

# Exploration of Influential Factors of Effectiveness of CMC on English Oral Proficiency

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**Abstract:** The ever-evolving technological innovation and development have brought dramatic changes to numerous conventional industries comprehending English language learning, so as to challenge them to innovate to meet the needs of the time in line with appropriate information technologies. The inception of the era of Internet Plus further boosted the process. Through the progression of over two decades in the 21st century, it has been highly common to hire Computer-Mediated Communication (CMC) as an approach to facilitate English language learning and teaching both inside and outside the classroom. However, CMC as an umbrella term covers various factors such as forms, temporality, and English activity types, and it is significant to master the skill to construct a set of effective combinations to realise specific teaching objectives. This essay aims at exploring how CMC play an effective role in enhancing English learners' oral competency through cross-analyzing three archetypical selective empirical studies. The results indicate that CMC tools may produce multifarious outcomes on pronunciation, lexical, and syntactic levels of oral production, speech fluency, and accuracy depending on various factors mentioned above.

**Keywords:** CMC; English oral proficiency; Influential factors under CMC

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## 1. Introduction

On the one hand, Payne and Whitney's study (2002) confirmed the hypothesis that the use of Computer-Mediated Communication (CMC) could have a positive indirect impact on second language (L2) oral proficiency by reducing students' working memory load. On the other hand, compared with face-to-face (F2F) communication, CMC demonstrated roughly similar effects on pronunciation, lexical and syntactic level of oral production, and meanwhile, it seemed that it would negatively impact the speech fluency and accuracy (Lin, 2015). These contradictory findings presented by Lin's study (2015) and Payne and Whitney's study (2002) greatly triggered the writer's interest. Nowadays technologies have become an indispensable part that facilitates learners' experience rather than just a supplementary tool during the learning process (Li, 2017), and various factors such as task types, and the CMC tools used could also influence the teaching outcomes (Lin, 2015). These conflicting results may be created due to the dramatic changes in computer technologies in a time gap of over a decade between these two studies, or other factors. In this situation, the writer of this essay particularly attempts to figure out if there is a link between the impacts that CMC has on English oral proficiency and the tools of CMC and task or activity types used in these studies based on several selected empirical works.

## 2. History of the development of CMC

According to Cummins (1986), since the mid-1980s, many researchers have started to study the use of CMC in language learning. Chapelle (2003) states that computer technology has not been commonly used in reading, writing, literacy and cultural awareness until 2000. Later, the advanced development of communication technologies has allowed CMC to provide opportunities for social networking and collaboration, which promoted more studies on CMC for oral development to appear (Lin, 2015). For example, Payne and Whitney (2002) employed a naturalistic experiment to test the hypothesis that text-based synchronous CMC can indirectly

improve L2 oral proficiency. The findings showed that the participants from the experimental group who received online classes scored higher than participants who were merely taught in face-to-face conditions (Payne and Whitney, 2002). Another study done by Blake, Wilson, Pearson, Cetto and Pardo-Ballester (2008) also showed that a CMC group completed a better oral performance compared with a face-to-face group. However, surprisingly, Blake's study (2009) failed to confirm this finding when he looked into the potential impacts that a text-based CMC had on strengthening the oral proficiency of L2. More importantly, what Blake (2008; 2009) encountered is not a single case, as plenty of other researchers such as Chang (2007) and Chang (2008, cited in Lin, 2015) also experienced evidently conflicting findings either in their own studies or comparisons with each other's ones (Lin, 2015). These interesting findings encouraged Lin (2015) to explore if there was a causal relationship between spoken CMC and the development of L2 oral competence, intending to identify a definite direction to follow regarding how to use CMC in the L2 classroom. Lin (2015) attempted to fill this gap by adopting a meta-analysis study of 25 relevant studies. As mentioned above, her study (2015) surprisingly demonstrated that CMC seemed to generate harmful impacts on accuracy and fluency, and the most popular task type 'opinion exchange' among researchers turned out to just slightly influence oral competence. This finding caused a ripple of discussion as it contradicts a common perception that CMC could enhance oral proficiency (Qi, 2020).

Therefore, this essay will try to analyse and compare the previous findings, particularly the ones presented in Lin's work (2015) with two subsequent empirical studies: Rassaei's study (2017) and Hung and Higgins' work (2016), to further explore the relationship between the application of CMC and L2 oral proficiency. This essay will focus on if the impacts that the use of CMC has on oral proficiency are also related to the communication mode such as text-based versus video-based CMC, temporality covering synchronous versus asynchronous CMC, and task or activity types used in the study.

### **3. Briefing of three selected empirical studies**

According to Lin (2015), various factors such as task types and the CMC tools used may also influence the teaching outcomes. In the three empirical studies indicated in this essay, Lin (2015) took a quantitative meta-analytic approach to 25 empirical studies. Hence, this study exemplified a collection of CMC modes and task types represented. The second empirical study - Rassaei's study (2017) employed an experimental design looking into the development of L2 among 57 EFL (English as a Foreign Language) learners under two modes of corrective feedback: F2F and video-chat CMC recasts. Lastly, the third one - Hung and Higgins' work (2016) adopted both qualitative and quantitative analysis to investigate the different learning opportunities by text-based and video-based synchronous CMC by involving 12 participants including six Chinese-speaking learners of English. The comparisons of findings across them are illustrated below.

#### **3.1 Relations between the use of CMC tools and oral proficiency**

Lin (2015) adopted a quantitative meta-analytic approach to investigate both the direct and indirect effects of using CMC to treat language oral competence. In order to figure out how the works could represent the effectiveness of CMC on the development of oral proficiency, the effect size based on Hedge's  $g$  was employed, and confidence intervals (CI) were introduced to test the statistical trustworthiness of both the individual and averaged effects sizes. Then, as this empirical study includes a vast body of empirical works conducted by other researchers, it is necessary to look into its data sampling strategies closely. Lin's study (2015) designed through inclusion and exclusion criteria for the selection of suitable works from key words identification and choice of databases covering both the published and unpublished works, to specific research questions and methodologies used. Through such meticulous work, 25 studies published and unpublished between 2000 and 2012 were eventually selected out of 1712. In the light of communication mode, 56% (14) of them used voice-chat CMC, nearly 36% (9) used text-chat, and only two of them used both. Regarding temporality, 68% (17) of studies employed real-time synchronous CMC (SCMC), merely 12% (3) adopted delayed asynchronous CMC, and 20% (5) used both of them. These two sets of proportions indicate that the findings included in Lin's work (2015) are most likely to be affected by the effects of voice-chat CMC and synchronous CMC.

Through a quantitative analysis of the first research question "Compared to face-to-face interaction or no interaction at all, how effective is CMC in promoting L2 oral proficiency?", Lin's study (2015) showed that the overall effectiveness of CMC had on L2 oral proficiency was small and positive over face-to-face communication or no interaction on the immediate posttest, and she claimed the finding was trustworthy as the data  $g=0.40$  fell between 0.15 and 0.65 standard deviation units. This finding was partially confirmed by Rassaei's study (2017), which found that both experimental conditions (video chat and face-to-face) significantly performed better than the control group (no feedback was provided). Namely, both F2F and CMC activities with interactions would benefit students' English oral proficiency. However, no statistically significant difference was observed between the two treatment conditions (Rassaei, 2017), which indicated that video-based online oral corrective feedback could be equally effective as traditional face-to-face feedback.

To summarise the points mentioned above, Lin's study (2015), with 56% studies of voice-chat CMC and 36% studies of text-chat CMC representing the samples, indicated that the use of CMC would make more significant impacts on overall oral proficiency than F2F communication. However, based on these data and this finding presented by Lin (2015), several possible relationships among the size of the effects of voice-chat CMC, text-chat CMC, and F2F could be inferred. In order to further explain the size of the effects of voice-chat CMC and text-chat CMC is different, a formula below is utilised to illustrate why the different size of the effects between different CMC communication modes (in this case, voice-chat and text-chat CMC) exists in a more precise picture.

Signs: A= the effects of voice-chat CMC; B= the effects of text-chat CMC; C= the effects of F2F.

Hypothesis: If  $A=B$ , according to Lin's study (2015), both A and B should generate a more significant impact than C so that  $56\% A + 36\% B > C$ .

However, Rassaei's study (2017), with almost equal samples representing video chat group ( $n=19$ ) and F2F communication ( $n=20$ ) in a single study, demonstrated that video-based CMC (underlying the voice-chat CMC) could generate similar effects on L2 development of oral production, namely,  $A=C$ .

Therefore, there is a strong reason to believe that  $A \neq B$ . In other words, the effects that CMC has on oral proficiency could be related to the CMC modes.

Supporting as a piece of further evidence, Hung and Higgins' study (2016) showed that text-based SCMC seemed to have higher positive impacts on language forms, while video-based SCMC appeared to particularly be effective for the development of both fluency and pronunciation, which showed the temporality of CMC also contributed differently to oral competence. This finding can make the statement that the tools of CMC could impact oral proficiency more convincible. However, further research employing a practical experimental design should consider all the different variables to demonstrate a more lucid outlook.

### **3.2 Relations between the use of CMC task or activity types and oral proficiency**

Besides the communication modes and temporality of CMC, as introduced above, Lin's study (2005) exemplified a bunch of studies, among which different types of tasks were also investigated. The tasks included in the 25 studies were categorised into five types following the typology established by Pica, Kanagy and Falodun (1993, cited in Lin, 2015). Among all the 25 studies, 18 of them employed opinion exchange tasks, only two of them adopted information gap and mixed task types, and one study separately took decision-making and jigsaw tasks. Interesting findings were presented in Lin's study (2015). These findings included: a) opinion exchange task produced the smallest size effect. b) jigsaw tasks turned out to negatively impact oral proficiency. Nevertheless, these results should be interpreted with caution as opinion exchange dominated the empirical studies and the number of studies using all other task types was quite small, which was also indicated by the author. Different from any task type in the body of works included in Lin's study (2015), Rassaei's study (2017) adopted a storytelling (oral production) task for the treatments of both the F2F communication and CMC. As indicated above, Rassaei (2017) concluded that video-based online oral corrective and traditional face-to-face feedback could be equally effective. Similarly, Hung and Higgins (2016) employed a single type of open-ended conversational task in their study and showed video-based SCMC benefited the development of fluency while Lin's study (2015) presented a contradictory result that voice-chat CMC and synchronous CMC tended to disadvantage English fluency. Meanwhile, it also needs to note that in the cases involved in Lin's study, "opinion exchange" was the most popular task exploited.

As a consequence, all these three empirical studies demonstrated different findings regarding how the use of CMC relates to L2 oral proficiency. However, this phenomenon could be well explained when considering all the task types included in them are different. This finding also corresponds to the claim that it is pointless to blindly criticize pedagogical activities without taking the teaching objectives, learners, and teaching content into consideration (He, 2021). Therefore, these three studies work together to support the writer's point of view that there is a link between the effects CMC has on oral proficiency and the task or activity type decided in an EFL environment.

## **4. Conclusion**

In general, it may seem confusing while looking at so many empirical studies presenting totally different research findings. However, this situation can be understood well when recognising that oral proficiency is related to various factors (Lin, 2015) including the communication mode, temporality as well as task or activity types explored in this essay. Through a two-step cross-comparing process between three empirical studies with focuses on the tools of CMC and task type adopted, this essay explains why oral development relates to CMC tools covering text-chat CMC, video-chat CMC, text-based and video-based SCMC, and a variety of task types. There have been numerous literary works presenting the opinion that online synchronous communication facilitates English oral proficiency to some extent and thus it indicates a large room to tailor more delicate research design to fathom how

different elements concerning the CMC approach benefit English oral competence in the field English teaching, especially with the rise of more advanced technologies driven by Artificial Intelligence. In terms of future research, this essay confirms the suggestion indicated by Lin (2015), that more research is needed to explore how different task types with specific target language can be depicted to promote oral proficiency by taking account of the various features, affordance as well as constraints of CMC techniques.

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