



Cloud Computing in Academic Writing: Instructors Perspectives

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Abstract. Cloud computing, explicitly using Google Docs, is crucial in creating high-quality and cohesive group research reports. This is made possible by enabling collaborative writing, allowing students to collaborate on assignments virtually, regardless of their location and schedule. However, there has been a lack of focus on the instructors' perspective in previous studies. This research explores instructors' views on the effectiveness of Google Docs as a platform for collaborative writing. The study looks explicitly at using Google Docs in a research methodology class, where students are tasked with producing group research reports. Each group, comprising five students, collaborates to create a unified and well-written report. The findings of the thematic analysis revealed seven significant themes that demonstrate the effectiveness of the Google Docs platform in producing outstanding research reports.

Keywords: Cloud computing, Google Docs, Collaborative Writing, Research Methodology

1 Introduction

Cloud computing is a computer application that assists the higher education institution students' teaching and learning process [1]. Google Docs is an example of a cloud server that Google features which enables students to undertake co-writing, especially in academic writing. In addition, it facilitates the students' interaction among themselves and the interaction between students and instructors. The application of Google Docs in academic writing supports the teaching flexibility pedagogies. Students can undertake the writing process anytime and anywhere, asynchronous or synchronous with the other students, without needing a physical meeting [1].

Regardless of any assignment, whether individual or group, coherent writing is essential to ensure it is written as one comprehensive assignment [2]. However, it is more challenging for the group assignment since it involves multiple writers working together to generate a unified document with suggestions for the document requested and contributions from various sections [3]. As agreed by Yonanda et al. [4], it is more difficult for group assignments as they need to master and understand different parts of

language and braid them to produce cohesive work output, using a similar writing style and correct grammar and punctuation. Previously, the traditional way of doing the writing separately and combining the whole writing at the end made the assignment less cohesive. Indirectly, the instructors can detect the writing is not being done in a group. Such a situation indicates a comprehensive platform is needed to improve and assist the student's collaborative writing task.

Thus, this study specifically focuses on investigating the effectiveness of Google Docs from the instructor's perspective. The application is designed as a group assignment tool to assist students in conducting their academic writing assignments. The instructor will discuss the effectiveness of this application based on the research methodology course assignment, which requires the students to prepare five chapters of academic writing based on the selected research topic.

2 Literature Review

Today, technological advancements have transformed the way teaching and collaborative learning activities are conducted [5]. Many collaborative writing tools are now available to assist students in group writing tasks, including the Slack application. Slack is a cloud-based team communication platform developed by Slack Technologies in 2020. It enables people to communicate and work together in a unified team, revolutionizing organizational communication [6]. While Slack primarily focuses on business-to-business services and business administration, it also serves as a messaging app that connects people to the information they need. However, it does not comprehensively focus on the writing functionalities required to produce a cohesive group report. Although it offers a free version, it has limited access and requires users to upgrade or subscribe for more features. This can be burdensome for students, especially those with no fixed income. Therefore, there is a need for another collaborative tool that facilitates group writing tasks and offers free access.

Google Docs is an emerging collaborative tool that can assist students in group writing tasks. It allows for seamless collaboration from anywhere, anytime, enabling students to generate ideas, organize text structure, and construct sentences online [7]. This application promotes peer-to-peer collaboration, making it suitable for remote work or classes conducted in a blended learning environment [8]. Students can collaborate on documents and edit files simultaneously, leading to the preparation of refined and cohesive writing.

The Google Docs application also enables students to receive immediate feedback or comments on each other's writing [8, 9]. Jaya and Mortini noted that Google Docs can assist teachers and students in achieving specific learning objectives [10]. Google Docs is a valuable tool for teachers and students learning to write, as it facilitates seamless collaboration in writing and editing among students [4]. This allows students to make instant revisions or corrections and receive feedback from their instructors when they share their initial draft of their assignment [8, 11]. This process also helps students to adjust their writing based on the instructors' comments.

The interaction between students and instructors enhances student engagement, leading to better learning outcomes (4, 10). Google Docs is an active learning platform that enables students to communicate and consult easily with their instructors (1). For some students, face-to-face classes can be intimidating, preventing them from asking questions. However, this platform makes it easier for them to feel comfortable and confident consulting their instructors about their assignments (4, 13).

Using Google Docs in academic writing enables instructors to create a collaborative learning environment, which helps students improve their writing skills [12]. Typically, students from various courses will enroll in the Research Methodology class. Some may have previous writing experience, while others may not. Through Google Docs, students can learn from each other's strengths and weaknesses [1, 2], and aid with grammar, writing structure, and content [14]. This indirect collaboration allows students to enhance their writing skills and produce high-quality pieces.

In addition, Google Docs also offers an option for instructors to conduct hybrid classes [15]. This enables students and instructors to communicate actively without physical meetings, saving time and money [16]. Due to the limited lecture hours, students taking the Research Methodology class often require additional instructor consultation, leading to increased time and financial commitment outside lecture hours [16].

While there are benefits to using Google Docs for academic writing, there are also challenges. Sharing an assignment file with multiple students can make writing more chaotic [14]. Although Google Docs allows simultaneous writing, the content and structure can become disorganized without clear guidelines. Therefore, better outcomes can be achieved through improved application of this platform.

Students must be highly committed and motivated when using Google Docs for academic writing. Without physical meetings, students may need extra motivation to complete assignments [14, 17]. Additionally, some students may take advantage of group work by being passive or uninvolved. Proper training for students and instructors is essential for using Google Docs effectively [14, 17]. Instructors should ensure that students understand the purpose of using Google Docs in academic writing, which is crucial for productive collaborative writing [14, 17]. Therefore, careful planning and clear guidelines are necessary to ensure successful engagement and collaboration between students and instructors.

3 Methodology

The study was undertaken using a participatory action research design. This design involved implementing Google Docs, evaluating its effectiveness in students' collaborative writing, and conducting critical reflection based on the evidence gathered [18]. This study involved 60 undergraduate students enrolled in a Research Methodology class at a public university in Malaysia.

In the beginning stage of the implementation of this study, the instructors diagnose the issue or problem faced by the students. Based on the previous semester's data, stu-

dents who enrolled in this Research Methodology class were regularly unable to produce a cohesive and pleasing academic writing task as the group assignment. As a result, the students mostly score poorly on this group assignment.

Based on the initial inquiries conducted about the students, it can be summarized that they mostly complete this group assignment individually and combine all the assignments at the end. This traditional method of doing group assignments is one of the reasons for poor writing cohesiveness among the students. Although this is a group assignment, the students divide the parts of the work among themselves and do it separately. Some groups need to conduct physical meetings to do the assignment together.

One student will receive the final task of combining all the assignment parts when all other students have submitted their parts. This student ensured everything was well organised and submitted to the instructors within the assigned due date. Usually, the student does not need to do any part of the assignment; his task is merely handling the technical aspect. As a result, this student does not take any initiative to correct the grammar, structure of the writing and even the content of the assignment.

To overcome this issue, instructors use Google Docs to help students with collaborative writing. At the beginning of the semester, the instructors briefed the students on using Google Docs as the platform for the Research Methodology class. The students were divided into 12 groups of five to complete the research report assignment. The communication between students and instructors is also mainly conducted through Google Docs, where the students must submit every chapter of the assignment to the instructors, and all the comments and feedback are recorded on Google Docs. Students must answer and correct based on the instructors' comments and feedback.

For this study, the instructors monitored the student's progress and engagement using Google Docs for the research report assignment. Based on the student's feedback and the quality of the research report produced by each group, the instructors conducted analyses and reflections. The instructors also monitored the students' response time. They corrected each of the provided comments to examine the effectiveness of Google Docs as the medium of interaction between students and instructors.

The quality of research report writing, including content, structure, language, punctuation, and grammar, is checked using the specific academic writing rubric. The instructors used the Gibbs Reflective Cycle, which consists of several parts, namely description, feelings, evaluation, analysis, conclusion, and action plan, as guidance to reflect the effectiveness of Google Docs for this assignment.

4 Results and Discussion

The following findings are derived from instructors' reflections based on profound observations of Google Docs use in the Research Methodology class. The findings were further analysed using thematic analyses to derive several related themes to explain the effectiveness of Google Docs in undertaking the research report assignment. In summary, seven themes have been derived from the instructors' reflections. The themes and discussion of the themes are as follows: -

a) Improve writing skills to produce quality reports.

Using Google Docs as a co-construction writing tool helped students improve their research reports, as their latest work showed a better understanding of the subject matter than the first draft shared. Students could demonstrate knowledge and interconnection with instructors by relying on their feedback. They could also use appropriate, relevant, and compelling content to illustrate mastery of the subject and convey their understanding of the written content to shape the entire report writing task. This showcases the effectiveness of Google Docs in fostering quality outcomes for group report work.

b) Great tools for collaborative writing

Using Google Docs for research project supervision and correction is a very effective way of streamlining the process and improving student collaboration. Instructors can easily track their progress by requiring students to use Google Docs for their research write-ups and invite them to meetings to discuss specific corrections and next steps. This process has made it much easier for the instructors to give students the support they need to complete their projects successfully.

c) Active learning environment

Overall, Google Docs is an effective tool that can embed technology-based assistance in teaching and learning in various ways. By using the features and add-ons that Google Docs offers, instructors can create an active learning environment that is supportive and engaging for students.

d) Improved the students' engagement and teamwork

Students were found to be highly engaged with each other when doing the assignment. There has been a drastic improvement in terms of cohesiveness in writing. All students show a high level of knowledge of each other's parts of the assignment rather than the individual parts only. The students also showed good teamwork when preparing this research report assignment.

e) Instant feedback

Google Docs helps the students provide instant feedback on each other's work. In addition, the instructors can directly comment on the students' initial draft once it has been submitted for checking. With all the instructor's feedback and comments, the students can immediately correct their writing.

f) Flexible teaching and learning setting

Students can enjoy the benefits of Google Docs by co-writing anytime and anywhere. They require less physical interaction to complete the assignment. Traditionally, students must meet and sit together for hours to complete the assignment. In addition, students are not required to conduct any extra physical consultation with the instructors to ask them to check the initial draft of the assignment. The consultation can be done virtually through the Google Docs platform. Ultimately, both students and instructors have saved a lot of time.

g) Moving toward paperless

The use of Google Docs significantly reduces paper usage. Students no longer need to print the assignment draft for the instructors to check. This indirectly helps the students save money and contribute to a green environment.

5 Conclusion

In conclusion, each theme discussed above indicates that Google Docs intervention dramatically enhances students' report writing performance. A proper understanding of the issue experienced by the students can help instructors propose the best teaching and learning intervention. Successful collaborative writing can only be achieved when the students clearly understand their role. They cannot work only on their part and treat this similarly to the individual assignment.

Each group member must actively participate in the collaborative writing of every part of the assignment and understand every part of the assignment. The student's high engagement in giving feedback on each other's work helps them to produce one cohesive and quality research report. The instant instructor feedback is also very helpful in refining the students' writing skills. The improvement in the final outcome of the research report significantly helps the students to get a better score for this assignment. These results show that the essence of Google Docs is fostering and streamlining the learning and teaching process and improving student collaboration in performing co-construction writing for group report tasks.

Despite these points, it is essential to note that this study has limitations. The findings may not be widely applicable since the study only focuses on the instructor's perspective. Therefore, it is recommended that additional analysis be conducted, such as quantitative measures like student grades or writing quality scores, to provide more solid and conclusive evidence of the effectiveness of Google Docs. Further investigation should be carried out because the results are based solely on one instructor, one class, and one-course assignment - a research report assignment. It is also suggested that other instructors consider integrating Google Docs as the platform for students to engage in collaborative writing. This approach could provide valuable insights for enhancing and optimizing the use of Google Docs in students' report-writing activities.

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