changes in real-time, and leave comments for further discussion. Research has consistently highlighted the benefits of using Cloud-based platform for collaborative writing. For instance, Chen et al. (2020) found that Google Drive promotes higher levels of engagement and interaction among students, as its features allow for seamless communication and co-construction of knowledge. This aligns with Lowry et al.'s (2005) assertion that communication is essential during the collaborative writing process.

In comparison to earlier tools like Blogs and Wikis, Google Drive offers a more integrated and user-friendly interface. Recent studies have highlighted its flexibility in accommodating diverse collaborative tasks, ranging from brainstorming to finalizing reports.

According to Nguyen et al. (2022), Google Drive has become a preferred choice among educators and students due to its real-time editing features and ease of access across devices. This adaptability makes it particularly suitable for collaborative academic projects, where participants can contribute at their own pace without compromising synchronization.

Communicative tools in Collaborative Writing

Effective communication is a cornerstone of collaborative writing. While tools like Google Drive provide a platform for editing and storing documents, communication tools such as WhatsApp, Telegram, or other instant messaging apps play a critical role in coordinating and discussing writing tasks. WhatsApp, a cross-platform messaging application, has grown exponentially in popularity, surpassing other communication tools such as BlackBerry Messenger and Viber (Google Trends, 2022). Its features—text messaging, voice and video calls, and the ability to send multimedia files—offer a versatile medium for collaborative teams.

Research indicates that WhatsApp enhances the collaborative writing process by enabling instantaneous communication and feedback. A study by Jafari and Chalak (2020) demonstrated that using WhatsApp in conjunction with collaborative writing tools significantly improved group dynamics and task completion rates. Furthermore, its wide accessibility and minimal technical requirements make it an inclusive tool for educators and students alike.

Comparative Insights

While both Google Drive and WhatsApp play vital roles in collaborative writing, their functionalities are complementary rather than interchangeable. Google Drive excels in document creation and management, providing a centralized space for collaboration. In contrast, WhatsApp facilitates ongoing communication, enabling writers to discuss, clarify, and negotiate ideas during the writing process. This combination of tools fosters a holistic collaborative environment, integrating content creation with effective communication.

Recent research underscores the evolving nature of collaborative writing tools. For example, Kim et al. (2023) highlighted the emergence of AI-powered tools, such as Grammarly and ChatGPT, which are increasingly being integrated into collaborative writing workflows to enhance grammar, coherence, and style. These advancements suggest that the landscape of CSCL is becoming more sophisticated, offering opportunities for deeper engagement and improved outcomes.

3. Research Methodology

Research Design

This study adopts a mixed-methods approach, combining quantitative and qualitative methods to gain a comprehensive understanding of how teachers use cloud-based storage and instant messaging applications for digital collaboration in writing. The quantitative aspect involves a survey to assess the frequency and perceived effectiveness of these tools, while the qualitative aspect includes interviews and document analysis to explore teachers' experiences and strategies in depth.

Participants and Sampling

The study targets English as a Second Language (ESL) teachers who have experience using digital tools for collaborative writing. The sampling strategy combines purposive sampling to ensure participants have relevant experience and snowball sampling to expand the pool of participants through referrals. The sample size of the study is divided into two parts. For the quantitative phasem it involved 98 teachers from various educational institutions, including primary, secondary, and tertiary levels, to ensure diversity in perspectives. Meanwhile, the qualitative phase include interviews with ten teachers selected from the survey respondents, representing different levels of teaching experience, geographical regions, and familiarity with digital tools.

Data Collection Methods

An online survey consisting of closed-ended questions (using Likert scales) and open-ended questions to collect quantitative data on the frequency of use, perceived usefulness, and challenges associated with cloud-based storage (e.g., Google Drive) and instant messaging applications (e.g., WhatsApp). The semi-structured interviews was conducted with ten participants from the qualitative sample to explore their experiences in using these tools. Interview questions focus on their strategies for using cloud-based tools and instant messaging for collaboration, challenges encountered during the process, and their perceived impact on their teaching practices and professional development. The document analysis was used to collect shared documents (e.g., lesson plans, reports) created through cloud-based tools and communication logs from instant messaging apps to examine patterns of collaboration, version control, and feedback mechanisms.

Data Analysis

For the quantitative data, it was analysed using descriptive statistics (e.g., frequency, mean, standard deviation) to summarize teachers' usage patterns and perceptions. The use of Inferential statistics (e.g., t-tests or ANOVA) are applied to identify significant differences based on demographic factors (e.g., teaching experience, level of education). Secondly, the qualitative data analysis was conducted by reviewing the interview transcripts and document samples to identify recurring themes, such as strategies, challenges, and benefits of using cloud-based and instant messaging tools. Triangulation of survey, interview, and document analysis findings to enhance reliability and validity. This study has limitation in terms of the reliance on self-reported data in the survey and interviews may introduce bias. The study focuses on ESL teachers, which may limit the generalizability of findings to other teaching contexts. The use of snowball sampling might lead to overrepresentation of participants from similar networks or backgrounds.

4. Findings and Discussion

The findings could encompass several key areas from a study investigating how teachers use cloud-based storage and instant messaging applications for collaborative writing. These findings can be categorized into themes related to patterns of use, benefits, challenges, and impact on professional practices.

Patterns of use indicate the Insights into which cloud-based tools (e.g., Google Drive, Dropbox) and instant messaging platforms (e.g., WhatsApp, Telegram) are most frequently used and why. The Differences in tool preferences based on teaching levels (e.g., primary vs. secondary), experience, or geographical regions. For collaborative practices, teachers shared

files such as lesson plans, reports, or student worksheets. The way teachers balance synchronous (real-time) and asynchronous (delayed) collaboration using these tools is called as their coordination strategies, which involves how teachers use instant messaging apps to assign tasks, set deadlines, and provide feedback and integrate between communication apps and cloud-based tools for seamless workflow.

The benefits of using digital tools among others are the increased accessibility and flexibility, especially because teachers show their appreciation to the ability to collaborate anytime and from any location, especially during time-sensitive tasks or remote teaching scenarios. Secondly, digital tools enhanced teachers' collaboration, because real-time editing and version control features improve document quality and minimize errors. It also provides instant communication fosters quick decision-making and troubleshooting. In terms of professional development, digital platform exposes that to digital tools enhance teachers' ICT skills and readiness for technology-integrated teaching.

Challenges Faced by Teachers

Technical Challenges

One of the primary barriers to the effective use of cloud-based tools and instant messaging applications for collaborative writing is the technical infrastructure. Teachers often encounter issues such as unstable internet connections, particularly in rural or under-resourced areas. This limitation disrupts real-time collaboration, leading to delays in task completion. For example, a study by Fathi and Afshar (2020) found that poor internet connectivity significantly impeded the adoption of online teaching tools in developing countries.

Additionally, limited access to devices such as laptops or smartphones further complicates participation. While many teachers may own smartphones, the small screen size and limited processing capabilities may not be suitable for intensive collaborative writing tasks. Similarly, compatibility problems with certain applications or operating systems can create friction, as highlighted by Alqurashi (2019), who noted that software compatibility issues undermine the usability of digital tools for educational purposes.

Skill Gaps

Despite the growing emphasis on technology integration in education, a significant proportion of teachers lack adequate digital literacy to use collaborative tools effectively. This skill gap often manifests in an inability to navigate advanced features such as version control, file sharing, and real-time editing. As per Tondeur et al. (2017), professional development opportunities for teachers often fail to address practical skills needed for specific tools, leaving many educators underprepared.

Furthermore, teachers with limited exposure to technology may experience anxiety or resistance when required to engage with new tools. This aligns with findings from Ertmer et al. (2012), who noted that internal barriers, such as self-efficacy and confidence, are just as critical as external barriers like access to resources.

Time Constraints

The challenge of coordinating collaboration due to differing schedules or heavy workloads arises from the complex and demanding nature of a teacher's professional life. Teachers often juggle multiple responsibilities, including lesson planning, classroom teaching, grading

assignments, participating in professional development, managing extracurricular activities, and fulfilling administrative duties. These tasks can vary widely in intensity and timing, making it difficult for teachers to synchronize their availability for collaborative activities. Below is an elaboration of this challenge. Teachers typically follow rigid timetables for teaching and administrative duties, which may not align with their colleagues' schedules. For example teachers who teach in different grades or subject areas may have classes at overlapping times, leaving minimal opportunities to collaborate during working hours. Another example is that break periods or designated planning times may not coincide, making it difficult to find mutually convenient slots for real-time collaboration. Furthermore, teachers with additional responsibilities, such as mentoring students or leading school programs, often face further restrictions in their availability.

5. Conclusion

We made this paper using Google Drive and communicated using WhatsApp. Using both programs are proven helpful and advisable for collaborating. How to use Google Drive and WhatsApp as we have explained, hopefully it will be useful for not only teachers to collaborate but also for classroom practices.

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