Supporting Learners' Participation in Collaborative Writing through Google Docs and Mobile Instant Messaging

Gibreel Sadeq Alaghbary

Department of English Language and Literature, College of Languages and humanities, Qassim University, Saudi Arabia

g.alaghbary@qu.edu.sa
https://orcid.org/0000-0002-8531-2913

Murad Abdu Saeed

Department of English Language, Faculty of Languages and Linguistics, Universiti Malaya, Malaysia

muradsaeed@um.edu.my
https://orcid.org/0000-0003-2933-7929

Received: 20/9/2024; Revised: 4/4/2025; Accepted: 17/4/2025

الملخص

على الرغم من المزايا المتعددة للتقنية في مجال الكتابة التعاونية، الا أن استخدام أداة واحدة قد تقيد المشاركة الفاعلة للطلبة، لذا تهدف هذه الدراسة الى المزج بين استخدام مستندات جوجل والمراسلة الفورية عبر الهاتف المحمول (MIM) في الكتابة التعاونية ل ٢٢ طالباً من طلاب المرحلة الجامعية الأولى في تخصص اللغة الإنجليزية، وتسليط الضوء على أبرز المزايا والتحديات الناتجة عن الجمع بينهما، وتشير نتائج تحليل تفاعلات المتعلمين ومسودات الواجبات والمقابلات إلى أنه بينما يسهل تطبيق واتساب الكتابة المسبقة للمتعلمين، فإن محرر مستندات جوجل يسهل الكتابة المشتركة للمتعلمين وتحريرها. وعلى الرغم من أن الطلبة ينظرون إلى واتساب كمنصة تتيح لهم التواصل مع مدرس المقرر الدراسي وإمكانية الوصول إليه، وإلى مستندات جوجل كأداة ملائمة وتفاعلية للكتابة التعاونية وتحرير النصوص، إلا أن مشاركتهم واجهت تحديات بسبب المشكلات المتمثلة في طبيعة واتساب المشتتة للانتباه وكيفية الحفاظ على المناقشات الجماعية، والمشكلات المتعلقة بمستندات غوغل مثل انقطاع الاتصال بالإنترنت، والعمل الذي يستهلك جهدًا كبيرًا، والخبرة السابقة في استخدامه في الكتابة بين الأقران. تؤكد نتائج هذه الدراسة أهمية مواكبة مستجدات التقنية وتطبيقاتها في دعم المتعلمين في الكتابة التعاونية.

Supporting Learners' Participation in Collaborative Writing through Google Docs and Mobile Instant Messaging

Gibreel Sadeq Alaghbary

Department of English Language and Literature, College of Languages and humanities, Qassim University, Saudi Arabia

g.alaghbary@qu.edu.sa
https://orcid.org/0000-0002-8531-2913

Murad Abdu Saeed

Department of English Language, Faculty of Languages and Linguistics, Universiti Malaya, Malaysia

muradsaeed@um.edu.my
https://orcid.org/0000-0003-2933-7929

Received: 20/9/2024; Revised: 4/4/2025; Accepted: 17/4/2025

Abstract

Despite evidence on the affordances of Web 2.0 tools in collaborative writing, a single Web 2.0 technology may restrict students' active engagement in collaborative writing. The current study, therefore, aimed to explore the affordances and challenges involved in a combination of Google Docs and mobile instant messaging (MIM) in collaborative writing among 11 pairs of undergraduate students of English. Analysis of learners' interactions, drafts of assignments and follow-up interviews highlight effective practices for leveraging technology and feedback to support and enhance collaborative writing experiences. Findings from the analysis of empirical evidence suggest that while WhatsApp facilitates learners' pre-writing, Google Docs facilitates learners' joint writing and edits. From students' perspectives, although the learners perceived WhatsApp as a platform that affords their connections to the task and accessibility of the course instructor and Google Docs as a convenient and interactive tool for collaborative writing and text editing, their engagement was challenged by WhatsApp-related issues: its distractive nature and how to maintain group discussions and Google Docs-related issues: internet disconnection, effort-consuming work and previous experience in using it in peer writing. These findings underscore the importance of continued innovation in the implementation of technology in supporting learners towards more fluency in collaborative writing.

Keywords: *collaborative writing; feedback; Google docs; mobile instant messaging; technology*

Introduction

Over the past decade, instructors and researchers of English as Second/Foreign Language (ESL/EFL) have displayed a great interest in integrating Web 2.0 technological tools, such as Wikis and Google Docs in collaborative writing. These Web 2.0 tools support students' peer interactions (Elola & Oskoz, 2010; Cho, 2017; Li and Zhu, 2017) and joint text revisions (Kessler, 2009; Kessler et al., 2012; Li & Zhu, 2017; Elola & Oskoz, 2010) through peer (Chang, 2012; Bradley, 2014) and teacher feedback (Neumann & Kopcha, 2019). Yet, most of these studies have focused on the opportunities afforded by Web 2.0 tools alone, which may not allow learners to adequately plan and revise their jointly written texts (Zhang & Zou, 2021). Therefore, additional synchronous chats are suggested to engage learners in elaborate peer interaction (Chong, 2019; Green, 2019; Guasch et al., 2019). In this regard, mobile instant messaging (MIM) through WhatsApp can serve this purpose (Allagui, 2014; Andujar, 2016; Pedro et al., 2018; Tang & Hew, 2017; Tyrer, 2019). However, teacher's support and feedback (Zhang, 2021) are needed to foster learners' engagement in collaborative writing (Chen & Yu, 2019; Zhang, 2021). Therefore, this study attempted to answer the following research questions:

1. How does the combination of Google Docs and MIM facilitate/support the teacher-guided approach to engaging learners in peer writing of assignments?
2. How do the students perceive the affordances of the combination of Google Docs and MIM for collaborative writing?

Literature

Theoretical Perspectives

The current study is grounded on three theoretical perspectives on language in general and processing of feedback in collaborative writing in particular. The first approach is the cognitive approach that emphasizes learners' processing of feedback information (Bitchener & Storch, 2016; Storch, 2021). Feedback is regarded as a form of input (Schmidt, 1990) that helps ESL/EFL learners to notice their erroneous language forms and see the difference between accurate language forms and that of their own interlanguage. It pushes learners to pay attention to their language use (Swain, 1995, 1998) and fosters their cognitive processing of the feedback information (Hattie & Gan, 2011). As defined by Swain (2006, p.68), languaging is "the process of making meaning and shaping knowledge and experience through language". Languaging occurs when learners interact with each other and exchange questions, explanations and suggestions, which will probably lead to their understanding and resolving of linguistic errors in writing (Storch, 2021). This means that engaging learners in collaborative writing tasks through feedback will provide them more language learning opportunities, resolving issues

through negotiations, deliberations and explanations (Brooks & Swain, 2009; Storch, 2021) as well as producing modified output (Li & Zhang, 2021; Zhang, Gibbons & Li, 2021).

From the sociocultural theory (Vygotsky, 1978), language is seen as a tool that mediates learners' cognitive development. In collaborative writing, paired learners exchange scaffolding-assistance or support to learners within their Zone of Proximal Development (ZPD) (Li & Zhang, 2021; Su & Zou, 2022; Tian & Zhou, 2020). Similarly, collaborative dialogue can occur as a result of paired learners' engagement with and interpretation of teacher feedback on their texts (Mohammed & Alharbi, 2022). As put by Storch (2021), unlike individual or solitary processing of feedback, collaborative processing of feedback is more likely to maximize the language learning potentials and help learners to resolve difficulties encountered in understanding the feedback information through collaborative dialogue.

Another theory pertinent to the investigation of the current study is the social constructivist view. In particular, constructivist research has conceptualized feedback as a dialogic and interpretive process of communication between a provider and a receiver. It is, therefore, a 'social and constructed phenomenon' (Ajjawi & Boud 2017, p. 253). As leaners engage in feedback dialogue, they are likely to construct their knowledge (Ajjawi & Boud, 2017; Carless, 2020; Su & Zou, 2022). Feedback dialogue plays a role in developing learners' shared and individual interpretations (Price et al., 2011; O'Donovan, et al., 2016). From this view, learners are active agents who construct their understanding of feedback (Ajjawi & Boud, 2017; Carless, 2006; Carless & Winstone, 2020). Social constructivist research also provided evidence on the role of feedback dialogue in cultivating paired learners' understanding of its meaning through question-response exchanges, meaning negotiations and error interpretations (Mohammed & Alharbi, 2022).

Affordances of Web 2.0-Facilitated Peer/Collaborative Writing

Research has highlighted certain affordances of Web 2.0 tools such as Google Docs, Wikis and Writeboard, including their interactive features that allow learners to construct their texts jointly (Elola, 2010; Elola & Oskoz, 2010; Kessler et al., 2012; Ishtaiwa & Aburezeq, 2015; Oskoz & Elola, 2014; Strobl, 2013). Moreover, Web 2.0 tools, specifically Google Docs afford learners the opportunity to contribute to their joint text (Abrams, 2016; Chu & Kennedy, 2011; Gillow-Wiles & Niess, 2017; Elola & Oskoz, 2010; Oskoz & Elola, 2014) anytime and at their comfort (Brodahl et al., 2011; Godwin-Jones, 2008; Kessler et al., 2012; Wheeler, 2009).

Web 2.0 tools are facilitators of learner-learner interactions in collaborative writing (Ishtaiwa & Aburezeq, 2015; Elola & Oskoz, 2010) through its combination of both asynchronous (written comments on the texts) and synchronous (chat rooms). Learners can

exchange feedback in the form of written comments that are linked to the specific part of the text where an issue/error is detected in the written (Ebadi & Rahimi, 2017; Semeraro & Moore, 2016; Woodard & Babcock, 2014; Neumann & Kopcha, 2019). For instance, Google Docs allows learners to engage in dialogue around peer and teacher feedback. In addition, editing/revising is one of the affordances rendering Web 2.0 technologies resilient, flexible and facilitative of collaborative writing (Oskoz & Elola, 2014; Strobl, 2013).

What also makes Google Docs distinguished from other Web 2.0 tools is that it facilitates synchronous and asynchronous writing and editing (Yang, 2010; Yeh, 2014) as well as direct editing, where instructors make instructions make corrections directly on the student's written work, and indirect editing, wherein instructors point out errors without making the correction (Oskoz & Elola, 2014), which can be easily tracked by teachers (Semeraro & Moore, 2016; Woodard & Babcock, 2014). It is an interactive platform that fosters learners' engagement and experience in collaborative writing (Irshad, 2022). Yet, students' use of Google Docs for collaborative writing is challenged by learners' preference for mobile applications for interactions, increasing workload, technical problems (Ishtaiwa & Aburezeq, 2015) as well as lack of in-person interaction (Irshad, 2022). Google Docs-based interactions seem less successful for effective editing (Woodard & Babcock, 2014).

MIM in Writing

In recent year, the opportunities for learners in learning activities outside the classroom through MIM have been on the rise (Andujar, 2016; Pedro et al., 2018; Tang & Hew, 2017; Tyrer, 2019). MIM supports synchronous and asynchronous communication (Andujar, 2016). For example, learners can engage in immediate, real-time interactions through both written and written and voice/audio IMs, which encourage quick responses (Cameron & Webster, 2005). MIM promotes active learners' interaction by enabling real-time communication which helps students engage more deeply with the language. This constant exchange not only boosts their awareness of English is used in different contexts but also offers a flexible learning environment and facilitates personalized learning experiences (Rambe & Bere, 2013).

WhatsApp groups can serve as an educational platform where learners share ideas and exchange immediate error corrections (Bouhnik & Deshen, 2014). Learners' active participation is even promoted by the anonymity of their message exchanges in the group (Rambe & Bere, 2013). When applied in writing courses, WhatsApp encourages learners' question-response exchanges (Allagui, 2014), engages them in writing process (Fattah, 2015), increases their participation (Awada, 2016) and enhances their writing (Allagui, 2014; Awada, 2016; Fattah, 2015). Yet, there are several challenging issues arising from its use in writing courses such as

imposing additional responsibilities on instructors and students, being disruptive of family time and frustrating due to the campus WiFi slow connectivity (Rambe & Bere, 2013). Other challenges are technical ones including message flooding, group maintaining, time-consuming and instructional such as expectations of highly available teachers online, use of inaccurate language and lacking efforts from students (Allagui, 2014; Bouhnik & Deshen, 2014).

Teacher's Role in Promoting Students' Collaborative Writing

Several studies have pointed at the teacher's facilitative role in students' collaborative writing. For instance, Webb (2009) argued that teachers do not only facilitate learners' interaction in collaborative tasks, but influence their interaction by engaging them in reciprocal question-response exchanges. Despite the emphasis, only a few studies have examined teacher's role in promoting students' engagement in collaborative writing. According to Zhang (2021), the teacher adopted a collaborative approach to facilitating collaborative writing of three groups of EFL learners that engaged them in planning, brainstorming and reviewing of their written texts. He also provided feedback on their first drafts, which promoted learners' engagement with their tasks. As a result of his feedback at the reviewing stage, the learners exchanged peer support in accomplishing their tasks. Similarly, Mohammed and Alharbi (2022) reported that teacher feedback highlights of errors in peer writing through Google Docs helped 28 pairs of EFL learners to discuss their errors through the Blackboard Collaborate Ultra and revise their essays accordingly. In addition, their synchronous interaction revealed how these pairs of learners engaged in error interpretation, negotiations and clarifications, which promoted their understanding of such errors and resulted into improving their texts.

Method

Research Design

The current study used a qualitative case study, particularly an exploratory case study, which is one of the most commonly used methodological approaches in educational research. It suits the purpose of the current study: answering research questions seeking to identify ways and practices in peer writing facilitated by combined technological tools.

Study Setting

The current study was carried out among 22 undergraduate students (10 males and 12 females) joining a course in English Linguistics during the academic year 2017-2018. The students were native speakers of Malay and their English proficiency was placed at B1 level based on the results of the admission test they completed before joining the department. They were taking this course as one of the compulsory courses during their first year/level at the

undergraduate program. The course, being taught by one of the paper authors, introduces learners to general background about linguistics, particularly morphology and syntax (See the printscreen on the left). The lectures/classes were delivered face-to-face, using PowerPoints (See the printscreen on the left) and electronic materials and aids, such as videos (See the printscreen on the right) were used in the course.

The students' performance in the courses was assessed using both formative (written assignments) and summative (final test) assessments. The current study focuses on the written task as a formative assessment. Specifically, the students were assigned to write a report on certain morphological and syntactic features of a written text of their own choice. The report was needed to be written by each two students (pair work) based on their morphological and syntactic analyses of the written text. The written report included: introduction, literature review, method, finding and conclusion.

The Procedure

The study procedure consisted of four main stages. The first stage was preparation of students for the peer writing activities. This included informing learners of the purpose of the peer writing activities (to write the assignment in pairs as part of the assessment of their performance in the course and to conduct a study on their practices in peer writing facilitated by our combination of Google Docs and mobile applications). They were also asked to sign written consent on their agreement about using their practices in the activities for the purpose of research after confirming them that their participation would be confidential. Moreover, to protect their anonymity, we used a combination of the initial letters of the words: pair and students followed by the serial numbers of the pair and that of students in each pair (e.g., P1S1 standing for student 1 in pair 1) when used sample excerpts of interactions, messages and follow-up interviews. During this stage, students were also divided into 11 pairs based on their choice of their peers and instructed on the assignment and its requirements as well as on the use of Google Docs for peer writing.

The second stage, the start of the actual data collection, focused on engaging students in several steps: planning their tasks, analyzing the linguistic features of the written texts for the peer assignments, writing the first drafts and revising the first drafts, the first, third and fourth steps are the constituents of the process writing. In each stage, all pairs were instructed and guided by the course instructor on what should be done or completed. The instructor used the last few minutes of the initial classes of the course, but due to the time limitation, he used the course WhatsApp group for this purpose. Students in each pair were also asked to discuss their tasks using the WhatsApp group and were also given the freedom to choose other mobile

applications for this purpose. However, they were required to provide or share their discussions with the course instructor as evidence on their engagement in the above steps.

In writing the first drafts, each pair used their Google Docs created earlier and shared with the instructor. While writing the drafts, the instructor was also checking the pages almost daily to track their progress. During this stage, students were also encouraged to interact with each other and with the instructor. They had to revise the first drafts. This continued till the 11th week when all pairs finished revising the first drafts and were ready to check the format and submit the final drafts for assessment.

Based on the above procedure, the data was collected from four different sources: (1) learners' discussions on their tasks, (2) written comments and interactions through Google Docs and WhatsApp, (3) edits/changes made to their texts and (4) follow-up interviews. The first three types of data were archived and organized in separate word files from the start of the study procedure. Students' discussions on their tasks, especially in the pre-writing stage include both Face-to-Face discussions recorded by mobile audio and video records as well as electronic discussions in WhatsApp. Moreover, the online interactions and comments in the writing and revision stages include written and audio messages through Google Dos and WhatsApp were also constantly archived in word files. The edits/changes to the first drafts made by students in the revision stage were visible as students used highlights and suggested edits through Google Docs. Therefore, the first and final draft of the essay for each pair was downloaded in the form of word file with the highlighted changes and saved in the name of the pair with the number assigned to it (pair1-pair11).

The last type of data was collected via follow-up interviews which were conducted at the 12th week of the semester. The interviews were conducted by an external assistant at five sessions (each session lasted for almost an hour) on different days during the week. It was a semi-structured interview that initially consisted of several questions prepared by the researchers based on the literature review and within the second research question to explore the role and challenges involved in our Google Docs-MIM combination.

Data Analysis

The data analysis procedure was performed in line with the collaborative writing approach implemented in this study described above: (1) planning and writing the first drafts of assignments, (2) instructor feedback-giving and (3) post-writing or reviewing. In order to answer the first research question addressing the paired learners' engagement in collaborative writing practices, we focused on Stage 1 and Stage 3 where learners collaborated in planning and writing their first drafts and revising them respectively. In this regard, a macro-level analysis

focused on what the learners did, how they did it and what technology did they use in planning and writing their first drafts. A micro-level analysis of paired learners' interactions in the forms of Google Docs text chats, Google Docs comments and WhatsApp messages and text changes or edits was also used to identify the patterns of interactions in terms of its direction (learner-learner and learner-instructor interactions), the mode of interactions (synchronous and asynchronous interactions), the patterns of feedback (teacher feedback and peer feedback) and the patterns of students' responses to feedback on their assignments (commenting on the feedback, interacting over the feedback and editing their texts). The micro-level analysis was performed based on codes in different previous studies on learners' interaction in collaborative writing (e.g., Zeng & Takatsuka, 2009), teacher feedback patterns (e.g., Webb, 2009) and learners' responses to teacher feedback (e.g., Alharbi, 2019).

From this iterative analysis, we found a range of types of interactions at various modes and with different directions (e.g., from learner to learner and from learner to instructor) and a wide variety of actions and contributions of learners to the texts prompted by interactions, which are all presented in the finding section with samples.

In addition, since learners' performance in writing is part of their collaborative writing practices, especially in the reviewing stage, the paired learners' first drafts and final versions of assignments were compared and scores were given based on a rubric and assessment required in the course. Then, these scores were calculated and compared using a paired t test to determine whether there were significant differences in assignment writing prior and after the instructor's feedback-giving.

The follow-up recorded interviews were listened to carefully and transcribed verbatim. Then, the transcripts were read and analyzed qualitatively and iteratively based on an open thematic coding outline on the basis of open thematic coding to find the most important themes about the students' perception of the Google Docs and MIM combination in their peer writing according to the second research question. In this regard, the segments from the interviews were underlined and assigned to codes. Following this, the codes were categorized and clustered under themes. This involved the researcher and an external research assistant in discussions and comparisons of their coding as well as negotiation of their agreements on meaningful themes. This resulted into several themes that are discussed in the findings under the affordances of MIM and Google Docs as well as the challenges involved in using these two tools in peer writing.

Findings

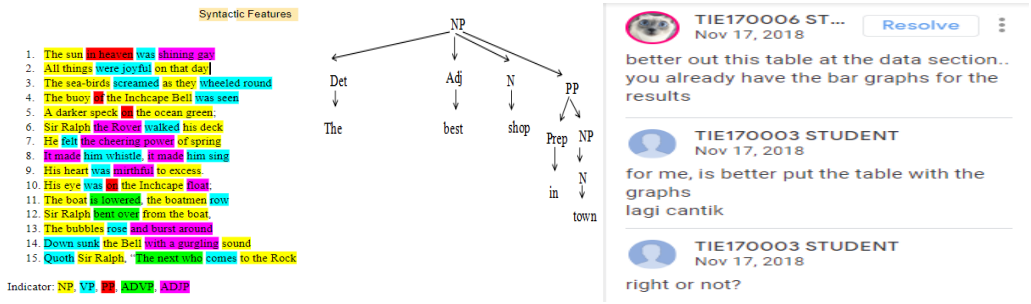
This section presents the findings of the current study according to the two research questions:

Planning and Writing through Interaction

In this stage, the instructor encouraged the paired learners to plan their tasks by using WhatsApp as a platform for their online discussions where they were observed to interact synchronously and asynchronously using both written and audio/voice messages. Each pair of students collaboratively worked on their outline that would be later developed into the first draft of their assignment. The following excerpt illustrates the paired learners' engagement in the task planning stage through WhatsApp:

> [4:44 PM, 2/15/2018] P1S1: Hi I suggest to choose a short story for our task.
>
> [4:45 PM, 2/15/2018] P1S2: Great but what in particular? What type of story? Or media discourse or what? I mean what are you going to focus on?
>
> [4:47 PM, 2/15/2018] P1S1: I was not in the class last time but does the topic/title has to do with language particularly English or can delve on another interesting topic? And do we start it from now?
>
> [4:48 PM, 2/15/2018] P1S2: Hi: You are in a language and linguistic course so whatever topic you seem interested in should have that part which we call language or linguistic features. But can you explain your area of interest a little here please?
>
> [4:50 PM, 2/16/2018] P1S1: Planning is quite challenging, but me and you need to decide and select articles for this assignment about newspaper reports.

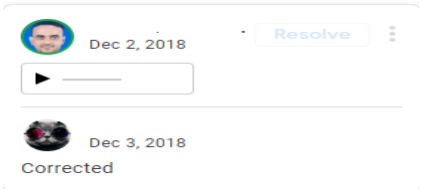
The students could carry out a morphosyntactic analysis of their stories through Google Docs color highlights (Screenshot 1), drew tree diagrams (Screenshot 2) and wrote their first drafts through interactions using Google Docs commenting boxes (Screenshot 3).



Receiving and Responding to Feedback

The students received text and voice feedback on their first drafts. While each written feedback targets a single issue, the voice/audio feedback addresses more than one issue (See the transcript of one voice note below).

Voice note transcript: A great introduction of your assignments. I will just point at some highlighted parts. Why should these words be capitalized? I see you change the adjective valid as it looks inappropriate in this sentence. This this part seems repetitive. Can you



So the feedback served as questions, statements, suggestions, imperatives, evaluation and direct corrections (Table 1).

Table 1

Sample Discourse Functions of Feedback

Discourse functions	Sample
Question	Sure clause here?
	What do u think?
	Why will? You already performed the analysis right?
	Can you identify the different types of phrases: NP, VP, AP, AdvP & PP using a table just with the number of each type?
	What do you mean by the location here?
Suggestion	This table should be placed after the paragraph that explains it.
	You should not use only instrumental, regulatory etc without a noun after it.
Evaluation	I do not think your introduction is coherent.
Statement	In grammar, we call it a subordinating conjunction since it is used to introduce subordinating adverbial clauses. However, in syntax especially in tree diagrams, we call them compartmentalizers (COMP).
Imperative	So delete the word clause as it is a PP and keep consistent in using the tense.
Correction	is rather than being.

Overall, the instructor's feedback in both modes conveyed 970 and 435 discourse functions, respectively (Table 2) which varied in the text and voice modes with imperatives and questions as the most frequently occurring functions in the text mode and with corrections dominating the voice mode.

Table 2

Number of Feedback Discourse Functions in the Text and Voice Modes

Discourse functions	Mode			
	Written/Text Comments		Voice Notes	
Question	248	18%	73	5%
Suggestion	117	8%	64	5%
Evaluation	88	6%	60	4%
Statement	88	6%	58	4%
Imperative	264	19%	81	6%
Correction	165	12%	99	7%
Total	970	69%	435	31%

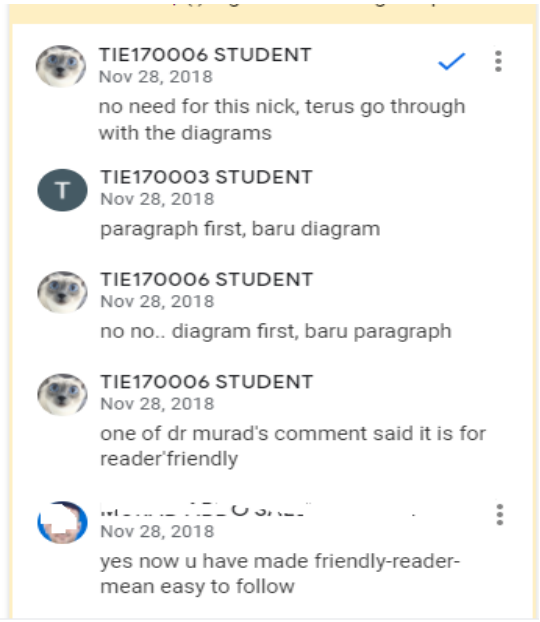
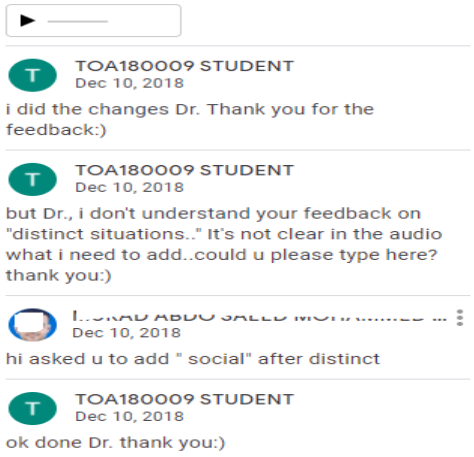
The learners were able to respond to the instructor's written and voice feedback through Google Docs by composing single text comments as shown in the following example extracted from Pair 1's Google Docs:

> Instructor: My question here: Why did not you inform them at the initial stage? Just I need your short answer.
>
> P1S1: Because the decision to conduct this study was made after their final exam. Instructor: Oh! You mean you were afraid if you told the students early that they might have done their best not to make such errors?
>
> P1S2: Not exactly. It's just that when the final exam was going on, this research wasn't initiated at all. So when we decided to conduct this research, I happened to have the existing data of my students' essays and decided to use them. That was when I told the students that I'll be using their essays. Just for ethical purpose, to let them know.

The students also replied to the feedback by asynchronously and synchronously interacting using comments and text chat boxes of Google Docs, respectively (Excerpts 1-2 in Table 3). However, due to the failures of some pairs to understand the meaning of some feedback, they extended the interactions to the course instructor through threads of comments in Google Docs and the WhatsApp chat (Excerpts 3-4). Both cases of student-initiated interactions are illustrative of students' roles as initiators of interactions (Excerpt 5). Learner-teacher interaction also occurred as a result of some pairs' questions seeking feedback on certain aspects of the jointly written texts (Excerpt 6).

Table 3

Sample Peer Interaction Practices around Feedback

Asynchronous Google Docs-Based	**Synchronous Google Docs-Based**
P3S2: SELECTED TEXT: We'd, She's, don't. Hi, don't you think these are contractions rather than clipping? if you give out some examples, do explain the process of that word being clipped and vice versa. Google Docs extended interaction  Seeking feedback re-formulation  	P8S2: I guess you can just key in all the data into the empty table. P8S1: Better do a new table? P8S2: You just did it. P8S1: I think it's best if you put the table with the data under the DATA section. WhatsApp extended interaction [00:36, 5/18/2018] P5S2: Dr, I got a question to ask about your feedback in Google docs. [00:39, 5/18/2018] Instructor Hi I replied to your question in the Google Docs. [00:40, 5/18/2018]P5S2 But Dr. could you explain it to me here? [00:42, 5/18/2018] Instructor Hi listen to me I would suggest that first you identify: NP, VP, PP, AP & AdvP. You may put percentage of each and then samples. Then, you choose few simple sentences and draw the tree structures. This is my suggestion. It would be easy and accurate for you. [00:46, 5/18/2018] P5S2 Thank you Seeking feedback P11S2: Dr, can 'quicker than' be an adjP? Should 'than' be included? Instructor: Could u please check it again? P11S2: Sir, I have asked for many's opinions regarding this question, and I decided to exclude 'than' in the adjP afterwards, so I have corrected this adjP where I have changed it from 'quicker than' to 'quicker' only Instructor: Great now.

In general, the pairs exchanged peer interaction that served as elicitation, evaluation,

confirmation, clarification, justification or reasoning, suggestions, questions and error admission as well as confusions and disagreements (Table 4). These types of peer interactional exchanges served as scaffolds within the ZPD. Moreover, Table (5) presents the numbers of these different strategies in responding to feedback across the pairs.

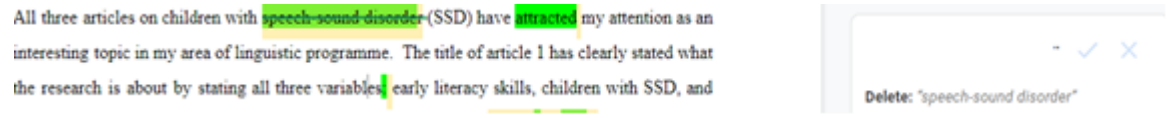
Table 4

Patterns of Peer Interactional Exchanges

Language functions	Example
Elicitation	P3S1: I've changed the diagram. How is it now?
Evaluation	P10S2: I think this sentence is grammatically wrong.
Confirmation	P5S1: It is better now after I rephrased it with clearer meanings. Got what I mean?
Question	P11S2:I have a question about this one. Can a sentence consist of only VP? P4S1: If the phrase is started with an adverb, then is it considered an adverbial phrase?
Clarification checks	P13S1: What do you mean? P13S2:I mean in this example, it seems like 'who shared their dormitory...' is another sentence. And it only consists of the conj who and VP, I can't find any NP.
Justification	P7S2: I personally think that it is an AdvP because it describes and modifies the main verb 'flew'. P5S1: Just itself is an adverb, so it is an AdvP though it is attached to the NP "a girl"
Confusion	P2S1: I am not sure about this one. Because there are 2 verbs I am very confused.
Suggestion	P9S2: We should put a comma here.
Agreement vs disagreement	P1S1: I agree it's unnecessary. P3S2: I can't agree with this analysis.
Error admission	P11S1: I have just realized that I made those silly mistakes, haha, I have made the correction,
Understanding vs misunderstanding	P8S2: Oh. I understand dr, so we need to find words that can be divided into both stem and root. P6S2: I am sorry but I don't understand what you mean by think to after proceeding.

Revising and Improving their Texts

Another important technology-facilitated collaborative writing practice is editing of the first drafts using suggest edits and color highlights (See the snapshot), which are counted for each pair (Table 5).



In addition, our evaluation of students' first drafts and final drafts through scores given to them based on the rubrics used in the classroom illustrates that the mean value for the revised or final drafts of assignments (M = 16.4439) was higher than that of the first drafts (M = 12.2300). The sample paired t test illustrates a statistically significant difference ($t = -10.716$; $p = .000 < .05$).

Table 5

Number of Commenting, Interacting around Feedback and Text Revisions

Pairs	Commenting on feedback only via Google Docs	Interacting on the feedback				Number of revisions
		Learner-learner interactions		Learner-instructor interactions		
		Google Docs	Whats App	Google Docs	WhatsApp	
Pair1	31	8	13	67	14	63
Pair2	22	9	19	37	11	34
Pair3	21	6	21	121	18	124
Pair4	17	11	11	78	4	77
Pair5	29	14	23	72	9	68
Pair6	36	7	12	72	5	67
Pair7	33	8	17	31	12	31
Pair8	22	12	31	2	7	34
Pair9	34	16	18	2	14	53
Pair10	21	19	16	3	6	60
Pair 11	27	8	15	19	3	62
Total	293	118	196	432	103	673

Students' Perspectives on Technology-Facilitated Collaborative Writing

The follow-up interview (Appendix 1) shows the perceived role of MIM and Google Docs as interactive and complementary platforms in collaborative writing. First, the students perceived the positive role of WhatsApp in connecting them to each other, discussing their

assignments, interacting and sharing information. It also helped them to contact the instructor to ask questions, seek clarifications and communicate with him regarding the task.

The students also perceived the potential of Google Docs in facilitating their collaborative writing because it served as a space where they jointly wrote their tasks, received both written and audio feedback, linked the feedback to the erroneous part of texts and jointly edited their texts anytime and anywhere. Moreover, Google Docs is an interactive tool that allowed them to respond to the feedback and interact around it in a flexible manner. Another feature of Google Docs is that it encouraged synchronicity and asynchronicity of interaction and allowed learners to view the instructor's comments on them while they were still available online and to get notified of his comments given at a delayed time through emails. Finally, Google Docs is perceived as a convenient tool for editing texts where the learners could simultaneously edit their texts and also make such edits visible through suggest edits and color highlights both of which were saved automatically and were easily tracked by the instructor.

Despite these potentials, our combined technology implementation was not without challenges including viewing WhatsApp as distractive for some learners' free time and the focus of a few learners, who were infrequent checkers of WhatsApp because of the difficulty involved in following the messages in order to reply to them. This could be due to the anonymity of students especially at the start of the semester before adding each other's mobile numbers to their contacts.

Moreover, using Google Docs for peer writing and editing was challenging for some learners. This is because of the Internet disconnection or weak connection issues, which sometimes rendered some individual students unable to access it and synchronously discuss and write with their peers. Other challenges are the effort-consuming nature of working through Google Docs and students' experience in using the tool for peer writing and text editing.

Discussion

In this study, combining Web 2.0 tools and mobile applications facilitated learners' engagement in collaborative writing. Due to the restricted time and opportunities for interactions in the classroom setting, the role of MIM, specifically WhatsApp comes into play as it was found to help learners vary their choices of where, when and how to interact during the pre-writing stage (Allagui, 2014; Awada, 2016; Fattah, 2015).

This study supports the evidence on Google Docs as a collaborative tool that enables paired learners to jointly write the text at their comfort (Abrams, 2016; Chu & Kennedy, 2011; Gillow-Wiles & Niess, 2017; Elola & Oskoz, 2010; Oskoz & Elola, 2014). Moreover, the

learners were observed to write the first drafts over a period of time since they could refer to the automatically saved drafts in their pages and continue working on it at any time (Brodahl et al., 2011; Kessler et al. , 2012; Wheeler, 2009). They could work on the text simultaneously as displayed by their synchronous interactions and simultaneous text changes. What is interesting is that Google Docs facilitates the presence of scaffolds. In this study, peer and teacher feedback interactions played a crucial role in facilitating learners' revisions within the ZPD. Both teacher and peers provided assistance through collaborative discussions and guided problem-solving, thus allowing students to engage with the writing tasks beyond their independent capabilities. The teacher also facilitated students' revisions by employing strategies such as comments varying from explicit to implicit ones, ensuring that students progressed toward autonomy over time. These interactions align with Vygotsky's sociocultural theory, which demonstrates how social interactions and structured guidance improve students' cognitive development within the ZPD (Li & Zhang, 2021; Su & Zou, 2022; Tian & Zhou, 2020).

Since text revision requires effective feedback, in this study, the paired learners received written and audio/voice feedback from the instructor. This result adds to earlier studies on the potential of Google Docs in exchanging feedback (e.g., Ishtaiwa & Aburezeq, 2015; Neumann & Kopcha, 2019). Inserting audio comments allows writing instructors to give asynchronous audio feedback on students' writing.

The above finding on Google Docs is not new given that several studies have shown how Google Docs enables providing and receiving peer (Semeraro & Moore, 2016; Woodard & Babcock, 2014) and instructor feedback (Ishtaiwa & Aburezeq, 2015; Neumann & Kopcha, 2019). Yet, will learners interact over the feedback before using it in revising their writing? This question as the current issue in today's research (Carless, 2012; Green, 2019; Guasch et al. , 2019) is partially answered by the current study as the learners actively responded to and interacted around the feedback before using it in editing their texts. This supports the value of our technology combination in collaborative writing where the teacher facilitates and promotes learners' active roles in the feedback processes in the context of collaborative writing (Zhang, 2021). This is exemplified through posting single comments on the feedback (Alharbi, 2019), synchronously and asynchronously interacting around it and expanding feedback interactions through WhatsApp messages. Such interactions enable learners to resolve issues around feedback (Guasch et al., 2019).

Despite the synchronicity of interaction afforded by Google Docs, in this study, some learners shifted to WhatsApp instant messaging for seeking the instructor's timely and detailed clarifications on some Google Docs-based feedback. This is probably due to the synchronicity

of WhatsApp messages (Cameron & Webster, 2005). Although this result supports the role of technology combination in overcoming the restrictions of one single technology use in collaborative writing, technology alone may not be effective (Zhang & Zou, 2021), and therefore, teachers need to guide their learners through effective feedback (Chen & Yu, 2019; Zhang, 2021). In this regard, the way teachers give feedback might carry negative effects (e.g., closing down the opportunities for learners' dialogue around feedback) (Winstone & Carless, 2019). However, this study supports the argument that giving feedback in the forms of questions seems more effective in enticing learners' interaction around feedback Winstone & Carless, 2019).

In using Google Docs, the learners edited their texts through different color highlights and suggested edits. This result underlies the affordances of Google Docs as resilient, flexible and facilitative tools for peer editing (Oskoz & Elola, 2014; Strobl, 2013). Moreover, as authors of texts, the learners became autonomous to accept or reject their peers' suggested edits through the acceptance versus rejection function of Google Docs (Oskoz & Elola, 2014; Yang, 2010). Google Docs also provided the learners and the instructor the opportunity to track what was contributed to the texts, whose contribution it was and when these contributions were made to the texts (Yeh, 2014).

Most of the above findings on the role of technology combination in facilitating learners' practices in collaborative writing were also supported by learners' views. First, the WhatsApp group served as an online platform that connected learners to each other despite their physical distance. They used it for planning their assignments and interacting with each other and with the instructor (Bouhnik & Deshen, 2014; Rambe & Bere, 2013). As a result of the easiness in contacting the instructor outside the classroom time, the learners were able to seek clarifications and even his feedback on their assignments. However, this workload may not be convenient for all university instructors since this might place pressure on instructors. Yet, regardless of the time pressure and workload, our technology combination could maximize the opportunity for learners to collaborate, interact and communicate beyond the classroom time limit.

In this study, the students perceived the positive role of Google Docs and its affordances in facilitating their collaborative practices which are convenient, interactive, visible and automatically saved (Irshad, 2022; Lee & Hassell, 2021). Yet, there are several challenging issues and concerns arising from our implementation of technology in this study including the distraction of WhatsApp group discussions especially among learners with busy family time (Rambe & Bere, 2013), inability of a few learners to follow the WhatsApp group discussions and the huge mass of text and voice messages. WhatsApp is known for its message flooding

(Bouhnik & Deshen, 2014), so teachers should allow learners to shift to asynchronous discussions where they read the messages and respond to them in an organized manner. For Google Docs, learners were disturbed by internet issues, such as slow net connections and failure to access the network. Moreover, working through Google Docs is effort-consuming since learners had to re-do the messed-up format after downloading the final drafts in MS word files and had to delete all comments attached to it. A few learners initially found it difficult to deal with the instructor's comments on their work owing to their lacking previous experience in using Google Docs. Therefore, instructors should ensure that learners are well trained on how to use technology prior to using it in collaborative work because this will enable learners to well focus on the tasks. To address the challenges associated with WhatsApp and Google Docs, teachers can implement structured guidelines for effective interactions and collaborative work, such as setting designated discussion times and clear participation expectations, thus minimizing any occurrence of miscommunication and overload. Additionally, explicit training on effective digital collaboration will assist students to navigate technical difficulties. Pedagogically, these strategies are likely to promote meaningful interaction, ensuring that technology enhances, rather than hinders, collaborative writing.

Conclusion

The findings of the current study have shown that although WhatsApp and Google Docs are distinctly different in their applications in peer writing, there is evidence that WhatsApp is complementary for Google Docs in peer writing. In other words, while WhatsApp was mainly used as an interactive platform for group discussions and sharing information in the pre-writing stage, Google Docs was used a tool for jointly writing the first drafts and revising or editing them. Nevertheless, students also used WhatsApp in the latter two stages of peer writing to interact with the course instructor and seek immediate responses that clarify his feedback and clarify their intentions in the Google Docs pages.

Despite the interesting results of this study on the affordances of technology combination in facilitating peer writing, there are several limitations that should be addressed for future research. First, although the different data in this study yielded rich insights into the role of WhatsApp and Google Docs combination in peer writing, our micro-analysis was not intended to delve into the different moves of learner-learner interactions, the different features (e.g., questions, statements, imperatives, etc) and modes of teacher feedback (written and audio/voice comments in Google Docs and WhatsApp), the different types of students' responses to and interactions over the feedback (e.g., clarifying, questioning, providing a correction, etc) and different kinds of their edits (content, language, etc). Additionally, several feature enhancements

and improved collaboration features have been introduced to Whatsapp and Google Docs, respectively, since the time of data collection. Therefore, future research may look at these micro-level patterns using the updated versions of the two platforms. Another limitation is that this study looked at the practices within the process of peer writing rather than evaluation of the end-products of writing. Future studies can evaluate students' writing by comparing the first jointly written drafts and the final drafts.

Bio

Gibreel Sadeq Alaghbary is an associate professor of English at the Department of English Language and Literature, College of Languages and Humanities, Qassim University, Saudi Arabia, and professor of English at the Center for Languages and Translation, Taiz University, Yemen. He served as a Fulbright post-doctoral fellow and adjunct faculty at San Diego State University, USA, in 2013. His research covers applied linguistics, educational technologies, and the analysis of textual ideology with a focus on political discourse. He is author of "Introducing Stylistic Analysis" (2022) by Edinburgh University Press and "Ideological Positioning in Conflict" (2019) in the Routledge Handbook of Language in Conflict.

Murad Abdu Saeed is a senior lecturer in the Department of the English Language, Faculty of Language and Linguistics, Universiti Malaya. His main research interests are applied linguistics, academic writing, educational technologies in EFL writing. His research papers appear in journals such as Language Learning & Technology, Australasian Journal of Educational Technology, Assessing Writing, International Journal of Educational Technology in Higher Education, Assessment & Evaluation in Higher Education, Innovations in Education and Teaching International, Computers & Compositions, the Language Learning Journal, Journal of Research & Method in Education and Asian Education and Develo

References

Abrams, Z. (2016). Exploring collaboratively written L2 texts among first-year learners of German in Google Docs. *Computer Assisted Language Learning*, *29*(8),1259-1270. https://doi.org/10.1080/09588221.2016.1270968

Ajjawi, R., & Boud, D. (2017). Researching feedback dialogue: An interactional analysis approach. *Assessment & Evaluation in Higher Education*, *42*(2), 252-265. https://doi.org/10.1080/02602938.2015.1102863

Alharbi, M. A. (2019). Exploring the potential of Google Doc in facilitating innovative teaching and learning practices in an EFL writing course. *Innovation in Language Learning and Teaching* 14(3), 227-242. https://doi.org/10.1080/17501229.2019.1572157

Allagui, B. (2014). Writing through WhatsApp: An evaluation of students writing performance. *International Journal of Mobile Learning and Organization*, 8(3–4), 216–231. https://doi.org/10.1504/IJMLO.2014.067022

Andujar, A. (2016). Benefits of mobile instant messaging to develop ESL writing. *System*, 62, 63-76. https://doi.org/10.1016/j.system.2016.07.004

Awada, G. (2016). Effect of WhatsApp on critique writing proficiency and perceptions toward learning. *Cogent Education*, 3(1), 1-25. https://doi.org/10.1080/2331186X.2016.1264173

Bitchener, J., & Storch, N. (2016). *Written corrective feedback for L2 development* (Vol. 96). Multilingual Matters.

Bouhnik, D., & Deshen, M. (2014). WhatsApp goes to school: Mobile instant messaging between teachers and students. *Journal of Information Technology Education: Research*, *13*, 217–231. https://doi.org/10.28945/2051

Bradley, L. (2014). Peer-reviewing in an intercultural wiki environment – student interaction and reflections. *Computers and Composition*, *34*, 80–95. https://doi.org/10.1016/j.compcom.2014.09.008

Brodahl, C., Hadjerrouit S., & Hansen, N. K. (2011). Collaborative writing with web 2.0 technologies: Education students' perceptions. *Journal of Information Technology Education: Innovations in Practice*, *10*: 73-103. https://doi.org/10.28945/1384

Brooks, L., & Swain, M. (2009). Languaging in collaborative writing: Creation of and response to expertise. In A. Mackey & C. Polio (Eds.), *Multiple perspectives on interaction* (pp. 64-95). Routledge.

Cameron, A., & Webster, J. (2005). Unintended consequences of emerging communication technologies: Instant messaging in the workplace. *Computers in Human Behavior*, *21*, 85–103. https://doi.org/10.1016/j.chb.2003.12.001

Carless, D. (2006). Differing perceptions in the feedback process. *Studies in Higher Education*, *31*(2), 219-233.

Carless, D. (2020). Longitudinal perspectives on students' experiences of feedback: A need for teacher–student partnerships. *Higher Education Research & Development*, *29(*3), 425-438. https://doi.org/10.1080/07294360.2019.1684455

Carless, D. (2012). Trust and its role in facilitating dialogic feedback. In D. Boud & E. Molloy (Eds.), *Feedback in higher and professional education* (pp. 90-103). Routledge.

Carless, D., & Winstone, N. (2023). Teacher feedback literacy and its interplay with student feedback literacy. *Teaching in Higher Education*, *28*(1), 150-163. https://doi.org/10.1080/13562517.2020.1782372

Chang, C.F. (2012). Peer review via three modes in an EFL writing course. *Computers and Composition*, 29, 63–78. https://doi.org/10.1016/j.compcom.2012.01.001

Chen, W., & Yu, S. (2019). Implementing collaborative writing in teacher-centered classroom contexts: Student beliefs and perceptions. *Language Awareness*, *28*(4), 247-267. https://doi.org/10.1080/09658416.2019.1675680

Cho, H. (2017). Synchronous web-based collaborative writing: Factors mediating interaction among second-language writers. *Journal of Second Language Writing*, 36, 37-51. https://doi.org/10.1016/j.jslw.2017.05.013

Chong, S. W. (2019). College students' perception of e-feedback: A grounded theory perspective. *Assessment & Evaluation in Higher Education*, *44*(7), 1090-1105. https://doi.org/10.1080/02602938.2019.1572067

Chu, S. K. W., & Kennedy, D.M. (2011). Using online collaborative tools for groups to co-construct knowledge. *Online Information Review*, *35*(4), 581-597. https://doi.org/10.1108/14684521111161945

Ebadi, S., & Rahimi, M. (2017). Exploring the impact of online peer-editing using Google Docs on EFL learners' academic writing skills: A mixed methods study. *Computer Assisted Language Learning*, *30*(8), 787-815. https://doi.org/10.1080/09588221.2017.1363056

Elola, I. (2010). Collaborative writing: Fostering foreign language and writing conventions development. *Language Learning & Technology*, *14*(3), 51-71.

Elola, I., & Oskoz, A. (2010). Collaborative writing: Fostering L2 development and mastery of writing conventions". *Language Learning and Technology*, *14*(3), 51.

Fattah, S. F. E. S. A. 2015. The effectiveness of using WhatsApp messenger as one of mobile learning techniques to develop students' writing skills. *Journal of Education and Practice*, *6*(32): 115–127.

Green, S. (2019). What students don't make of feedback in higher education: An illustrative study. *Journal of English for Academic Purposes*, *38*, 83-94. https://doi.org/10.1016/j.jeap.2019.01.010

Guasch, T., A., Espasa, M., & Martinez-Melo, M. (2019). The art of questioning in online learning environments: the potentialities of feedback in writing. *Assessment & Evaluation in Higher Education*, *44*(1), 111-123. https://doi.org/10.1080/02602938.2018.1479373

Gillow-Wiles, H., & Niess, M.L. (2017). Engaging Google Doss to support collaboration and reflection in online teacher education. In M. L. Neiss & H. Gillow-Wiles (Eds.), *Handbook of research on teacher education in the digital age* (pp. 635-662). IGI Global.

Hattie, J., & Gan, M. (2011). Instruction based on feedback. In R. E. Mayer & P. A. Alexander (Eds.), *Handbook of research on learning and instruction* (pp. 263-285). Routledge.

Irshad, M. (2022). Challenges encountered during synchronous online collaborative writing via Google Docs. *International Journal of Web-Based Learning and Teaching Technologies* (IJWLTT), *17*(6), 1-14.

Ishtaiwa, F. F., & Aburezeq, I. M. (2015). The impact of Google Docs on student collaboration: A UAE case study. *Learning, Culture and Social Interaction*, *7*, 85-96. https://doi.org/10.1016/j.lcsi.2015.07.004

Kessler, G. (2009). Student-initiated attention to form in wiki-based collaborative writing. *Language Learning & Technology*, *13*(1), 79-95. http://dx.doi.org/10125/44169

Kessler, G., Bikowski, D., & Boggs, J. (2012). Collaborative writing among second language learners in academic web-based projects. *Language Learning & Technology*, *16*(1), 91-109. http://dx.doi.org/10125/44276

Lee, K. Y., & Hassell, D.G. (2021). Students' attitudes and preferences towards Google Docs as a collaborative writing platform. *International Journal of Computer-Assisted Language Learning and Teaching (IJCALLT)*, *11*(2), 1-15.

Li, M., & Zhang, M. (2023). Collaborative writing in L2 classrooms: A research agenda. *Language Teaching*, *56*(1), 94-112. https://doi.org/10.1017/S0261444821000318

Li, M., & Zhu, W. (2017). Good or bad collaborative wiki writing: Exploring links between group interactions and writing products. *Journal of Second Language Writing*, *35*, 38-53. https://doi.org/10.1016/j.jslw.2017.01.003

Neumann, K. L., & Kopcha, T.J. (2019). Using Google Docs for peer-then-teacher review on middle school students' writing. *Computers and Composition*, *54*, 1-15. https://doi.org/10.1016/j.compcom.2019.102524

O'Donovan, B., Rust, C., & Price, M. (2016). A scholarly approach to solving the feedback dilemma in practice. *Assessment & Evaluation in Higher Education*, *41*(6), 938-949. https://doi.org/10.1080/02602938.2015.1052774

Oskoz, A., & Elola, I. (2014). Promoting foreign language collaborative writing through the use of Web 2.0 tools and tasks. In M. González-Lloret & L. Ortega (Eds.), *Technology-mediated TBLT* (pp. 115-148). John Benjamins. https://doi.org/10.1075/tblt.6.05osk

Mohammed, M., A.S., & Alharbi, A. M. (2022). Cultivating learners' technology-mediated dialogue of feedback in writing: processes, potentials and limitations. *Assessment & Evaluation in Higher Education*, 47(6), 942-958. https://doi.org/10.1080/02602938.2021.1969637

Pedro, L. F. M. G., de Oliveira Barbosa, C.M.M., & das Neves Santos, C.M. (2018). A critical review of mobile learning integration in formal educational contexts. *International Journal of Educational Technology in Higher Education*, *15*(1), 1-15.

Rambe, P., & Bere, A. (2013). Using mobile instant messaging to leverage learner participation and transform pedagogy at a South African University of Technology. *British Journal of Educational Technology*, *44*(4), 544-561. https://doi.org/10.1111/bjet.12057

Price, M., Handley, K., & Millar, J. (2011). Feedback: Focusing attention on engagement. *Studies in Higher Education*, *36*(8), 879-896. https://doi.org/10.1080/03075079.2010.483513

Schmidt, R. W. (1990). The role of consciousness in second language learning1. *Applied Linguistics*, *11*(2), 129-158. https://doi.org/10.1093/applin/11.2.129

Semeraro, J., & Moore, N.S. (2016). The Use of Google Docs Technology to Support Peer Revision". In E. T. Ortlieb, E. Ortlieb, E., & W. Verlaan (Eds.), *Writing instruction to support literacy success* (pp. 203-220). Emerald Group Publishing Limited.

Storch, N. (2021). Collaborative writing: Promoting languaging among language learners. In M. García Mayo (Ed.), *Working Collaboratively in Second/Foreign Language Learning* (pp. 13-34). Berlin, Boston: De Gruyter Mouton. https://doi.org/10.1515/9781501511318-002

Strobl, C. (2013). Affordances of Web 2.0 technologies for collaborative advanced writing in a foreign language. *Calico Journal*, *31*(1), 1-18.

Su, F., & Zou, D. (2022). Technology-enhanced collaborative language learning: theoretical foundations, technologies, and implications. *Computer Assisted Language Learning*, *35*(8), 1754-1788. https://doi.org/10.1080/09588221.2020.1831545

Swain, M. & Lapkin, S. (1995). Problems in output and the cognitive processes they generate: A step towards second language learning. *Applied Linguistics*, *16*, 371−391.

Swain, M. (1998). Focus on form through conscious reflection. In C. Doughty & J. Williams (Eds.), *Focus on form in classroom second language acquisition* (pp. 64−81). Cambridge University Press.

Swain, M. (2006). Languaging, agency and collaboration in advanced second language learning. In H. Byrnes (Ed.), *Advanced language learning: The contributions of Halliday and Vygotsky* (pp. 95−108). Continuum.

Tang, Y., & Hew, K.F. (2017). Is mobile instant messaging (MIM) useful in education? Examining its technological, pedagogical, and social affordances. *Educational Research Review*, *21*, 85-104. https://doi.org/10.1016/j.edurev.2017.05.001

Tian, L., & Zhou, Y. (2020). Learner engagement with automated feedback, peer feedback and teacher feedback in an online EFL writing context. *System*, *91*, 1-14.

Tyrer, C. (2019). Beyond social chit chat? Analyzing the social practice of a mobile messaging service on a higher education teacher development course. *International Journal of Educational Technology in Higher Education*, *16*(1), 1-20.

Webb, N. M. (2009). The teacher's role in promoting collaborative dialogue in the classroom. *British Journal of Educational Psychology*, *79*(1), 1-28. https://doi.org/10.1348/000709908X380772

Winstone, N., & Carless, D. (2019). *Designing effective feedback processes in higher education: A learning-focused approach*". Routledge.

Wheeler, S. (2009). Learning space mashups: Combining Web 2.0 tools to create collaborative and reflective learning spaces. *Future internet*, *1*(1), 3-13. https://doi.org/10.3390/fi1010003

Woodard, R., & Babcock, A. (2014). Designing eriting tasks in Google Docs that encourage conversation: An inquiry into feedback and revision". In S R. Anderson & C. Mims (Eds,), *Handbook of research on digital tools for writing instruction in K-12 settings* (pp. 1-29). IGI Global.

Yang, C. C. R. (2010). Using Google Docs to facilitate collaborative writing in an English language classroom practice. *TESL-EJ*, *14*(3), 1–6.

Yeh, H. C. (2014). Exploring how collaborative dialogues facilitate synchronous collaborative writing. *Language Learning & Technology*, *18*(1), 23-37. http://dx.doi.org/10125/44348

Zeng, G., & Takatsuka, S. (2009). Text-based peer–peer collaborative dialogue in a computer-mediated learning environment in the EFL context. *System*, *37*(3), 434-446.

Zhang, Z. (2021). Promoting student engagement with feedback: Insights from collaborative pedagogy and teacher feedback. *Assessment & Evaluation in Higher Education*, *47*(4), 540-555. https://doi.org/10.1080/02602938.2021.1933900

Zhang, R., & Zou, D. (2021). Types, features, and effectiveness of technologies in collaborative writing for second language learning. *Computer Assisted Language Learning*, *35*(9), 2391-2422. https://doi.org/10.1080/09588221.2021.1880441

Zhang, M., Gibbons, J., & Li, M. (2021). Computer-mediated collaborative writing in L2 classrooms: A systematic review. *Journal of Second Language Writing*, *54*, 100854. https://doi.org/10.1016/j.jslw.2021.100854