

# Emerging Instructional Technology Enhancing Collaborative Writing in the Digital Era

## เทคโนโลยีการสอนเพื่อส่งเสริมการเขียนแบบร่วมมือ ในยุคดิจิทัล

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### Abstract

The 21<sup>st</sup> century has been a period of rapid change in information and technology. English language learning at the present time should be modified from using English language content for setting instructional objectives and the learning process to using 21st century competencies for designing students' learning experiences. Collaboration is one of the core competencies. Collaboration can improve students' writing skills. Though, this paper reviews the use of collaborative writing and publishing facilitated by E-mail Exchanges, Google Docs, and Wikis as an emerging instructional technology and their significance for student literacy and language education in the classroom. Firstly, Electronic Mail has been a tool in both

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first language and second language education. Teachers use E-mail substantially increased their communication between students over time compared to traditional modes. Secondly, Google Docs can enhance peer collaborating in writing. Lastly, Wikis give the users the ability to edit, add content, track who made changes, and allow revisions to previous entries. At the end section, this paper also indicates the 4 pitfalls when technology is involved in writing teaching in the digital era: concerning more with software instead of what the students are learning, online interaction is a different experience, affording to purchase computers and facilitating plagiarism.

**Keywords:** Instructional Technology, Collaborative Writing, Computer-Mediated Communication, Digital Era

### บทคัดย่อ

ศตวรรษที่ 21 เป็นยุคแห่งการเปลี่ยนแปลงด้านข้อมูลสารสนเทศและเทคโนโลยี ผู้เรียนจึงต้องเป็นผู้ที่มีสมรรถนะให้ทันต่อการเปลี่ยนแปลง การจัดการเรียนการสอนภาษาอังกฤษในปัจจุบันจึงต้องปรับเปลี่ยนจากเดิม มาสู่การนำสมรรถนะในศตวรรษที่ 21 มาเป็นฐานในการออกแบบการเรียนรู้ เพื่อให้ผู้เรียนฝึกปฏิบัติอย่างรอบด้าน อันจะเป็นการเตรียมผู้เรียนให้พร้อม หนึ่งในสมรรถนะของศตวรรษที่ 21 คือ การร่วมมือ ซึ่งส่งเสริมทักษะการเขียนของผู้เรียนเป็นอย่างดี ดังนั้นบทความนี้จึงทบทวนวรรณกรรมเกี่ยวกับการเขียนแบบร่วมมือรวมถึงการใช้เทคโนโลยีต่าง ๆ ที่ช่วยส่งเสริมการเขียนแบบร่วมมือ คือ จดหมายอิเล็กทรอนิกส์ ใช้ในการเขียนสื่อสารระหว่างผู้เรียนมากขึ้น เมื่อเทียบกับการสอนในอดีต เอกสารออนไลน์ส่งเสริมทักษะการเขียนแบบร่วมมือ และวิกิพีเดียช่วยส่งเสริมการเขียนแบบร่วมมือ โดยสามารถแก้ไขและทบทวนเนื้อหาพร้อมกันได้ ดังนั้นเทคโนโลยีดังกล่าวจึงมีส่วนสำคัญต่อการส่งเสริมการเขียนแบบร่วมมือในยุคดิจิทัล โดยเฉพาะกับการจัดการเรียนการสอนภาษาอังกฤษ ตอนท้ายของบทความผู้เขียนยังได้นำ

เสนอหลุมพรางต่าง ๆ เกี่ยวกับการนำเทคโนโลยีเข้ามาช่วยในการเรียนการสอนภาษาอังกฤษ โดยเฉพาะการเขียนในยุคดิจิทัล ใน 4 ประเด็น คือ การกังวลเกี่ยวกับการใช้เทคโนโลยีมากกว่าสิ่งที่จะเรียนรู้ การปฏิสัมพันธ์ทางออนไลน์ซึ่งเป็นประสบการณ์แปลกใหม่ ค่าใช้จ่ายในการใช้เทคโนโลยีที่สูง และการคัดลอกผลงานผู้อื่น

**คำสำคัญ :** เทคโนโลยีการสอน การเขียนแบบร่วมมือ การสื่อสารผ่านคอมพิวเตอร์ ยุคดิจิทัล

## Introduction

Over the past decade, digital technologies have gone from being an optional tool for the few to a required tool for the majority. Computer and internet are more important than ever before in domains ranging from employment to education to civil affairs (Packard, 2018). Furthermore, the growth of Web 2.0 tools has opened new avenues for collaborative applications in education. The development and spread of the personal computer and the Internet have brought the most significant changes in the technology of writing since the diffusion of the printing press. Changes in how and why people write are occurring so quickly that they are difficult to document, much less analyze. Yet, as difficult as such analysis is, it must be attempted if we are to understand the role that Computer-Mediated Communication (CMC) can and should play in English language teaching, especially in the teaching and learning of writing.

At the same time, the form and function of computers and the Internet have changed dramatically. The use of information technology has been increasing in higher education and educational research has demonstrated that different ways of integrating the use of technology into

classroom teaching have different effects on learning. In many cases, learning can be enhanced through the experience of a shared environment for discussing and working together. As an educational pedagogy that promotes learners' autonomy and improves their writing skills, online collaboration has the potential role to promote students' learning (Curtis & Lawson, 2001; Kaplan, 2002). Online collaboration can help improve students' writing skills by motivating students to write, enhancing their sense of audience, teaching them the importance of revision, reducing stress in writing, and cultivating positive attitudes towards writing. This paper reviews the use of collaborative writing and publishing facilitated by Emails, Google docs, and Wikis as an emerging instructional technology and their significance for student literacy and language education in the classroom. This article begins by reviewing research on classroom use of the main forms of Computer-Mediated Communication (CMC). Then, collaborative writing, current issues regarding the use of instructional technology (Emails, Google docs, and Wikis) in foreign language writing instruction will be discussed. Finally, the concerns of new technologies in teaching of writing will be addressed.

Teachers who have taken the dive into education technology have infinite teaching and learning possibilities at their fingertips. Introducing Collaborative writing tools into English language classrooms such as Computer-Mediated Communication can provide excellent opportunities for practice, assessment, better writing, and better communication (Bennett, C., 2015). Thus, Computer-Mediated Communication will be addressed in the following sector.

### Computer - Mediated Communication

Computer-Mediated Communication (CMC) became popular in the English composition classroom in the 1980s, due to several benefits. Instructors reported that control of discussion shifted decisively in the direction of the students, as students could speak to each other without having to wait for the teachers' permission (Balester, Halasek, & Peterson, 1992; Barker & Kemp, 1990; Faigley, 1990). They claimed that this fostered student-student discussion and promoted cooperative relationships among students (Langston & Batson, 1990). Students reportedly become better writers by having an authentic audience and a purpose for their writing (Peyton, 1990) as well as more time on task. Electronic discussion encouraged a process of knowledge and a critical awareness about how communication, or miscommunication (DiMatteo, 1991). These include the amount of student participation, the linguistic characteristics of interaction, and the impact of CMC use on students' writing. Several studies included quantitative measures to evaluate amount of student participation and compare it to face-to-face-discussions (Chun, 1994; Kelm, 1992; Kern, 1995; Sullivan & Pratt, 1996; Warschauer, 1996a). All studies found a greater amount of student participation in three measures--percentage of student talk vs. teacher talk, directional focus of student talk (toward other students or toward the teacher), and equality of student participation.

This data suggests essential results toward the possibilities of promoting collaborative learning in the classroom. One of the main obstacles toward achieving a collaborative classroom is the teacher-centered nature of discussion, with classroom discourse dominated by the sequence of an initiating move by the teacher, a responding move by a student, and a follow-up move by the teacher. While electronic discussion is certainly not

the only way to break this pattern, it does appear to be a very effective way. Warschauer (1999, 2002a) conducted ethnographic research of students in an ESL composition course that used CMC extensively throughout the semester. The study found that the student-directed nature of the discussion—which contrasted greatly with the face-to-face discussions in the classroom, almost all of which were dominated by the teacher—allowed students to explore and develop their opinions on important topics related to second language writing, such as the nature of plagiarism and the value of networking with professors and fellow students.

Finally, at least one report (Kelm, 1992) indicated that synchronous communication can also be a useful tool for developing students' linguistic accuracy. Kelm, in a university intermediate Portuguese course, used students' own computer-mediated messages as a basis for reviewing of particular grammatical points and noted an 80% reduction in certain grammatical errors (e.g., incorrect usages of gerunds and progressives). Therefore, research on CMC supports the view that it can be an important component of the language writing classroom, especially when judiciously combined with, rather than replacing, face-to-face discussion (Warschauer, 2007).

Nevertheless, Computer-Mediated Communication (CMC) alone may not be sufficient to be fully effective in realizing all the potential benefits of writing activities. Collaboration in writing is considered as essential process that promotes interactions and language use as well. Collaborative writing will be addressed in the following section.

### Collaborative Writing

As emerging area in Second Language (L2) writing, collaborative writing (CW) has received increasing attention in the past few decades (Zhang, 2018). Defined as a writing activity in which two or more learners communicate with each other throughout the task to generate one single text, CW is noted for promoting learner interaction and facilitating deliberation on language use, which in return facilitates L2 learning (Li & Kim, 2016; Shehadeh, 2011; Storch, 2013). The use of collaborative writing is supported by Vygotsky (1978) sociocultural theory, which holds that individuals construct developmental knowledge through their social interactions and that learning results from the internalization of these interactions (Storch, 2002).

Collaborative writing during which students work together to complete a writing task, to evaluate the writing performance of their classmates, or to revise their written texts jointly, is grounded in the social constructionist theory of learning and the process-based approach to writing (Min, 2005; Shehadeh, 2011). Research has focused on various issues of collaborative writing in second language context. Storch (2005) states that pair and small group activities constitute one of the most common practices in communicative Second Language classroom, theoretically supported by both psycholinguistic and sociocultural perspectives on L2 acquisition. In writing classes, group work has tended to be limited to brainstorming and peer review activities. But in recent years, a number of studies have called attention to the benefits of collaborative writing tasks, which require learners to work in pairs throughout the entire writing process. Research from a sociocultural perspective suggests that collaborative writing activities push learners to reflect on their language use and work together in the

solution of their language-related problem (Swain, 2000). By pooling their linguistic resources to solve the problems encountered, learners engage in language-mediated cognitive activities that are taught to facilitate the co-construction of language knowledge and a higher level of performance (Swain, 2000).

Expanding on studies that examined individual planning conditions, researchers began to explore the effectiveness of collaborative prewriting. Neumann and McDonaugh (2014) reported that English Second Language university students wrote paragraphs that received higher analytic rating after collaborative writing as opposed to individual writing. Furthermore, in English as Foreign Language (EFL) context, McDonaugh and colleagues (McDonaugh, De Vleeschauwer, & Crawford, 2018) found collaborative prewriting helped Thai EFL students write problem/solution paragraphs that received higher scores and were more accurate than paragraphs written by individual writers.

From the previous studies above (McDonaugh, De Vleeschauwer, & Crawford, 2018), collaborative writing tasks were more accurate than individual tasks. This suggests that the benefits of collaboration for accuracy may occur when students co-construct texts, not when they plan to write individually. In addition, the exiting use of collaborative writing tasks in the EFL context where students work in pairs or small groups, the research also reported advantages for small groups (Fernandez & Dobao, 2014a, 2014b). It indicates that the participation and interaction among students in a collaborative writing task may impact student talk and text quality.

For more effective writing quality, technology is introduced into the collaborative writing classroom more and more in order to facilitate students' writing skills. Nowadays, E-mails, Google Docs, and Wikis are



considered as instructional tools to facilitate students' writing quality. These instructional technologies will be discussed respectively.

### **Instructional Technology**

Online collaboration and communication tools offer educators another means of fostering collaboration among student groups. This section will highlight some of the ways in higher education, and corporate environments are using Emails, Google docs, and Wikis in collaborative writing.

### **E-Mail Exchanges**

Electronic mail has been a tool in both First Language and Second Language education. It is used both for communication between teacher and student as well as long-distance exchanges between students in different locations. According to Fotos and Browne (2011), E-mail Exchanges promote proficiency and motivation in the foreign language classroom. The study reviewed research that suggests E-mail is similar to speech in written form and can thus be considered a new discourse genre. They describe E-mail Exchange program between university English as Foreign Language (EFL) students and American student keypals, the E-mail project provided authentic Second Language (L2) resource, promoted overall L2 proficiency gains, and led to increased levels of intercultural awareness and motivation to study the target language. Such E-mail Exchange programs are suggested to be specifically useful in the foreign language context as they provide exposure to the target language outside the classroom.

Technology for writing such as E-mail Exchanges assist writing instruction and supports students in developing their own writing. From the review, Computer-Assisted Language Learning (CALL) continues to be used

for all sorts of specific language learning activities, including writing skill development. Several studies on using CALL for writing were found (e.g. Lamjuanjit, 2009; Vichaidit, 2012). For example, Lamjuanjit (2009) conducted a study to enhance university students' writing strategies through a constructed CALL program. The main methodology in enhancing strategies was having the subjects learn seven writing strategies based on Oxford (1990) through the CALL program. The findings revealed that the subjects employed greater numbers of writing strategies in comparison with the pre-enhancing phase. The subjects had positive attitudes toward the general use, contents, and design of the constructed CALL program. They also suggested the program to be designed as a game to increase program-user interaction. The findings of a previous study (Vichaidit, 2012) also support the effectiveness of CALL in terms of improving students writing and promoting learner autonomy. Along with the use of CALL programs, E-mails have been used as asynchronous communication tool in developing writing skills. The use of E-mails in teaching writing was found in several studies (e.g., Chan, 2004; Loha, 2004; Duangkhamchan, 2005). For instance, Duangkhamchan (2005) examined the effect of the use of E-mail correspondence to enhance students' writing accuracy for secondary school students. The students interacted with each other via E-mail discussing essays and exchanging essays for peer review. The findings indicated that the use of E-mail Exchanges was effective in enhancing students' writing skill in relation to task fulfillment and grammatical accuracy. The teaching model helped improved students' writing skills and promoted students' motivation toward learning how to write via E-mail Exchanges. Students also reported positive attitudes towards E-mail Exchange writing in improving their writing skills. E-mail Exchanges make the students use the language for authentic

purposes; furthermore, they can use it to make new friends and learn new cultures.

A good way and method to teach writing skill is essential. Many studies above have been done and to some extent came to some positive findings. On the other hand, in this new age of communication, students tend to communicate internationally through the technologies and they should be provided and supported to express themselves in a broad way. Sending and receiving E-mails is a dominant way of communication for the students to get closer to what they desire.

Another instructional technology which is practical to use in English language classrooms is Google Docs. Now Google Docs is an application which is widely used and brings documents to life with smart editing and styling tools to help writers format text and paragraph easily. The next section, Google Docs will be addressed.

### **Google Docs**

Google Docs is a product of Google to create and share work online as well. You can create documents, spreadsheets, and presentations online from scratch or upload many different file formats to work with others on a project.

Using Google Docs in the classrooms for collaborative writing has emerged for a while. The Google Teacher Academy in the summer of 2007 highlights a wide variety of disciplines from Palo Alto High School, CA using Google Docs. The author identifies 4 key advantages for using Google docs in the classroom: firstly, makes peer collaborating and editing exciting and fun; secondly, saves automatically – no more complaints about I lost my work; thirdly, easy access from any internet computer – eliminates my computer

crashed because it is always online; lastly, teacher can monitor student work easily and offer comments and suggestions at any point in the assignment (Wojcicki, 2007). Online Collaborative Writing (OCW) tools such as Google Docs have been developed and widely used in education. Furthermore, Google Docs also provide an efficient way for students to perform collaborative writing texts (Liu, 2018). OCW research has been conducted to explore the impact of OCW tools in collaborative learning (Wheeler, Yeomans, & Wheeler, 2008) and in second language learning (Elola & Oskoz, 2010)

One of the earlier studies regarding the use of Google Docs among a non-native English speaking group was done by Yang in 2010. The study explored how Google Docs can be used to facilitate collaborative writing in a Second Language classroom. Another similar study was done by Chao and Lo in 2011, where they proposed a web-based five-stage computer mediated collaborative writing approach to the writing process for English as a foreign language (EFL) learner. The five stages were: collaborative planning, partitioned drafting, peer-revising, peer-editing, and individual publishing was blended with on-campus English composition course (Chao & Lo, 2011), and showed positive impact on student learning.

Some previous studies have shown that writing processes and perceptions of Google Docs suggests that learners support each other in terms of linguistic knowledge and strategy use leading to a positive perception of collaboration in the web-based environment (Kessler, Bikowski, & Boggs, 2012). Another study showed that students using Google Docs had a better performance than the face-to-face group; which can be attributed to three main reasons: the collaboration method, special features of Google Docs which motivated students to learn more efficiently, and more contribution

to work (Suwantarathip & Wichadee, 2014). According to Limbu and Markauskaite (2015), Google Docs enabled learners to participate in, and to form; communities that engaged in purposeful communication. Furthermore, a Google Docs study by Liu & Lan (2016) showed the difference in motivation, vocabulary gain and perceptions on using Google Docs between individual and collaborative learning at a tertiary level. Though, Google Docs has shown tremendous pedagogical among non-native English speaking communities, where students have found Google Docs to have predominantly positive impact on their learning.

Therefore, Google Docs has generally the power to promote student-student interaction, can be used to facilitate collaborative writing, and provides an efficient way for students to perform collaborative writing tasks. Furthermore, Google Docs supports learners to have a better performance than the face-to-face group. The application as perceived by the students was an interesting and beneficial tool to collaborate with their peers as well.

However, there are essential and several factors that influence the success and failure of collaborative writing such as teacher competence in teaching writing and managing the writing process, the writing classroom context, the nature of the school curriculum and syllabus, and individual student differences (e.g. a student proficiency level in language and writing or motivation to write collaboratively) (Widodo, 2013). While collaborative writing has been around for a long time, online collaborative writing is still fairly new, specifically among non-native speaking communities. Therefore, it is crucial to dedicate enough time for the students to get familiarity with tools such as Google Docs in order to use the tool to its full potential.

Apart from E-mail Exchanges and Google Docs, Wikis is another instructional technology which leads to the collaboration, promotes student-student interaction, and develops the skills required to benefit from group work. Though, the use of Wikis will be discussed in the next section.

### Wikis

Besides, E-mail Exchanges and Google Docs, Wikis are widely considered to be student-centered platforms which promote collaborative writing as well (Alhgasab, Hardman, & Handley 2019). They contribute to the emerging literature on the role of teachers in supporting collaborative learning during Wiki activities by examining teacher and student online interaction during Wiki-mediated collaborative writing activities in three Kuwaiti high school English as a Foreign Language (EFL) classes. They found that there was greater student-to-student interaction and collaboration leading to jointly constructed texts. Such finding points to the benefits of adopting a dialoging approach to teaching during Wiki-mediated collaborative writing activities.

Furthermore, Wikis provide students the tools to engage in collaborative dialogue and writing (Li & Kim, 2016 and Yang & Lee, 2017). For example, students can post their ideas in a discussion forum, share a text on a Wiki page for others to comment on, revise and edit, and track the history of changes one another have made (Mak & Coniam, 2008). Some research has found that some learners do indeed engage with one another collaboratively during Wiki-mediated group writing activities (Arnold, Ducate, & Kost, 2012; Aydin & Yildiz, 2014). For example, some studies observe a high level of student collaborative dialogue (Lee, 2010) and collaborative writing (Li, 2012, 2013; Li & Kim, 2016). In these studies, students were observed to

verbalizes their thoughts, engage with each other's contributions, seek feedback, pool their linguistic resources to solve problems, and deliberate on their own and other's edits to complete a common writing task. The process which exhibits a high degree of mutuality has been found to feed into students' collective learning in terms of acquisition of vocabulary, grammar and writing content and structure, and have a positive impact on students' writing performance (Storch, 2013; Swain & Watanabe, 2013). Grant (2009) also asserts that students were motivated in their writing by the use of Wikis.

While the current study of Wiki-mediated EFL collaborative writing instruction and practice is small and exploratory in nature, it provides valuable insights into the role of the teacher in promoting a collaborative writing approach while using an online platform like Wikis (Nami & Marandi, 2014). Though, a technological innovation like Wikis will not bring about pedagogical changes by itself without the support of the teachers, and that key pedagogical practices need to be addressed to ensure that a broader repertoire of interactive and discourse practices while using Wikis. This is particularly essential in a country like Thailand where English language teaching is often teacher-led with a focus on language mastery and accuracy where the interactions mainly focused on linguistics (vocabulary and grammar) rather than text structures and forms of argumentation.

As productive classroom talk is seen as prerequisite for learning, there is a need for teachers to be trained in an effective online pedagogy in order to change habitual classroom behaviors and traditional discourse patterns which teachers use in both face-to-face teaching and online to secure improvements in student engagement and learning through the guided co-construction of knowledge (Prestridge, 2014; Hardman &

Hardman, 2016; Mercer, Hennessy & Warwick, 2017). Wikis technology in particular requires that teachers use a dialogue approach alongside more directive forms of teaching, particularly in English as Foreign Language (EFL) contexts where technology is not fully-embedded in a curriculum (Pifarre & Li, 2012).

As the growth of technology, the digital natives are responding to these new communities of learning and collaboration online. E-mail Exchanges are series of emails between two or more participants, each generally a response to the previous emails. Another technology, Google Docs are more than letters and words. Google Docs bring the documents to life with smart editing to help writer format texts and paragraph easily. Lastly, Wikis are the knowledge base websites on which users collaboratively modify content and structure directly from the web browser. Wikis also work well for teachers to set-up a system for students to post their work and for the class to work together. It is shown that Web 2.0 tools offer new ways for teachers to foster collaboration among groups and enhance collaborative writing activities.

In sum, the modern classroom has taken several steps forward in its evolution of the learning environment. Many of the benefits that we have seen in this setting are due to the introduction of new technology options for students. Instead of having a single computer for a class to use or a laboratory environment for the entire school placed in one room, we can now help students learn at their table or desk with items issued to them directly. Nevertheless, introducing technology to students in a classroom setting can certainly help the educational environment, but it also requires equal access for all students to ensure that everyone receives the same opportunities to success. That is why schools, teachers, and parents should



periodically review the advantages and disadvantages of technology in educational settings.

### Conclusion

In digital era, where all students have access to digital devices, they also have access to the internet and the expansive progression of digital resources. Further, in such environments, teachers can provide resources and support via class sites as shown in a study of Zheng, Warschauer, Lin and Chang's meta-analysis (2016) that showed an average effect of writing achievement in learning environments.

In a digital era, arguably, the changes in outcome are dependent upon changes in pedagogy to support writing (Zheng, Warschauer, Lin and Chang, 2016). It is argued that digital era offer potential increases in autonomy, collaboration, personalization and creativity (McLoughlin and Lee, 2008). Studies identify increased writing quantity and increased engagement in writing processes (Lowther, Inn, Ross, and Strahl, 2012; Yang and Wu, 2012). In terms of tutorial properties, studies of digital learning environments identify potential for an increase in learning-focused interactions and higher level thinking skills (Grimes & Warschauer, 2008; Yang and Wu, 2012). In their survey of writing teachers, it is reported that teachers see benefits for connecting with an audience, collaboration and creativity. This report provides initial evidence that there is opportunity for the nature of school writing activities to change given teachers' belief and the nature of their practices within the digital environment. There is also evidence that the nature of the support to achieve writing expertise can be different, given the digital opportunity for ongoing iterations, and the opportunity to access resources and tools that support process (Sylvester & Greenidge, 2009).

Nevertheless, all these studies agree that the positive effects, while avoiding associated following pitfalls.

Firstly, the students might be more concerned with what they receive through the software or app instead of what they are learning. Though, teachers should set and enforce boundaries when using technology in the classroom to ensure results are possible.

Secondly, interacting online with others is a different experience when the students collaborate with others. For example, being behind a screen provides students with a layer of anonymity that they don't receive with a face-to-face conversation. Learning how to work with one another using technology is an essential skill as well. Teachers should encourage social interactions that accurately communicate thoughts, feelings, or emotions so that when a student is offline, they can still make a better life for themselves.

Next, whether technology is in the classroom or at home, there is the issue of affordability to worry about in today's world. Some households cannot afford to purchase computers for their kids to manage their school work. Like some schools, they don't have enough money to pay their salaries each year, add new tech components for learning.

Lastly, the growth of technology facilitates students' plagiarism by making available millions of texts around the world for easy cutting and pasting. Teachers should also be strict rules about the use of technology and remind students that there are search engines or social commercial anti-plagiarism sites in order to call students' attention to realize when getting involve in technology.

In summary, the digital era has emerged for a while. Introducing technology to students in an English writing classroom setting can certainly

help the educational ambiance. Furthermore, communication continues to develop and expand, it will challenge not only to how teachers teach writing, but also to how they conceptualize writing and its role in education and society (Warschauer, 2007).

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