

Challenges and Benefits of Using Wiki-based Collaborative Writing in EFL Classes

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The challenges and benefits of wiki that students encounter during the process of implementing wiki in EFL writing classes is the focus of the research that need to be investigated. The emphasis of the research is to look at the benefits and challenges that university students faced during the implementation of wiki-based collaborative writing at Addis Ababa Science and Technology University. The participants were enrolled in a noncredit essay-writing course that was linked with the wiki platform. Questionnaires and focus group discussion were used to collect data. All students completed questionnaires and focus group discussion to investigate the benefits of using wiki. Descriptive statistics such as frequency and mean were used to analyze the quantitative data. To analyze the data, themes about benefits of using wiki were used. Students faced both psychological and functional challenges. Students discussed that they collaborated during the process of using wiki and their writing skills was improved. Finally, English as a Foreign Language writing skills teachers should carefully train students on how to use social media like a wiki in their curricula.

Keywords: wiki-based collaborative writing, benefits of wiki, challenges.

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Проблемы и преимущества использования коллаборативного письма на основе Wiki на занятиях по английскому языку как иностранному

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В фокусе исследования лежат проблемы и преимущества Wiki, ожидающие студентов при использовании данного ресурса на занятиях по письму на английском языке как иностранном. Цель исследования – рассмотреть плюсы и минусы, с которыми столкнулись студенты Аддис-Абебского университета науки и технологий в период применения Wiki при коллаборативном письме. Участники были зарегистрированы на некредитном курсе, посвященном написанию эссе и связанном с платформой Wiki. Для сбора данных использовались анкеты и метод фокус-группы. Все студенты заполнили анкеты и приняли участие в фокус-групповой дискуссии с целью изучить преимущества использования Wiki. При анализе количественных данных применялась описательная статистика, такая как частота и среднее значение. Для анализа данных использовались темы о плюсах использования Wiki. Студенты столкнулись как с психологическими, так и с функциональными проблемами. По словам участников, в процессе использования Wiki они работали вместе, и их навыки письма улучшились. Таким образом, преподаватели английского языка как иностранного должны уделять особое внимание вопросам использования студентами социальных медиа, таких как Wiki, в своих учебных программах.

Ключевые слова: коллаборативное письмо на основе Wiki, преимущества Wiki, проблемы.

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Introduction

Students faced challenges during the wiki-based collaborative writing projects that can be characterized as either functional or psychological challenges that hindered them from active participation [18]. Functional challenges included the difficulty of using the new wiki tool, and psychological challenges included an apparent reluctance to try new writing practice tools as well as the issue of "saving face" in peer feedback. With every technology, usability is the key attribute for a positive user experience [22]. The usability challenges with the wiki tool included unfamiliarity with the wiki interface, no auto draft-saving mechanism, and the time-consuming nature of adjusting to the format. These major concerns indicate that the new tool disrupted the learning experience.

Unfamiliarity with the new tool was somewhat improved by problem-solving activities such as in-class peer demonstrations and having learners spend more time practicing with the tool, but these innovative projects did not proceed as smoothly as expected [8]. Factors such as the limited research period, frustration, and personal or social issues limiting participant enthusiasm for the use of the technology deserve further investigation. Students tried to be inoffensive and avoided providing solid revisions because the wiki writing task was something others "come up with through hard work". Students are reluctant to claim authority and often are afraid to criticize or give negative feedback to peers [8; 21]. Overcoming such reluctance and raising students' comfort levels with having their work evaluated by others should be considered in the design of peer feedback training. One possible solution is to give students the option of using pseudonyms instead of real names in peer reviews to ensure anonymity. Explaining the value of collaborative peer feedback, describing the procedures, establishing a supportive context, and creating a scaffolding framework may contribute to student development of important attitudes and skills [4; 7; 11; 13; 15].

English language teachers should implement learner-centered collaborative writing projects in which students work together with their classmates using a variety of technological means, for example, wikis [11; 16; 20]. This can help students to increase their writing performance at an individual level. However, the benefits of online technologies and the obstacles they face during the process of implementing wiki-based collaborative writing to improve their writing performance in the Ethiopian context have not yet been investigated. Using wiki-based collaborative writing is important to enhance students' writing performance [10; 14]. Nevertheless, their perception of wiki-based collaborative writing and the challenges they face during the process of using wiki were not investigated, and they are going to be investigated in the context of the current research. As result, the focus of the current study is, however, to investigate benefits of using wiki-based collaborative writing and the challenges they faced during the process of implementing wiki-based collaborative writing.

A quasi-experimental study in which 42 EFL first-year undergraduate students participated in the study was conducted [1]. The students were enrolled at King Saud University, Saudi Arabia,

and the study lasted for 20 weeks. The genre of the writing tasks for the pre and posttest was similar, but the topic was different. The researcher assessed the writing performance of students using an analytical scoring rubric; inter-rater scoring was used to analyze the agreement between the pre and posttests (finding an agreement level of 97%).

A study was conducted using a cluster sample of 80 students from both traditional and wiki-based writing sections [21]. The students met once a week for over 2 hours for 14 weeks, during which time data were collected using multiple instruments. First, the researchers designed English summary writing tests for pre-and post-tests, the validity of which was verified by three experts. Next, a questionnaire with five rating-scale responses was designed with a reported validity of 0,87 and 0,85, respectively. Last, an open-ended questionnaire was administered, and 100 pieces of summary writing from the two groups were checked for accuracy.

As far as our reading and understanding of the area is concerned, no one has so far researched the benefits of using wiki-based collaborative writing and the challenges students encountered during the process of implementing wiki-based collaborative writing in the context of Ethiopian higher institutions in general and Addis Ababa Science and Technology University in particular. As a result, the current research aims to answer the following heuristic research questions.

Research questions

What challenges do students face during the implementation of wiki based collaborative writing to improve their writing performance?

What are the benefits of using wiki-based collaborative writing in writing classes?

Research methods

In this study, a mixed research design was employed. The reason why this design was used in the study is due to both quantitative and qualitative data. To investigate the perception of wiki-based collaborative writing and the challenges they encountered while using a wiki in their writing classes, quantitative and qualitative data were collected from 35 engineering students. According to [3; 6; 13], a mixed research design is particularly useful when a researcher needs quantitative data, then the qualitative data plays a supportive role.

In the current research, the two research questions need both quantitative and qualitative data. Acquiring a better understanding of causal mechanisms requires substantive knowledge of the contents, which cannot be employed using quantitative data [9]. As a result, in this mixed research design, students' perceptions of wiki-based collaborative writing and the challenges they faced during the process of using a wiki to improve their writing performance were investigated. Students who learned writing via wiki-based collaborative writing filled in questionnaires about the challenges they faced during the process of using wiki-based collaborative writing. In the end, ten participants who were selected randomly from the group had focus group discussion about the benefits and challenges of using wiki-based collaborative writing.

The research participants and samples

In Addis Ababa Science and Technology University, there were about 1500 first-year

students enrolled in pre-engineering (three-fourth of total) streams in 2021/2022 academic year. In the first semester of the academic year, one class of students who used wiki-based collaborative in EFL writing classes having 35 students was selected randomly for this study. At the end, Students who participated in the project filled in a questionnaire and ten of them were chosen randomly for FGD purposes to answer the guiding questions.

Data collection methods

Quantitative and qualitative data were used in this study to investigate the challenges students faced during the process of using a wiki and the benefits of using wiki in writing classes. The quantitative methods used in this study included closed-ended survey questions to assess the challenges they face during the process of writing using the wiki. As the purpose of the questionnaires was to assess participants' perception of wiki-based collaborative writing and the challenges they encountered during the process, these questionnaires were adapted from the work of [8] about students' perceptions and challenges of using wiki-based collaborative writing. As a result, nine items were designed to address the functional challenges of utilizing a wiki. Participants indicated their agreement or disagreement with each statement on a scale ranging from strongly disagree to strongly agree. Moreover, 13 questions were developed to assess the psychological challenges that participants encountered during the process.

Accordingly, participants indicated their agreement or disagreement with each statement on a scale ranging from strongly disagree to strongly agree. The qualitative method also included open-ended survey questions and focus group discussion about benefits of using wiki-based collaborative writing and the challenges they faced during the process of using wiki-based collaborative writing.

Data analysis of the study

Descriptive statistics were used to analyze the quantitative data, which were gathered using close-ended questions. The major challenges (functional and psychological) students encountered during the process of using wiki and the benefits using wiki-based collaborative writing were analyzed. The qualitative data from the open-ended questions were thematically analyzed. As stated before, the qualitative data was gathered using FGD and open-ended questions. Before the researchers started the analysis, they came across different steps. First, similar items were collected and organized in the form of a theme. Finally, the analysis was carried out qualitatively.

Results of the study

The challenges and benefits using wikis during the process are analyzed. The collected data were analyzed under the quantitative and qualitative analysis sections separately. In the first section, the quantitative data are presented. Next, the qualitative data analyses and findings are also reported.

The first research question focused on the challenges or obstacles that students faced because of using a wiki-based collaborative writing instruction. The objective is to investigate challenges that students faced when integrating wiki-based collaborative writing into their writing classes. Descriptive analyses such as frequency and percentage were used to address the study's first research question. When technology is integrated into the teaching-learning process, there are two

primary kinds of challenges: functional and psychological challenges [18]. As a result, the extent to which these challenges influenced participants' writing processes while using a wiki-based collaborative writing instruction was investigated. Participants in the study, as evidenced by their replies, experienced both functional and psychological challenges at the start of the intervention session; their responses and analysis of each item of the questionnaires are presented below.

The functional challenges with the wiki tool that students faced are unfamiliarity with the wiki interface, the lack of an auto draft-saving system, and the time-consuming nature of adapting to the format [22]. These main issues suggest that the new technology hindered the learning process. Regarding the first item in table 1 of appendix, wiki-based collaborative writing at the outset of utilizing a wiki confused 32,5% of the respondents. There were some misconceptions at the outset of the intervention. In connection with this, participants in the FGD also discussed this issue. At the same time, 51,5% of the respondents claimed that they were not confused when they began to use a wiki in their writing lessons. This data demonstrates the individual variations among students in their ability to view all pages of the wiki. The remaining 17% of respondents did not make a decision. Regarding item 2, all participants (100%) said that they were aware of how to utilize a wiki. On the other hand, 60% of them stated that they experienced challenges while utilizing a wiki at the beginning although 28,6% of them disagreed with the assertion. It indicates they had no major difficulties when they first started using a wiki. The remaining 11,4% of the respondents were unable to make a decision.

Concerning the third item of the above table, 28,6% of the respondents disagree with the statement 'I feel difficulty at the very beginning of using the wiki.' 37,2% of the respondents agree with the statement. However, the remaining 34,2% of the respondents were unable to decide. Furthermore, 68,6% of them indicated that they were familiar with wiki-based collaborative writing and they intended to use a wiki in the future writing process. However, 11,4% of the respondents agreed with the statement, 'because of my unfamiliarity with the wiki page, I will not use it in the future.' The remaining 20% of respondents were unable to decide with statement of item four. Concerning the fifth item in the above table, 51,4% of the respondents disagree with the assertion, while 29% stated that they might not utilize the wiki page in the future due to unfamiliarity. The remaining 20,6% were unable to decide.

For item six, 65,7% of the respondents disagree with the statement 'using a wiki in taking notes diminishes the quality of my notes.' 17,1% of the respondents agree with the statement. On the other hand, 18,2% of them could not decide. As 68,6% of the respondents responded, a wiki was not difficult for them to use different note-taking styles. Furthermore, 20% of respondents indicated that they did not agree or disagree with the statement for item 7. Regarding item eight, 54,3% of the respondents stated that wiki helped them not become dependent on the expertise of their teachers for the quality of the notes they produced. 42,9% of respondents replied that wiki is not hard to implement evaluation of individual students' work when collective notes are used. On the other hand, 22,9% of the respondents feel that wiki is hard to implement for the evaluation of individual students' work when collective notes are applied. The remaining 36,8% of the respondents could not decide on the statement of item nine. Therefore, there were functional challenges that limited participants' ability to use the wiki effectively at the beginning of the intervention.

Psychological challenges are connected to students' initial hesitation to adopt the new writing technique since they were attached to old writing approaches [22]. In the current study, it is critical to investigate how participants interpreted wiki in their writing as shown in the table 2 of appendix.

Regarding the psychological challenges of using the wiki indicated in table 2 of appendix, 57,1% of the respondents indicated that they feel using a wiki tends not to be slower to engage in dialogue than other students use. In contrast, 17,1% of the respondents agreed with the statement positively. On the other hand, the remaining 25,8% of the respondents did not decide. As 54,3% of the respondents indicated their agreement with the given items, their first thought about wiki-based collaborative writing was negative. This might indicate students feel using a wiki in writing is difficult, but they feel it is very easy to manage as long as they learn how to use it. In contrast, 31,4% of the respondents did not agree with the first statement. 14,3% of the respondents could not decide concerning item two. Besides, the wiki allowed participants to control the overall notes and take responsibility for their content, as 54,3% of the respondents confirmed. 20% of the respondents pointed out their disagreement with the statement. The remaining 25,7% of the respondents did not show their decision to the statement of item three.

Concerning item four, 60,7% of the respondents stated that wiki did not force them to become overly dependent upon others for producing quality notes. 31,4% of them showed their agreement with the statement, and the remaining 8,6% of the respondents did not decide. About item five, 40% of the respondents disagree with the statement, 25% of them agree, and the remaining 35% of the respondents neither agree nor disagree with the given statement, which says *I feel that some students touch on the idea of the content*. For the statement of item six, 37,1% of the respondents stated that most of the students did not comment on tense or spelling, whereas 28,6% of the respondents agreed with the statement. It means most of the students mostly comment on tense or spelling. For the given statement, 34,3% of respondents chose to be neutral.

Item seven was about the role of peers to point out problems during writing. 42,8% of the respondents showed their disagreement. In contrast, 20% of the respondents agree with the statement. The remaining 37,2% of the respondents decided to be neutral about the given statement. Item eight is about students' feelings of their preference of using wikis in writing. For this item, 48,6% of the respondents agreed that they tend to say wiki would be better if they could write in certain ways. 20% of them disagreed with the statement, and the remaining 31,4% decided to be neutral.

Item nine is about students' feelings concerning their tone of writing. 34,3% of the respondents feel that using a polite tone to comment on students' work is important to improve their writing skills. On the other hand, 28,6% of the respondents disagreed with the statement. The remaining 37,1% of them did not show their agreement, but they preferred to be neutral. The purpose of item ten was to assess students' familiarity using the wiki during idea contribution. 62,9% of the respondents disagree with the statement, which says, *I am afraid of the feeling of discomfort among classmates during idea contribution*. For this statement, 25,7% of the respondents showed their agreement. Those participants who preferred to be neutral were 11,4%.

Item 11 was concerning students' feelings of sharing their work with their friends on the wiki. 57,2% of the respondents disagree with the statement *I feel very nervous because I am afraid that I will provide a wrong suggestion*. Participants who agreed with this statement were 29,9%, and

22,9% of the respondents could not decide about the statement. The item that shows students' feelings regarding pointing out errors was item 12. For this item, 40% of the respondents showed their disagreement with the statement *I do not point out any errors*. In contrast, 31,5% of the respondents agreed with this statement. The remaining 28,5% of respondents preferred to be neutral on the above statement.

The last item about the psychological challenges of using wiki-based collaborative writing was about the feelings of students using a polite tone at the time of giving comments. 51,4% of the respondents liked to use a polite tone when commenting to make people feel that they were not looking for trouble, whereas 22,9% of the respondents disagreed with the statement. Finally, 25,7% of the respondents could not decide. As a result, participants faced psychological challenges during the process of using wiki-based collaborative writing.

In summary, participants were confused on the first day of the intervention of accessing the workspace, let alone revising their essays and commenting on their friends' work. As they noted during the focus group discussion, things grew simpler after a while. There were additional psychological difficulties that participants encountered when utilizing wiki-based collaborative writing. According to the survey findings, participants first believed that wikis were not useful in developing their writing skills. They found it challenging to use the wiki during the writing process. However, as they mentioned during the focus group discussion, the procedure assisted them in changing their perceptions. So far, the quantitative data analysis has focused on the functional and psychological challenges that learners faced while utilizing wiki-based collaborative writing. The part that follows discusses the qualitative data analysis.

Analysis of open-ended questions

Six open-ended questions in the questionnaires were asked. These questions concern the wiki's function in encouraging student involvement. The feelings of participants regarding the function of a wiki in editing essays and their opinions about utilizing a wiki to participate in a discussion with their peers were explored. Furthermore, the benefits of utilizing a wiki in students' learning experiences as well as the challenges of using a wiki in the writing learning experience were investigated. Finally, the participants' recommendation to use a wiki in their future writing skills improvement process is also discussed.

The wiki's role in increasing student interaction

For the question, 'does wiki assist you in editing and increasing your interaction with your friends?', all participants answered 'yes'. They said that because the platform is connected to the internet, it allows them to gather ideas and share what they have acquired. According to the replies of the participants, a wiki allows them to learn from people who have prior writing expertise because the platform allows learners to submit whatever they have in mind. "Yes, it is an easy or simple and effective technique of writing an essay and allowing people to edit my essay, which in turn allows me to write a better essay," one respondent stated. This might imply that students have a positive attitude toward wiki-based collaborative writing, which could help them enhance their writing skills in the future. This is how the majority of respondents responded to the closed-ended questions.

Another participant stated that utilizing a wiki to edit an essay was extremely straightforward and promoted interaction between him and others as he indicated, the wiki page allowed him to engage in the writing process with many students and acquire numerous suggestions. In contrast, two of the participants stated that wikis do not play a role in boosting student engagement. One of the two said that connecting with people on the wiki is not as easy as chatting with them in person. "No, I don't think the interaction is based on a wiki or any website or software; it is more depending on individuals," stated the other participant. This participant stated that interaction was not dependent on the wiki. A wiki is a tool that allows people to engage with one another. All of these suggest that wikis may be useful in assisting students to enhance their overall writing skills.

Benefits of wiki-based collaborative writing

The second research question concerned the benefits of using a wiki in students' writing learning experiences. 'What are the benefits of using wikis in your learning experience?' was the query. Participants highlighted several benefits of utilizing a wiki in their writing projects. They claimed that wiki helped them save time and improve their writing skills. By reading the comments of their peers, participants improved their language and edited their writings. Furthermore, as previously said, a wiki allows participants to submit suggestions for their friends' essays as well as receive ideas from their friends.

Participants also stated that wiki was useful for comparing and contrasting the old and new versions of their essays, as well as preserving and retrieving all of the writing processes they went through. According to the participants, the wiki has improved their determination to write. They openly communicate their opinions, which allow them to avoid needless social engagements at a time when the COVID19 epidemic is causing them headaches, as they said.

Participants attempted to identify the key challenges they faced while experimenting with wiki-based collaborative writing. The above-mentioned theme was asked, 'what are the challenges of using wikis in your writing learning experience?' The primary challenge they noted were that they were having trouble accessing the editing page during the introduction session, as they said. The second challenge was a stoppage in the internet connection. The connection, as they said, was not steady. Another issue they noted was a lack of time. One of the respondents claimed that he/she needed to spend a significant amount of time to write an essay, but the teacher replied, 'your time is up.' Another person mentioned the following point. 'I need to sit and write since the technology attracted me,' he/she adds, but the main issue was a lack of time. If there is Wifi connectivity near my dorm, I am quite pleased to do my project while being away from the digital library and close to my dorm.' This might suggest that if the issue with the internet infrastructure is fixed, learners will be allowed to utilize wiki indefinitely. Another issue they highlighted was a lack of expertise with using a wiki throughout the writing process.

During the FGD discussion, participants made suggestions for incorporating wiki-based collaborative writing into the process of teaching and learning writing skills. The following question was posed to them on the aforementioned theme: 'what do you propose for using wikis in your learning of writing skills?' As they stated, the majority of them were interested in the workspace (wiki). They remarked that they learned new abilities and that this was one opportunity to improve

their writing skills in this technological age.

Furthermore, they suggested that before using wiki-based collaborative writing, students should be familiar with the basic characteristics of the workspace or platform. They also mentioned that this platform should be used in a variety of circumstances. According to their reasoning, it should not be limited to writing lessons alone. Teachers of other courses should assist students by incorporating new teaching and learning technology into the classroom. Another suggestion made by participants was that wiki-based collaborative writing without the presence of the teacher would not help students develop their writing skills. According to one of the participants, “we should utilize a wiki in the future since it is beneficial, but the teacher's presence is critical. We will always require teachers. Collaborative writing on wikis should be linked to the chalk and talk approach. For example, before we begin writing, we must be informed about essay writing, essay components, and so on, as it is done in this semester.” Integrating wiki-based collaborative writing with the chalk and talk technique may assist students and teachers in improving the teaching and learning of writing skills. This section examined the open-ended question concerning participants' perceptions of wiki-based collaborative writing and the challenges they faced when utilizing a wiki.

As a result, the open-ended questions, as indicated above, were divided into six themes. The wiki, as most participants stated, was beneficial in promoting student engagement. The majority of participants said that wiki enabled them to engage with one another to enhance their overall writing ability in terms of content, organization, vocabulary, language use, and mechanics. Participants also stated that the wiki was simple to use and provided opportunities for writing practice. They also noted that the wiki platform allowed them to convey their thoughts. The primary reasons they mentioned were that wiki was simple for writers to utilize.

Focus group discussion analysis

The purpose of the focus group discussion was to explore students' perception of wiki-based collaborative writing and the challenges they experienced when using the wiki. The discussion was guided by 11 questions. For the sake of the analysis, these questions were divided into three categories. The focus group discussion had ten members.

Participants' understanding of wiki-based collaborative writing

There were four discussion topics for focus group discussions to better understand students' participation in a wiki-based collaborative writing. These questions concerned how students understood wiki, their interaction during the writing process, how wiki helped them develop their writing skills, and how wiki helped them communicate their thoughts in writing. All participants discussed that wiki-based collaborative writing was helpful to improve their writing performance. They discussed that the platform helped them to have strong interaction with their friends. In Contrast, participant 04 stated the following point:

Necessarily, I cannot say my writing skills have improved much. Because it was hard to get feedback from the teacher. The problem might be because of this specific website. Because... eh... It does not specify easily when you give feedback and notify it, but I found it easier to find essays and I can easily brainstorm ideas from the internet. Editing is easy. We cannot get feedback

from teachers. The problem may not be from this specific website. I found it easier to write essays. I can get information from the internet, editing was easy.

Teachers' comments, according to participant 04, are crucial, as is the presence of the instructor, for the improvement of students' writing skills. He also claimed that wiki was simple to use for writing and that it helped him/her in brainstorming ideas quickly.

The discussion forum of wiki

Wiki includes discussion, editing, and history pages [2; 5; 12]. The discussion page is where people communicate with one another and submit what they have written. There were four questions to be discussed. These questions focused on the role of discussion boards in their writing classes and how they helped them interact with their peers; how the discussion page assisted them in improving their writing skills; and whether they felt free to share their opinions during the discussion process. During the discussion, participants mentioned how useful the editing and discussion pages were during the writing process on wiki. In relation to this, participant 07 reflected the following point.

You see, this platform is very good for editing. I found it very helpful for editing the history. The history page especially was very helpful for me to see what problems and what changes are made. If I have deleted something that I needed, I can come back and get it back. This kind of feature has been a lot better to improve my writing skills.

This participant stated that both the editing and history pages of the wiki were helpful for editing what he wrote and for comparing and contrasting his new version of the essay with that of the old version. According to the participants' discussions, the wiki's discussion forum helped to enhance their writing skills. They also noted how the platform's design enabled them to communicate, exchange ideas, and receive feedback from their peers. They talked about how the discussion page let them post and engage with their peers. The points reflected by participant 06 supported this idea. This participant reflected the following points.

I think it helped me a lot. It makes me put more effort into my works because I did not know how to write using this platform. I was not that much at writing or I was just probably taken from someone saying try to make it better, but now it is making me put more pressure. It expanded my imagination, expanded my creativity in this aspect and I agree with him on the individual part in the group, but I saw it in myself and I did not interact with the other person with my other pair. We even did not talk a lot. He came into work and I worked with him. That is all. We did not even talk. We did not even contribute any of our ideas because there was no medium for us to connect more. In addition, as an individual, I have a lot of change right now.

The participant mentioned that at the very beginning, she was not confident enough to write and share it with her friends. However, during the process of using the discussion with her pair, her perception was totally changed. According to her reflections, she posted her idea on the discussion page and got a chance to get comments from her friend. Finally, the process helped her to be creative and expand her imagination. On the other hand, she stated that there was no room to have face-to-face interaction with other pairs, but it was possible to interact with any pair using the wiki workspace. That might have happened because of a lack of awareness of how to access the wiki platform.

The role of wikis in improving learners' writing skills

On this last team, there were three discussion questions. These questions focused on the advantages of using a wiki in their writing, the challenges they encountered, and their recommendations for the advantages of using wiki-based collaborative writing in the writing process. The wiki, as recommended by participants in the focus group discussion, was beneficial in the writing process. They also suggested that teachers and students use wikis to learn how to write and educate themselves. Participants also discussed the difficulties they encountered throughout the implementation phase. For example, participant 07 reflects on the major challenges he encountered during the implementation of wiki-based collaborative writing as follows.

Even though I have not faced any problems relating to using the technology, I would say some of my fellow students had some problems. Some of them could not access their websites and use them properly. They could not use the history page as they want, and they usually come to me and other students to help each other and help them to access it. Yes, the internet and power is a big problem in the university that should be fixed. Yeah, and I wish the platform was more like the app discord. Do you know it? Yeah, I wish it was like that because the interaction is better there.

Participants faced challenges during the process, according to the participant's reflection. Accessing the history page is challenging, and there are issues with power outages and a poor internet connection. This showed that students' comprehension of how to access the wiki's editing, discussion, and history pages should be prioritized. Furthermore, when it comes to the favorable benefits of wiki-based collaborative on students' writing performance, the institution should take into account internet and power outages.

As previously noted, the focus group discussion consisted of eleven leading questions and three topics. Almost everyone indicated that wiki-based collaborative writing improved their writing skills in terms of content, organization, vocabulary, language use, and mechanics. They also noted that the wiki allowed them to have a deeper level of interaction with one another, which might help them improve their writing skills. The issue is bolstered by participant 02's reflection, which is described below.

...Yeah... I think wiki helps me. I think wiki has many benefits for me. For the first time, I am afraid of writing essays because generating ideas are difficult for me before I write in the wiki. However, after that, I see that after much practice, I think essay writing become simpler for me. In addition, I want to add that at the individual level, it helped me to improve my grammar, writing with precise words to minimize the words and being specific for that content. In addition, in the wiki, we can use Google and other sources, but in face-to-face writing, we have only our minds, not other sources. I agree with my fellows because there are a lot of burdens in one person. One person at the beginning may have a load to write.

It is clear from the participant's reflection that wiki-based collaborative writing assisted him in improving his writing skills and shaping his perception of essay writing. He felt apprehensive about writing at first. He was able to get more practice with his writing skills thanks to a wiki. Furthermore, as he indicated, his language skills increased. The approach also helped in obtaining material from a variety of sources, such as Google, which is not possible in face-to-face writing education.

The second theme was the function of the discussion forum in helping members improve their writing skills. During the focus group discussion, participants claimed that the wiki platform enabled them to engage with their peers, exchange ideas, and receive feedback. They also claimed that the discussion page encouraged them to publish and connect with their peers. The third topic focused on the wiki's function in helping individuals improve their writing abilities. The wiki, as participants in the focus group discussion claimed, was useful in the writing process. They also advised that instructors and students utilize a wiki to educate and develop writing skills. During the discussion, participant 08 raised the following points from the total number of participants.

...Well, as I have said before, not perfectly. You mean like see our history and see the problems that we have when we have faced when we write our history can show us what our group meets has and what changes have done, what things he has done. However, I do not think as if socially we were interacting. I do not think that we were doing the thing the project as a group. We are doing the things like individually like parts two-part half-and-half. That is what I think. Any ways teachers should use this kind of technology when they teach.

According to the participants' reflections, participants involved in the group collaboration were limited. The reason for their limited collaboration might be the limited awareness they have. This implies that strong follow up from the teachers' side and intensive training are needed. Furthermore, participants' recommended that teachers integrate technology with their face-to-face instruction to improve the practice of teaching and the learning process. This indicates how much students are interested in technology embedded teaching and learning processes.

Discussion of the results of study

The main intention of the first research question of the study was to explore challenges participants encountered during the integration of wiki-based collaborative writing into their writing classes. As mentioned in the analysis section, there are two major challenges (functional and psychological) that affect the process of implementing wiki-based collaborative writing to improve learners' writing performance. Thus, how much these challenges affect participants' during the implementation of the wiki in writing classes while they were using a wiki-based collaborative writing approach was the center of the investigation.

During the process of the study, students encountered both functional and psychological challenges. As participants pointed out during the focus group discussion, they had a problem at the beginning of the intervention in the process of navigating the workspace (wiki). They were also in confusion about editing and commenting on their essays and their friends' essays at the beginning of the intervention. Additionally, there were also psychological challenges that participants faced during the process of using wiki-based collaborative writing. Unfamiliarity with new technologies can be solved by using problem-solving activities [11; 12; 16; 17; 22]. Thus, the discussion was about the quantitative data regarding the functional and psychological challenges of using wiki-based collaborative writing during the intervention. The next section is about the qualitative data gathered from participants regarding their perception of using wiki-based collaborative writing and the challenges they encountered during the process of using wiki-based collaborative writing.

These qualitative results endeavored to support the quantitative, which were about participants' perception of wiki-based collaborative writing, and the challenges they faced during

the intervention process. Before the analysis, the researcher categorized the questions into themes. The first theme gives the idea concerning the role of the wiki in increasing interaction among students; all participants appreciated the wiki, which helped them interact with each other to improve their overall writing performance. Besides, most of the respondents stated that wiki helped them to express their ideas freely. The main reasons that they mentioned were the wiki platform, which was easy for writing and editing, and as they explained, the wiki helped them increase their motivation while expressing their feelings in writing [11; 16; 19].

As most of the participants mentioned, the wiki allows them to write, edit others' essays, and let others edit their essays. As a result, these activities helped them to have strong interactions with their friends even outside of the classroom. As to the participants' explanation, the wiki has advantages like, increasing interaction, improving writing skills, increasing writing motivation, comparing and contrasting the old version of their essays with the new version.

Another point mentioned by the participants was about the role of integrating wiki in writing classes compared with the traditional way of learning writing skills. They also explained that integrating wiki-based collaborative writing with the chalk and talk method may help students and teachers to improve the process of teaching and learning writing skills. The participants also mentioned that at the beginning of the intervention, they thought that wiki was not helpful to improve their writing skills. However, they appreciated the role of the wiki to improve their writing skills during the focus group discussion. Thus, the above section was about the discussion of the analysis of the open-ended question regarding participants' perception of wiki-based collaborative writing and the challenges they encountered during the process of using a wiki in learning writing skills. The next section is about the discussion of the results of the focus group discussion.

The main objective of the focus group discussion was to support the data gathered with close-ended and open-ended questionnaires about participants' perceptions of wiki-based collaborative writing and the challenges they encountered during the process of using a wiki in writing classes. In the beginning, the researcher transcribed the recorded data, and he reviewed it multiple times to generate common themes and patterns to be identified and be presented. There were nine guiding questions for the discussion, which the researcher categorized into three themes. Regarding the first theme, participants discussed how wiki-based collaborative writing helps to improve their writing performance. They discussed that the wiki helped them to have strong interaction among their peers.

The role of the discussion forum in the wiki to improve participants' writing skills was the second theme. During the discussion, participants discussed how the wiki platform facilitated their interaction, sharing ideas, and getting comments from their friends. They also discussed that the discussion page helped them to post and to build strong interaction with their friends. The third theme was about the role of a wiki to improve participants' writing skills. As participants in the focus group discussion argued, a wiki was valuable in the process of writing. They also suggested that teachers and students should use a wiki in the process of teaching and learning writing skills.

Conclusion

Before assigning a writing task to students, learning preparation is necessary to ensure that all students are adequately prepared to work in the virtual environment and propose the expected

collaborative writing process. Students were not initially comfortable with this online learning environment, but with practice, they became more learners that are effective. Both functional and psychological challenges were observed at the beginning of the intervention. Most of the students were interested in wiki-based collaborative writing, and this showed that online collaborative writing with wiki technology did integrate the function of computer-mediated communication with the advantage of collaborative writing. Students valued the wiki technology and admired its easiness in determining who, when, and what to change or edit in each essay.

From the above findings, we can generalize that the benefits of wikis provided students with a better collaborative writing experience than they had experienced in face-to-face writing instruction, and wiki-based collaborative writing was a useful online learning environment for students to engage in written work collaboratively. Besides, wiki promotes interaction among students during the process of writing.

Recommendations

This mixed research study was conducted at Addis Ababa Science and Technology University on freshman engineering students. The study examined the potential challenges of wiki-based collaborative writing on students' writing performance and the benefits of using wiki-based collaborative writing in the process of writing. The findings generated suggestions for future researchers who will be interested in wiki-based collaborative writing vis-a'-vis face-to-face writing instruction.

The following are the recommendations of the study.

The technology and the student's acceptance of the online learning environment should be used to extend the pedagogical benefits of collaborative writing work using the wiki. Continuous computer-based processes, such as reviewing or reading and editing, and frequent peer interaction, indicate that the implemented collaborative writing project can foster self-reliant engagement in purposeful tasks associated with the writing process. Such engagement can also motivate students to keep on top of collaborative writing and to spend more time on tasks. Student-centered writing can allow EFL learners to accommodate individuals' learning of self-regulation to develop their writing skills.

It is hoped that it can serve as a basis for future studies on wiki-based collaborative writing in the context of the current research. However, 10 weeks' writing training is too short to investigate the growth of writing capability. A semester writing project, as well as longitudinal research, will be suitable for surveying individuals' progress in writing skills. There should be studies that could be undertaken to explore future factors such as sex, learning style, culture, and learning achievement.

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Appendix

Table 1

Functional challenges of wiki

1. I feel confused at the beginning of using a wiki.	Level of agreement	Frequency	%
	Strongly Disagree	8	22.9
	Disagree	10	28.6
	Neutral	6	17.1
	Agree	10	28.6
	Strongly agree	1	3.9
	Total	35	100
2. I just don't know how to use a wiki	Strongly disagree	25	71.5

	Disagree	10	28.5
	Neutral	0	0
	Agree	0	0
	Strongly agree	0	0
	Total	35	10
3. I feel difficult at the very beginning of using the wiki.	Strongly disagree	1	2.9
	Disagree	9	25.7
	Neutral	12	34.3
	Agree	10	28.6
	Strongly agree	3	8.6
	Total	35	100
4. Because of the unfamiliarity with the Wiki page, I will not use it in the future.	Strongly disagree	12	34.3
	Disagree	12	34.3
	Neutral	7	20.0
	Agree	2	5.7
	Strongly agree	2	5.7
	Total	35	100
5. The wiki is limited in style to outline the contents and to insert the basic charts.	Strongly disagree	6	17.1
	Disagree	12	34.3
	Neutral	10	28.6
	Agree	5	14.3
	Strongly agree	2	5.7
	Total	35	100
6. Using wiki in taking notes diminishes the quality of my notes.	Strongly disagree	11	31.4
	Disagree	12	34.3
	Neutral	10	28.6
	Agree	4	11.4
	Strongly agree	2	5.7
	Total	35	100
7. Wiki is difficult for me to use different note-taking styles.	Strongly disagree	7	20.0
	Disagree	17	48.6
	Neutral	5	14.3
	Agree	5	14.3
	Strongly agree	1	2.9
	Total	35	100

8. Wiki helps me not become dependent upon the expertise of my teacher for the quality of the notes.	Strongly disagree	3	8.6
	Disagree	7	20.0
	Neutral	6	17.1
	Agree	17	48.6
	Strongly agree	2	5.7
	Total	35	100
9. Wiki is hard to implement evaluation of individual students' work when collective notes are used.	Strongly disagree	5	14.3
	Disagree	10	28.6
	Neutral	12	34.3
	Agree	7	20.0
	Strongly agree	1	2.9
	Total	35	100

Table 2

Psychological challenges of using the wiki

	Level of Agreement	Frequency	%
1. I feel that using a wiki tends to be slower to engage in dialogue than other students do.	Strongly disagree	0	0
	Disagree	20	57.1
	Neutral	9	25.7
	Agree	6	17.1
	Strongly agree	0	0
	Total	35	100
	2. My early thought is that it is difficult to learn a new thing, but I feel it is very easy to manage content as long as I learn how to use it.	Strongly disagree	0
Disagree		11	31.4
Neutral		5	14.3
Agree		14	40.0
Strongly agree		5	14.3
Total		35	100
3. The wiki allows me to control the overall notes and take responsibility for the contents.	Strongly disagree	2	5.7
	Disagree	5	14.3
	Neutral	9	25.7
	Agree	17	48.6
	Strongly agree	2	5.7
	Total	35	100

4. Wiki forced me to become overly dependent upon others for producing quality notes.	Strongly disagree	7	20.7
	Disagree	14	40.0
	Neutral	3	8.6
	Agree	11	31.4
	Strongly agree	0	0
	Total	35	100
5. I feel that some students touch on the idea of the content.	Strongly disagree	5	14.3
	Disagree	9	25.7
	Neutral	12	34.3
	Agree	9	25.7
	Strongly agree	0	0
	Total	35	100
6. Most of the students mostly comment on tense or spelling.	Strongly disagree	4	11.4
	Disagree	9	25.7
	Neutral	12	34.3
	Agree	8	22.9
	Strongly agree	2	5.7
	Total	35	100
7. My peers do not try to critique directly... instead of directly pointing out where the problem is.	Strongly disagree	4	11.4
	Disagree	11	31.4
	Neutral	13	37.1
	Agree	7	20
	Strongly agree	0	0
	Total	35	100
8. Students tend to say wiki would be better if (they) could write in certain ways.	Strongly disagree	1	2.9
	Disagree	6	17.1
	Neutral	11	31.4
	Agree	15	42.9
	Strongly agree	2	5.7
	Total	35	100
9. I want to be more polite, and I feel that writing is something others come up with through hard work, so I tend to be more indirect.	Strongly disagree	1	2.9
	Disagree	9	25.7
	Neutral	13	37.1
	Agree	11	31.4
	Strongly agree	1	2.9

	Total	35	100
10. I am afraid of the feeling of discomfort among classmates during idea contribution through a wiki.	Strongly disagree	8	22.9
	Disagree	14	40.0
	Neutral	4	11.4
	Agree	9	25.7
	Strongly agree	0	0
	Total	35	100
11. I feel very nervous because I am afraid that if I provide wrong suggestions on grammar.	Strongly disagree	3	8.6
	Disagree	17	48.6
	Neutral	8	22.9
	Agree	7	20.0
	Strongly agree	1	2.9
	Total	35	100
12. I do not point out any errors.	Strongly disagree	5	14.3
	Disagree	9	25.7
	Neutral	10	28.6
	Agree	10	28.6
	Strongly agree	1	2.9
	Total	35	100
13. I like to use a well-mannered tone of say to comment to make people feel that I am not looking for trouble.	Strongly disagree	0	0
	Disagree	8	22.9
	Neutral	9	25.7
	Agree	14	40.0
	Strongly agree	4	11.4
	Total	35	100

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