

ANALYZING COLLABORATIVE CREATIVITY: UNIVERSITY STUDENTS' PERCEPTIONS ON THE USE OF GOOGLE DOCS

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Abstract. Google Docs is a widely used digital multimodal composition platform that allows students to integrate text, images, audio and video while collaborating in real time. This study examines university students' views on how Google Docs fosters creativity and collaboration in the classroom and highlights the challenges they face to achieve the desired learning outcomes. A quantitative research design was used, collecting data from 50 UNISEL students via an online survey. The survey used questions on a 5-point Likert scale to assess students' perceptions of the role of Google Docs in fostering creativity and collaboration. The results show that students perceive Google Docs as an effective tool for academic writing and group projects, with real-time editing and feedback encouraging engagement. However, students also encounter challenges, such as internet connectivity issues, technical difficulties and concerns about customisation and mobile usability. The study provides valuable insights into the effectiveness of Google Docs as a tool for digital multimodal composition, highlighting its potential to promote collaborative learning and enhance writing practice in a digital academic environment.

Keywords: *Google docs, creativity, collaboration, digital multimodal composition, peer collaboration, technology in education*

Introduction

In higher education, digital multimodal composition has become a potential instructional strategy. It is characterised as the integration of several media, including text, images, audio, and video, into cohesive compositions. This strategy takes into account the various learning styles and digital literacy levels of today's pupils in addition to being in line with current technology developments. Digital multimodal composition encourages students to work together to create meaning by combining various media, which fosters creativity and active engagement in the learning process. It provides opportunities for students to create information in ways that go beyond conventional textual formats, encouraging more in-depth comprehension and analytical abilities. Additionally, studies indicate that students' capacity to communicate well in a variety of settings and with a range of audiences can be improved by participating in digital multimodal composition. As universities increasingly recognize the importance of preparing students for a digitalized world, exploring the effectiveness of digital multimodal composition in enhancing learning outcomes becomes imperative.

The use of Google Docs as one of the useful platforms for university students to do their work has been emerging over the past decades. Google Docs is an application invented by Google. According to Boyes (2016), "Google Docs allows instant feedback and collaboration on student-generated text when students are online at the same time." Ragupathi (2013) also highlights that the application helps foster collaborative learning environments among educators and students. These include several reasons, which are to control editing settings, facilitate real-time chat, save changes and help resources,

enable simultaneous collaboration, and provide comprehensive online tutorials and help resources. These abilities help students collaborate better with one another on their work. However, while the use of Google Docs as one of the collaborative multimodal compositions is seen as promising, research related to the integration of Google Docs as one of the collaborative multimodal compositions remains mostly unexplored. This research aims to explore how the use of Google Docs as one of the multimodal composition tools helps university students promote collaborative classroom interaction and highlights the challenges they face in achieving the desired learning outcomes.

Literature review

The pedagogical features of Google docs for collaborative writing

Google Docs is considered a valuable tool for improving collaborative writing in higher education. Aldawi and Maher (2023) highlighted that it creates a virtual learning environment where students can work together in an interactive way. Furthermore, Yeh (2021) noted that Google Docs helps students develop new literacy skills needed for digital learning. As technology continues to shape education, Google Docs provides an effective way for students to engage in writing, communicate with peers, and improve their skills in a computer-based environment (Aldawi and Maher, 2023; Yeh, 2021). The integration of Google Docs into educational settings has fundamentally reshaped collaborative writing practices, offering a suite of features that enhance both the process and the product of student work. Studies consistently demonstrate the platform's ability to foster a positive learning environment, primarily through its capacity to provide immediate and continuous feedback. Bakar (2021) as well as Nasri et al. (2022) both highlight that learners perceive Google Docs as not only effective and user-friendly but also promotes increased engagement. The ability to receive timely feedback from instructors directly within the document motivates students to contribute more actively and thoughtfully to their writing. This immediate feedback fosters a dynamic learning environment where students can quickly address errors and refine their ideas, promoting a deeper understanding of the writing process.

Furthermore, the collaborative nature of Google Docs facilitates synchronous communication and peer interaction, which are essential components of a supportive learning environment. Shahidan et al. (2022) emphasizes that features like colour-coded contributions and real-time editing streamline collaborative efforts, making it easier for students to track changes and understand individual input. This transparency and accessibility enhance the sense of shared ownership and responsibility, fostering a collaborative culture where students learn from each other. The platform's ability to support synchronous communication also allows for immediate clarification and discussion, reducing misunderstandings and promoting a more cohesive collaborative experience. This instant exchange of ideas and feedback not only improves the quality of the final product but also enhances students' communication and negotiation skills.

Enhancing writing and digital literacies through collaborative features

Google Docs has been widely recognized as a helpful tool in both individual and group learning. Alsubaie and Ashuraidah (2017) found that using Google Docs in writing activities can motivate students and improve their writing skills. Their study showed that students who used Google Docs performed better in writing tasks compared

to those who did not. This suggests that the tool can play an important role in enhancing learning outcomes (Alsubaie and Ashuraidah, 2017). One of the key benefits of Google Docs is its ability to support collaboration. According to Aldawi and Maher (2023) as well as Akoto (2021), Google Docs allows students to write and revise their work together in real time. This feature makes it easier for students to share ideas, provide feedback, and improve their writing as a team. Instead of waiting for feedback through emails or printed copies, students can make changes instantly, which makes the writing process smoother and more efficient (Aldawi and Maher, 2023; Akoto, 2021).

In addition to collaboration, Google Docs also encourages interaction and communication among students. Yeh (2021) explained that the tool helps students engage with each other's writing by allowing them to comment, edit, and suggest revisions. This process supports active learning and helps students develop better writing skills through peer feedback. Different types of writing changes, such as adding new ideas, rephrasing sentences, and correcting grammar, are made easier through the platform (Yeh, 2021). The collaborative capabilities of Google Docs extend beyond task completion, and significantly contributing to the development of students' writing and digital literacies. Nguyen (2023) observed substantial improvements in students' grammar, vocabulary and sentence structure after using Google Docs for group writing activities. This improvement can be attributed to the platform's ability to facilitate peer review and editing, where students learn from each other's strengths and weaknesses. The shared document environment encourages students to pay closer attention to language conventions and provides opportunities for immediate correction and revision. Moreover, the platform's collaborative features foster a sense of shared responsibility, motivating students to produce high-quality work that reflects mutual effort and understanding.

Moreover, the use of Google Docs in collaborative writing projects has been shown to enhance students' digital and social skills. Nguyen (2023) found that students who engaged in group writing activities using Google Docs demonstrated increased social interaction and engagement, leading to the development of crucial digital knowledge. The platform's real-time interaction and communication features requires effective digital communication and collaboration skills, both of which are becoming increasingly important in today's digital age. Fitria et al. (2023) also highlighted the benefits of Google Docs in developing communication skills among EFL learners, which emphasizes the platform's role in facilitating meaningful interactions and knowledge sharing. By engaging in collaborative writing projects, students not only improve their writing skills but also develop the important digital and social literacies needed to navigate and succeed in a digitally connected world.

Challenges and adaptations in digital writing pedagogy

Despite its numerous benefits, the integration of Google Docs into educational practices has been challenging, particularly highlighted during the rapid shift to remote teaching and learning during the pandemic. Johinke et al. (2023) emphasized that the sudden transition interrupted the traditional writing pedagogy, making sure that there are significant adaptations from educators. The need to maintain student engagement and ensure effective learning outcomes required instructors to rethink their teaching approaches, placing a greater emphasis on student autonomy and creative assessments.

This shift highlighted the importance of educators not only being proficient in using these digital tools but also have to be adept at designing pedagogical strategies to enhance the teaching and learning process. The pandemic provides the critical need for digital writing instructors to possess a deep understanding of the features and limitations of digital technologies to align effectively with educational values.

Furthermore, the complex synchronous online collaboration, as pointed out by Irshad (2022), present unique challenges that must be addressed. The patterns of interaction in online environment are dynamic, which can be difficult to manage and this requires careful planning and facilitation. As Akoto (2021) pointed out, some students may not contribute equally to group work. In some cases, a few students take on most of the work while others participate less actively. Additionally, technical problems, such as internet connection issues or difficulties using certain features, can sometimes make it harder for students to work efficiently (Akoto, 2021). Irshad (2022) also cautioned against the overgeneralization of findings, noting that the variability of learning contexts and the diverse needs of students, particularly second language learners. This highlights the importance of context-specific pedagogical strategies and the need for ongoing research to explore the degrees of using Google Docs in different educational settings. Despite its advantages, there are some challenges in using Google Docs for collaborative writing. While Fitria et al. (2023) acknowledged the drawbacks associated with using Google Docs, the majority of the literature suggests that with thoughtful implementation and ongoing adaptation, Google Docs can significantly enhance student learning and collaboration in writing.

Materials and Methods

This study employs a quantitative research design to examine university student's perceptions of Google Docs as a collaborative composition tool. As a preliminary study, the study involves 50 undergraduate students from a private university in Selangor, selected through a random sampling. Data was collected through a structured Google Form survey comprising three sections: Section A gathered demographic information, including age, gender and prior experience with Google Docs; Section B focused on students' perception of Google Docs in fostering creativity, collaboration and engagement and Section C explored the struggles students encounter, such as technical difficulties, accessibility issues and limitations in writing practices. Both Section B and Section C employs 5-point Likert Scale questions, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The collected data was analyzed using statistical analysis methods using SPSS version 27, including descriptive statistics such as mean and frequency to identify patterns and relationships between students' perception and challenges in using Google Docs. The following measurement is used to indicate students' agreement towards the statements used in the survey (*Table 1*).

Table 1. Interpretation of mean score.

Mean score	Interpretation
3.67-5.00	High
2.34-3.66	Moderate
1.00-2.33	Low

Results and Discussion

This study aimed to explore university students' perception of Google Docs as a tool for collaboration and creativity in the classroom, as well as the challenges they encounter while using it. The results indicate that Google Docs is generally perceived as an effective platform for academic collaboration and creative writing, with students appreciating its ability to facilitate teamwork, feedback exchange, and interactive drafting. However, challenges such as mobile usability issues, reliance on internet connectivity, and limited customisation options were also identified. The following sections provide an in-depth discussion on the findings.

Respondents' profile

To better understand the perceptions of university students regarding the use of Google Docs as a collaborative digital multimodal composition tool, it is essential to analyze the demographic profile of the participants. A total of 50 undergraduate students from a private university in Selangor took part in this study. The respondents were selected randomly and represented diverse backgrounds in terms of gender, age and experience with Google Docs. The demographic details of the respondents are summarized in the following Figure 1, Figure 2 and Figure 3. The gender distribution among respondents was relatively balanced, with 26 female students (52%) and 24 male students (48%). This near-equal representation ensures that the study captures perspectives from both genders, providing a more detailed understanding of how different students engage with Google Docs for academic purposes. The balanced participation of male and female students also allows for a more equal discussion of the challenges and advantages experienced by different groups, as previous studies suggest that technology adoption and digital collaboration experiences can sometimes differ by gender (Akoto, 2021).



Figure 1. *Respondents' gender.*

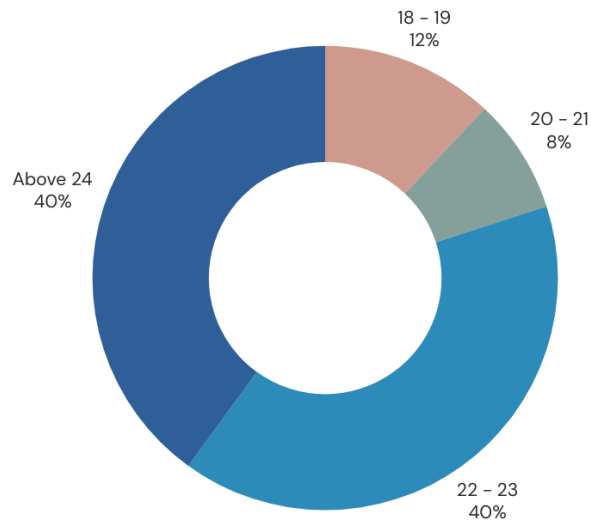


Figure 2. Respondents' age range.

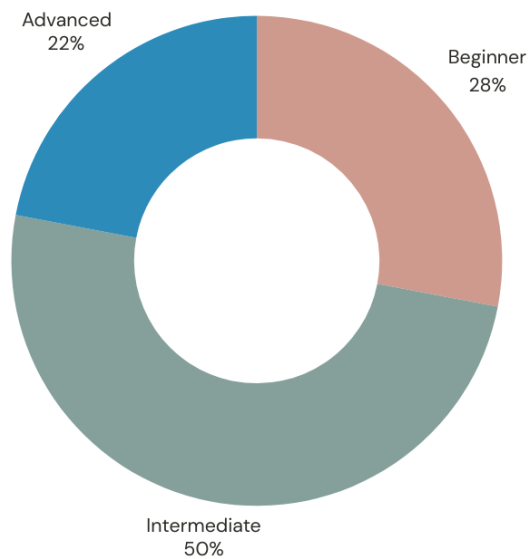


Figure 3. Respondents' experience with Google Docs.

The participants in this study came from different age groups, ranging from 18 years old to above 24 years old. The largest groups of respondents were those aged 22-23 years old and those aged 24 and above, making up the majority of the sample which is 40% for both age groups. This indicates that most respondents were in their final years of university studies, which suggest that they have considerable experience with academic writing and collaborative projects. Meanwhile, 12% of respondents were aged 18-19 years old, and 8% were in the 20-21 age range, representing younger students who may have had less exposure to digital collaborative tools in higher education settings. The distribution of age groups provides valuable insights into the level of digital literacy among students. Older students, particularly those in their final year of study, may have had more exposure to collaborative digital tools like Google Docs, whereas younger students may still be adapting to these technologies as part of their academic journey. This variation in experience may influence their perceptions of the platform's effectiveness and ease of use.

The respondents' familiarity with Google Docs was categorized into three levels: Beginner, intermediate and advanced. The majority of students (50%) identified as intermediate users, meaning they were familiar with Google Docs and had used it for academic purposes but may not have explored all of its advanced features. Meanwhile, 22% of students considered themselves advanced features, indicating a strong proficiency in utilizing Google Docs for various collaborative and creative tasks. On the other hand, 28% of students identified as beginners, implying that a significant portion of the respondents were still in early stages of learning how to maximize the potential of Google Docs for academic purposes. The varying levels of experience among respondents highlight the importance of digital literacy training in higher education. While many students are comfortable using Google Docs, a notable percentage still require additional guidance to fully utilize features such as real-time collaboration, commenting and version tracking. This aligns with previous research, which emphasizes the need for digital tool training to help students engage more effectively in collaborative learning environments (Aldawi and Maher, 2023).

Analysis of university students' perception on the use of Google Docs collaboratively

The following data in *Table 2* summarizes university students' perception on the use of Google Docs collaboratively shown as mean scores on a 5-point scale where 1 represents the lowest agreement and 5 represents the highest agreement.

Table 2. University students' perception of Google Docs as a tool for collaborative learning.

Statement	N	Minimum	Maximum	Mean	Std. Deviation
Google Docs allows me to collaborate effectively with my peers on creative projects.	50	1.00	5.00	4.0800	.94415
Google Docs improves my ability to share and receive feedback on creative projects.	50	1.00	5.00	3.7800	.97499
I find it difficult to organize my work in Google Docs when collaborating with others.	50	1.00	5.00	2.8400	-1.13137
I struggle to track changes or edits made by collaborators in Google Docs.	50	1.00	5.00	3.1400	1.16075
Privacy concerns make me hesitant to use Google Docs for group projects.	50	1.00	5.00	2.7200	1.26233
Valid N (listwise)	50				

The analysis of survey responses reveals that students largely perceive Google Docs as a valuable tool for collaboration. The highest mean score (4.08) was recorded for the statement, "Google Docs allows me to collaborate effectively with my peers on creative projects." This suggests that students find the platform highly beneficial for working together on academic tasks. The relatively low standard deviation (0.94) further indicates that responses were consistent across participants, reinforcing the idea that collaboration is a widely acknowledged advantage of Google Docs. Another important aspect of collaboration is the ability to share and receive feedback efficiently. The mean score for "Google Docs improves my ability to share and receive feedback on creative projects" was 3.78, showing that most students value the feedback tools embedded within the platform. However, the slightly higher standard deviation (0.97) compared to the previous statement suggests some variation in individual experiences. While many students find the feedback mechanism useful, others may have encountered difficulties in effectively utilising them. Despite the generally positive perception of Google Docs in fostering collaboration, some students reported challenges. The mean score for "I find

it difficult to organise my work in Google Docs when collaborating with others" was 2.84 which was moderate. This indicates that while some students struggle with document organisation, the issue is not widespread. Similarly, the statement "I struggle to track changes or edits made by collaborators in Google Docs" recorded a mean score of 3.14, implying that although this issue is present, it does not significantly impact the majority of students. Privacy concerns were the least problematic aspect, with a mean score of 2.72. This suggests that while some students are cautious about privacy, it is not a major hindrance to collaboration. Overall, the data indicates that students perceive Google Docs as a strong collaborative tool, with only minor challenges related to document organisation and change tracking.

Analysis of university students' perception on the use of Google Docs creativity

The following data in *Table 3* summarizes university students' perception on the use of Google Docs creatively shown as mean scores on a 5-point scale where 1 represents the lowest agreement and 5 represents the highest agreement.

Table 3. University students' perception of Google Docs as a tool for creativity in learning.

Statement	N	Minimum	Maximum	Mean	Std. Deviation
I find Google Docs to be an easy tool to use for brainstorming and developing creative ideas.	50	1.00	5.00	3.9200	1.14000
Using Google Docs helps me feel more independent when working on assignments.	50	1.00	5.00	3.9000	1.03510
Google Docs encourages me to be more creative in my writing tasks.	50	1.00	5.00	3.5800	1.24687
Google Docs enhances my ability to work on multiple drafts of a creative project.	50	1.00	5.00	3.9400	.93481
I feel more productive and organized when using Google Docs for creative assignments.	50	1.00	5.00	3.6600	1.13587
The tools in Google Docs (e.g., comments, suggestions) support my creative process.	50	1.00	5.00	3.9200	.98644
Valid N (listwise)	50				

Analysis of university students' challenges of using Google Docs

The following data in *Table 4* summarizes university students' perception on the challenges of using Google Docs shown as mean scores on a 5-point scale where 1 represents the lowest agreement and 5 represents the highest agreement. Based on the results in the survey, while Google Docs offers many advantages, some challenges do exist. The most significant disadvantage was the difficulty of using Google Docs on mobile devices compared to desktops or laptops, scoring the highest mean of 3.44. This suggests a strong need for improvements to the mobile interface to better accommodate the increasing use of mobile technology needed for academic tasks. Additionally, internet dependency is considered an obstacle, with a mean score of 3.26, which indicates that unreliable internet connectivity is a significant impact to students' ability to work effectively on the cloud-based platform. Students also expressed the need for more customization options, though this was a lesser concern with a mean of 3.18. In contrast, the lowest mean score (2.64) was for the statement, "The features in Google Docs are overwhelming and hard to navigate." This indicates that most students generally find the platform user-friendly and its features accessible, despite a small portion potentially feeling overwhelmed. Overall, the primary areas for improvement to

enhance student experience with Google Docs are mobile usability and reducing the reliance on a stable internet connection.

Table 4. *University students' perception on the challenges of using Google Docs.*

Statement	N	Minimum	Maximum	Mean	Std. Deviation
I often experience technical issues (e.g., slow loading or lost changes) while using Google Docs.	50	1.00	5.00	3.1400	1.19540
The features in Google Docs are overwhelming and hard to navigate.	50	1.00	5.00	2.6400	1.12050
I feel that Google Docs lacks customization options for my specific needs.	50	1.00	5.00	3.1800	1.10083
Internet connectivity problems hinder my ability to use Google Docs effectively.	50	1.00	5.00	3.2600	1.19198
Google Docs' interface is not user-friendly for complex or large-scale projects.	50	1.00	5.00	2.9600	1.12413
I find it challenging to use Google Docs on mobile devices compared to desktops or laptops.	50	1.00	5.00	3.4400	1.28031
I feel that using Google Docs requires more time and effort compared to other tools.	50	1.00	5.00	2.7000	1.11117
Valid N (listwise)	50				

One of the key findings of this study is that university students see Google Docs as a helpful tool for working together, especially in writing and group projects. The high average score of 4.08 for "Google Docs allows me to collaborate effectively with my peers on creative projects" shows that students find it useful for teamwork. Many students also agreed that the platform is easy to use for brainstorming ideas (average score: 3.92) and working on multiple drafts (average score: 3.94). However, students reported challenges, especially with mobile usability (3.44) and internet dependency (3.26), which sometimes made it hard for them to work effectively. The results of this study suggest that Google Docs is a valuable tool for improving digital literacy and teamwork in academic settings. Its ability to support real-time collaboration can help students develop communication and writing skills, which are essential for both academic and professional environments. However, the challenges of mobile use and internet dependence show that students need better access to a stable internet and a more user-friendly mobile version of Google Docs to fully benefit from it. If these issues are addressed, Google Docs could become an even more effective tool for learning and collaboration.

It is important to acknowledge several limitations in this preliminary study. Firstly, the sample size of 50 undergraduate students from a single private university in Selangor restricts the generalizability of the findings to a broader population of university students or different educational contexts. As an initial exploration, this study provides valuable insights within this specific setting, but further research with a larger and more diverse sample is needed to confirm these perceptions across various institutions and student demographics. Secondly, the reliance on a quantitative survey methodology, while effective for gathering broad perceptions, may lack the depth of understanding that qualitative approaches could offer. The use of a 5-point Likert scale provides a structured measure of agreement but it may not fully capture the complexities of university students' experiences with Google Docs for collaborative creativity. Future research incorporating interviews or open-ended questions could provide richer, more detailed insights into the specific ways students use the platform and the challenges they encounter. Finally, as a preliminary research, this study offers an insight into students' perceptions at a particular point. Longitudinal studies could provide a more comprehensive understanding of how students' experiences and

perceptions of Google Docs evolve over their academic careers and with continued exposure to digital collaborative tools.

Conclusion

This study aimed to explore university students' perceptions of Google Docs as a collaborative digital writing tool. The findings show that students find it helpful for teamwork and writing, especially because of its real-time editing and feedback features. However, some challenges, such as difficulty using it on mobile phones and the need for a stable internet connection, make it less effective for some students. Overall, the study confirms that Google Docs is a useful tool for collaboration and creativity in academic work. However, while it helps students work together more easily, technical challenges limit its full potential. The findings contribute to the understanding of digital multimodal composition by showing that while Google Docs supports collaborative learning, improvements in accessibility are necessary. Educators can use these insights to develop better strategies for using digital tools in classrooms while considering students' technological limitations. Therefore, in conclusion, Google Docs is a valuable but imperfect tool for academic collaboration. Improving its mobile functionality and reducing its dependence on internet access could make it even more effective for students. Future research should explore ways to refine digital tools to better meet students' learning needs.

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Conflict of interest

The authors confirm that there is no conflict of interest involve with any parties in this research study.

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