

A Systematic Review on Mobile Instant Messaging as a Collaborative Tool for Language Learning

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Abstract

In recent years, collaborative learning is commonly used at higher learning institutions. One of the modes of collaborative learning is exploiting mobile phones specifically instant messaging to foster new possibilities in providing more effective and attractive learning activities. Even though instant messaging has become valuable collaborative learning tools, their substantial contributions to collaborative learning are still insufficient. The study aims to identify the effectiveness of mobile instant messaging as a collaborative tool in language learning at higher learning institutions through collating and correlating 40 journal articles published between 2016 and 2018 since the development of mobile technologies has rapidly changed during those years. A systematic review was conducted to identify the most common mobile instant messaging application used and the effects of mobile instant messaging applications as a collaborative tool in teaching and learning. The outcomes revealed that *WhatsApp* was the most common mobile instant messaging used and has improved student and lecturer collaboration, created effective distant learning opportunities, and increased students' participation. Further, the study provides insights for future research and practice such as recommendations on how to appropriately employ instant messaging applications in facilitating mobile language learning specifically.

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Keywords: Instant messaging application; Mobile based intervention; Mobile collaborative learning; Systematic Literature Review.

INTRODUCTION

In today's world, information and telecommunication technologies have triggered drastic development in our educational field. Teaching and learning methods in the field have shifted from the traditional face-to-face to digital learning atmosphere that resists the need for common time and geographical distances. The widespread of technology such as smartphones, iPads, tablets and personal computers among students in academic and institutions of learning, together with the possibility and ability of the Internet and instant messaging tools have influenced communication, as well as learning (Ling, 2016). Specifically, students use technology tools to improve their language and academic achievement (Yin, 2016).

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The impact of these technologies in the 21st century, which has reformulated the mode of how students acquire and receive instructions from their teachers, is causing transformations in the teaching profession (Amin, 2016). Teachers are now facilitating their students using any available social media application which serves as a platform for instant messaging, at their own pace (Amin, 2016; Turay, 2016). Among these technology tools, mobile phones and its instant messaging capability have become famous among teachers in teaching language skills (Rabab'ah, Rababa'h & Suleiman, 2016; Hamad, 2017).

LITERATURE REVIEW

2.1 Mobile Learning and Instant Messaging Development

Over the years, mobile learning and instant messaging are one of the fastest growing technologies which are extensively used by numerous individuals, companies and educational institutions (Baek, Yoo, Lee, Jung & Baek, 2017). According to Rouse and Marquet (2013), about 200 million users are responding to 60 percent of real-time communication daily through their preferable instant messaging platforms. Instant messaging has been exploited as a foundation for education institutions to encourage forthcoming events and notify students with news (Chugh, 2017). Educational institutions like colleges and universities have discovered the ability of instant messaging tools to be useful tools within collaborative learning environment, and the fact that the tools allow learning to occur anytime and anywhere (Cetinkaya, 2017).

Today, *WhatsApp*, *Telegram*, *WeChat*, *Viber* are commonly used among teachers and students. Studies found the integration of mobile in teaching and learning has been expanding gradually through teachers who continuously seek ways to incorporate these tools to support teaching and learning (Sung Chang & Liu, 2016; Baek et al., 2017). The brisk acceptance of instant messaging tools among students indicates that social media technologies are going to experience a paradigm shift (Odia, 2016; Sutikno, Handayani, Stiawan, Riyadi, & Subroto, 2016). Evidently, the extensive use of the instant messaging by students has attracted many researchers' interest to explore the flexibility of the application in assisting students' learning (Sánchez & Isaías, 2014; Fattah, 2015).

2.2 Collaborative Learning for Educational Achievement

Collaborative learning which is embedded from primary schools to tertiary level intuitions is among the most explored learning method in the 21st century (Mahbib, Esa, Mohamad & Mohd Salleh, 2017). Collaborative learning is accepted as a method of teaching and learning where students work together in groups to create, complete and enhance given tasks (Le, Janssen & Wubbles, 2016). Collaborative learning has been perceived as an informal way of learning, but has proven to cause a major impact in teaching and learning (Le, Janssen & Wubbels, 2018).

It is important to note that working in teams does not indicate the exact collaborative practise; it is essential for the team to be cooperative to bring out a valuable outcome from it (Rodríguez, Rianza & Gomez, 2017). However, Kukulska-Hulme and Viberg (2018) suggest that collaborative learning can occur among two students or even a student with a teacher. Students in the collaborative learning are confronted socially and emotionally as they need to be attentive to various viewpoints, to express and to defend their thoughts which eventually promote teamwork among students. Collaborative language learning in particular, creates a platform for students to practise language skills as well as construct new knowledge and relationship inside and outside classroom setting (Kukulska-Hulme & Viberg, 2018).

2.3 The Impact of Mobile Collaborative Learning

Students in a mobile collaborative learning environment exploits smart devices to collaborate typically in informal learning outside of normal classroom or instructor supervision. However, attention is

needed for the time spent by students on these devices inside and outside classroom (Baloch, Rahman & Ibad, 2012). Mobile collaborative learning has been examined due to its' swiftness and flexibility which has altered the context of learning and modes of collaboration, requiring various methods than those exploited in a traditional classroom (Fakomogbon & Bolaji, 2017). This method of learning offers new opportunities to support and improve collaboration through engaging students in various activities across various places and contexts (West, 2013). According to a survey conducted by Yeboah and Ewur (2014) which is focusing on tertiary students, an average student devotes almost eight hours daily on instant messaging through mobile phones. Thus, it is clear as to why this application is widely accepted and used in field of education.

The benefits of exploiting instant messaging in developing various teaching methods, usefulness and academic performance have led current researchers with diverse outcomes on the effects of instant messaging (Liu & Wu, 2016); Awada, 2016; Ashiyani, 2016; & Hazaea & Alzubi, 2016). Also, some studies have highlighted the ways to explore and use instant messaging (e.g. Malecela, 2016; Şahan & Razi, 2016; Justina, 2016) for collaborative learning. It is therefore, identified that the literature regarding collaborations of mobile instant messaging to support teaching and learning can be categorised into two major components that focus on: (1) the use of mobile instant messaging as a collaborative learning tool in language teaching and learning; (2) users' perceptions towards employing instant messaging as collaborative learning tools.

2.3.1 The Use of Instant Messaging Applications as Teaching and Learning Tools

Most of the studies revealed that collaborating instant messaging like WhatsApp, WeChat, Telegram, Viber as teaching tools have significantly improved the learning process. As well, the versatility of mobile services creates a pathway for teachers, so as to enhance students' performance (Liu & Wu, 2016; Malecela, 2016; Yin, 2016; Sayan, 2016; Awada, 2016; Ashiyani, 2016; Sahan, Coban & Razi, 2016; Susanti & Tarmuji, 2016; Hazaea & Alzubi, 2016; Jafari & Chalak, 2016; Minhas, Ahmed & Ullah, 2016; Hulya, Avci & Tufan, 2017). Despite the positive effects, some studies revealed that this method required extra attention by teachers due to some drawbacks such as time spent in preparing materials, controlling disciplines of students in groups as well as technical problems, namely readability, conversational structure, financial burden, internet speed and short battery life which needed to be overcome (Shi, Luo & He, 2016; Verheijen, Spooen & Me, 2016; Alshammari, Parkes & Adlington, 2017; Hamad, 2017).

2.3.2 Users' Perceptions towards Employing Instant Messaging as a Collaborative Learning Tool

Most studies have shown positive feedbacks. For instance, Mistar & Embi (2016), Shariffuddin, Shaaidi and Hashim (2016) and Yavuz (2016) discovered that students who learned using instant messaging performed reasonably well than those who were exposed to traditional methods. However, So (2016), Mwakapina, Mhandeni and Nyinondi (2016), Ling (2016), and Shi et al. (2016) highlight the hitches that need to be solved in order to have successful collaborative teaching and learning activities. For instance, the issue over students' autonomy which includes the struggled to continue over time, and students who were at risk with mobile phone addiction.

Based on the two major components, it was recognised that even though collaborating instant messaging as a teaching aid provides positive outcome to teachers and students, the learning techniques need to be improved. Researchers have typically measured the effectiveness of mobile learning in general rather than instant messaging applications in teaching and learning (Fattah, 2015; Sung Chang & Liu, 2016; Baek, et.al, 2017). Nevertheless, with the increased popularity of instant messaging applications in the education field since 2016, further exploration is highly called for (So, 2016; Caro-Alvaro, Garcia-Lopez, Garcia-Cabot, de-Marcos & Martinez-Herraiz, 2018), particularly at the tertiary level contexts.

Therefore, this SLR paper aims to identify the effectiveness of mobile instant messaging as a collaborative tool in language learning at higher learning institutions through collating and correlating 40 journal articles published between 2016 and 2018. Specifically, the objective is to identify the most

commonly used instant messaging application in teaching and learning.

METHODOLOGY

Research articles published during the period of 2016 to 2018 were searched electronically and through reference list checking to retrieve the appropriate literature. These years were chosen due to the rapid development of mobile technologies especially in education (Al-Hunaiyyan, Alhajri & Al-Sharhan, 2018). The electronic databases involved in the electronic search were Ebscohost, Emerald, ProQuest, ScienceDirect, Scopus and Google Scholar. There were two type of keywords searched: (1) mobile phone related keywords, including instant messaging, instant messaging application, *WhatsApp*, *Telegram* and *WeChat*; and (2) teaching and learning related keyword, including collaborative learning, mobile learning, mobile collaborative learning, tertiary students, teachers and lecturers.

First, the logs were chosen by searching the titles paralleled to the related topics of interest. After collating all of the articles, another round of searches was conducted using the list generated by the electronic databases to find relevant works. The third step, was to shift through all the abstracts of the related journals and discard them if they did not meet the related topics. The final step was to determine the suitability of full text articles. The articles were reviewed only if they were paralleled to the criteria: (1) the effects of instant messaging as collaborative learning tool and (2) students' perceptions in collaborating instant messaging in language learning and (3) the selected articles were experimental study in nature, which is the best way for drawing conclusions regarding intervention.

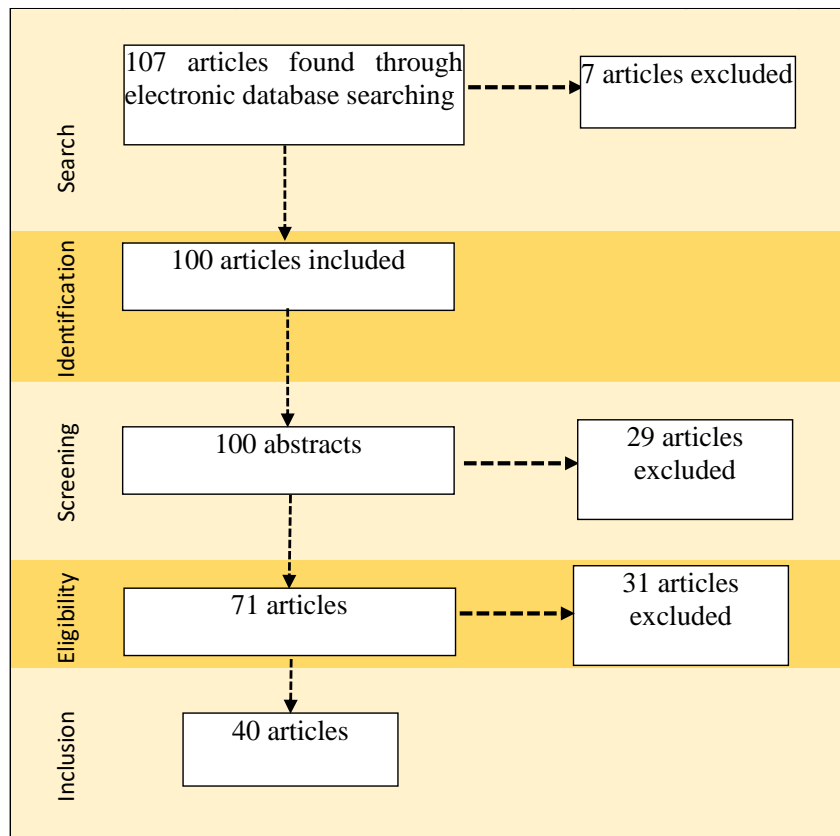


Figure 1. Flowchart of the Search for and Inclusion of Studies.
Adapted from Garrote, Dessemontet & Opitz (2017)

As a start, a total of 71 journal article titles and abstracts which focused on the said criteria were reviewed. However, a total of 31 articles were discarded due to their publication period dated before 2016 (e.g. Alemi, Sarab & Lari, 2012; Deng & Nie, 2011; Bere, 2013). There were also articles focused solely

on mobile learning (e.g. Hu, 2012; Alemi & Lari, 2012; Liu, 2016). Therefore, a total of 40 journal articles were finalized for review as illustrated in Figure 1. There were 18 articles focused on the effects (e.g. Liu & Wu, 2016; Sayan, 2016; Awada, 2016; Hazaea & Alzubi, 2016; Jafari & Chalak, 2016), and the rest highlighted users' perceptions towards exploiting mobile instant messenger in their teaching and learning (e.g. Ling, 2016; Mistar & Embi, 2016; Minhas, Ahmed & Ullah, 2016).

RESULTS AND DISCUSSION

4.1 Common Types of Instant Messaging Application Used in Classroom

All the 40 selected for review studies took place at higher learning institutions, among tertiary level students. Table 1 presented the common types of instant messaging applications used in teaching and learning of the selected articles.

Table 1. Types of Instant Messaging Application Used in the 40 Selected Studies.

Author (year)	Type of Instant Messaging Application
Adelore (2017)	WhatsApp
Akpan & Abe (2017)	WhatsApp
Alshammari, Parkes & Adlington (2017)	WhatsApp
Ashiyani (2016)	WhatsApp
Awada (2016)	WhatsApp
Bensalem (2018)	WhatsApp
Centinkaya (2017)	WhatsApp
Dehghan (2017)	WhatsApp
Gasaymeh (2017)	WhatsApp
Ghaemi & Golshan (2017)	Telegram
Ghobadi & Taki (2017)	Telegram
Gon & Rawekar (2017)	WhatsApp
Guler (2017)	WhatsApp
Hamad (2017)	WhatsApp
Hazaea & Alzubi (2016)	WhatsApp
Hulya & Tufan (2017)	WhatsApp
Jafari & Chalak (2016)	WhatsApp
Justina (2016)	WhatsApp
Karakus & Unluer (2017)	WhatsApp
Khodarahmi & Heidari (2018)	Telegram
Liu & Wu (2016)	Line & MMS
Malecela (2016)	WhatsApp
Minalla (2018)	WhatsApp
Minhas, Ahmed & Ullah (2016)	WhatsApp
Mistar & Embi (2016)	WhatsApp
Mwakaipina Mhandeni & Nyinondi (2016)	WhatsApp
Ramakrishnan (2017)	WhatsApp
Sahan, Coban & Razi (2016)	WhatsApp
Sayan (2016)	WhatsApp
Shariffuddin, Shaaiddi & Hashim (2016)	WhatsApp
Shi, Luo & He (2016)	WeChat
So (2016)	WhatsApp
Susanti & Tarmuji (2016)	WhatsApp
Ta'amneh (2017)	WhatsApp
Veeresh (2017)	WhatsApp
Verheijen, Spooren & Me (2016)	WhatsApp
Yavuz (2016)	WhatsApp
Yin (2016)	WhatsApp
Zarei, Darani & Golestan (2017)	Telegram

Table 1 showed the types of application used in the classroom based the 40 selected articles. A bar chart was made to illustrate the results of the types of application used in the studies (Figure 2). As expected, majority of the studies investigated the effects of *WhatsApp* as the instant messaging tool in teaching and learning, and were identified as experimental studies. Four experimental studies measured the effects of other instant messaging applications namely *Telegram* and *WeChat* (Shi et al., 2016) and *Line* (Liu & Wu, 2016).

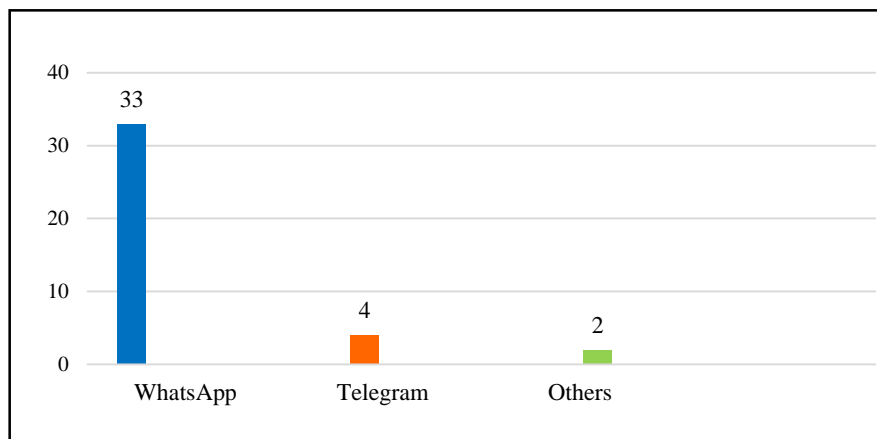


Figure 2. Types of Instant Messaging Application Used in the Classroom.

From the data, *WhatsApp* was the dominant messaging application that is used in the classroom (Hamad, 2017). Likewise, about 97% Malaysians are using *WhatsApp* (Mistar & Embi 2016). Moreover, this finding is consistent with that of Centikaya (2017) who affirmed that *WhatsApp* is one of the most preferred mobile applications. Similarly, Statista, (2016), and Church and de Oliveira (2013) highlight that *WhatsApp* has gained its popularity because of its benefits like being able to send real-time messages to a person or groups of friends concurrently, at low-cost, and privately. Other messaging applications like *Telegram*, *WeChat* and *LINE* have also increased in usage and stayed ahead of the competition by constantly introducing new ways to engage users in and outside the classroom (Winton, 2017).

4.2 Effects of Mobile Instant Messaging Application on Collaborative Learning

Table 2 presented further detail i.e. the sample of study (*n*), intervention, and effects of the reviewed articles. A total of 31 studies were reviewed for the purpose of this analysis. These articles were dominantly experimental studies on using instant messaging application as an intervention.

In terms of the effect of instant messaging applications, most of the reviewed studies compared lessons with and without mobile intervention. There were 18 mobile learning studies specifically evaluated on instant messaging application as the intervention in students teaching and learning process (Adelore 2017; Akpan & Abe, 2017; Centinkaya, 2017; Ghobadi & Taki, 2017; Guler, 2017; Hazaea & Alzubi, 2016; Hulya & Tufan, 2017; Justina, 2016; Karakus & Unluer, 2017; Khodarahmi & Heidari, 2018; Liu & Wu, 2016; Mwakapina et al., 2016; Sahan et al., 2016; Sayan, 2016; Shi et al., 2016; Verheijen, Spooren & Me, 2016). Meanwhile, 13 studies employed no intervention versus mobile learning intervention in their studies.

Moreover, it was found out from the studies that students who went through mobile instant messaging intervention had a vast understanding on the subject learned. This finding was similar with So's (2016) who found the students' academic performance improved after the intervention of *WhatsApp*. Similarly, Malecela, (2016), indicated that the students agreed learning through *Whatsapp* to be interesting and educationally useful. Sayan (2016) concurred on the use of *WhatsApp* which has significantly proven to improve the students' final examination performance. This finding is similar to Akpan and Abe's

(2017) who found that *WhatsApp* application as an effective collaborative tool for the 21st century teaching and learning activities, an educational tool with a potential of making learning interesting. They observed that the students who used *WhatsApp* application for learning had significant improvement in their academic performance and retention ability. In a related study, Malecela (2016) and Ajid, Reni, Yunita and Dwi's (2018) also asserts that *WhatsApp* was a mean of a collaborative learning experience and helpful in increasing social interactivity with peers and instructors.

Table 2. Mobile Based Interventions and its Effects.

Author (year)	Sample (n)	Intervention	Effects
Adelore (2017).	20	Mobile Learning	Mixed
Akpan & Abe (2017)	60	Mobile Learning	Positive
Ashiyani (2016)	60	No Intervention Vs Mobile Learning	Positive
Awada (2016)	52	No Intervention Vs Mobile Learning	Positive
Bensalem (2018)	40	No Intervention Vs Mobile Learning	Positive
Centinkaya (2017)	60	Mobile Learning	Positive
Dehghan (2017)	32	No Intervention Vs Mobile Learning	Negative
Ghaemi & Golshan (2017)	60	No Intervention Vs. Mobile Learning	Positive
Ghobadi & Taki (2017)	60	Mobile Learning	positive
Gon & Rawekar (2017)	80	No Intervention Vs. Mobile Learning	Positive
Guler (2017)	84	Mobile Learning	positive
Hazaea & Alzubi (2016)	30	Mobile Learning	Positive
Hulya & Tufan (2017)	85	Mobile Learning	Positive
Jafari & Chalak (2016)	60	No Intervention Vs. Mobile Learning	Positive
Justina (2016)	80	Mobile Learning	Positive
Karakus & Unluer (2017)	16	Mobile Learning	Positive
Khodarahmi & Heidari (2018)	60	Mobile Learning	Positive
Liu & Wu (2016)	40	Mobile Learning	Mixed
Minalla (2018)	30	No Intervention Vs. Mobile Learning	Positive
Mwkapina, Mhandeni & Nyinondi (2016)	120	Mobile Learning	Mixed
Ramakrishnan (2017)	200	Mobile Learning	Positive
Sahan, Coban & Razi (2016)	33	Mobile Learning	Positive
Sayan (2016)	92	Mobile Learning	Positive
Shariffuddin, Shaaidi & Hashim (2016)	55	No Intervention Vs Mobile Learning	Positive
Shi, Luo & He (2016)	50	Mobile Learning	Mixed
So (2016)	30	Mobile Learning	Mixed
Ta'amneh (2017)	40	No Intervention Vs Mobile Learning	Positive
Veeresh (2017)	80	No Intervention Vs Mobile Learning	Positive
Verheijen, Spooen & Me (2016)	150	Mobile Learning	Negative
Yavuz (2016)	45	No Intervention Vs Mobile Learning	Positive
Zarei, Darani & Golestan (2017)	150	No Intervention Vs Mobile Learning	Positive

On the other hand, Yin (2016) highlights the advantage of *WhatsApp* in fostering students' learning, enhancing social skills, improving technology proficiency, promoting collaborative learning, increasing

self-confidence and developing social presence. This finding is consistent with Mwakapina et al. (2016) who found *WhatsApp* blended learning classroom played a positive role to help students to learn English language by providing enough opportunities to improve English vocabulary, giving broader understanding of the topics discussed in class and improving English language interactions. To add, *WhatsApp* helped students developed their language skills such as listening, reading, writing and vocabulary (Hamad, 2017). Therefore, it is clear that using instant messaging application as an intervention is effective and crucial in this 21st century teaching and learning environment.

There were two studies which highlighted the effectiveness of mobile intervention even though there were mixed outcomes identified. First, integrating instant messaging tool assists students' in improving their knowledge outside classroom and fosters an effective communication anywhere and anytime (So, 2016). However, students are reluctant to receive instructional materials and questions outside of the class hours as it interferes with their private lives (So, 2016; Ling, 2016). On the other hand, Shi et al., (2016) discovered students who received instructions via *WeChat* improved their communication skills and gradually enhanced their English proficiency. Yet, students with limited learning autonomy had difficulties to participate and over the time there was a risk of students' mobile phones addiction. Due to these mixed findings of the studies, here lies the need for further investigation on the extent of these tools in rebuilding the interactive nature of teaching and learning language in classroom context for the future use (Gasaymeh, 2017).

This systematic review also proved that mobile instant messaging was an essential learning tool that provided students better opportunities to improve their language skills. Most of the studies reviewed were focusing on the effectiveness of instant messaging application in higher institutions such as colleges and universities. Therefore, it is highly recommended that similar studies are conducted at schools to identify the effectiveness of instant messaging application specifically as a collaborative learning tool among school students.

CONCLUSION

The analysis of the systematic review of the topic revealed that the use of mobile instant messaging as a collaborative learning tool in education had positive impact on teaching and learning activities. *WhatsApp* was identified the most used tool in teaching and learning due to its versatility (Hamad, 2017; Mistar & Embi, 2016; Centikaya, 2017; Statista, 2016; Church & de Oliveira, 2013). *WhatsApp* had made communication in lessons a success, helped teachers in exploiting its benefits (Malecela, 2016; Yin 2016) hence, was considered as a perfect collaborative learning tool. In general, most of the students in the reviewed studies used *WhatsApp*, *Telegram*, *Line*, *WeChat* and etc., because they considered instant mobile applications as easy to use (Ajid et al, 2018). However, the usage of other instant messaging applications like *Telegram*, *Line*, *WeChat* and others need further investigation to identify the presence of collaborative features in these applications.

Based on the findings of this study, teachers are highly recommended to consider the effectiveness of instant messaging application in selecting appropriate communication tools for a collaborative learning environment. The reviewed studies have provided the empirical evidences on the effectiveness of mobile instant messaging in increasing social interactivity between peers and teachers, technology proficiency and self-confidence during classroom activities. Therefore, more studies are recommended to provide in-depth insights on how to effectively employ these instant messaging tools in aiding students to enhance their language skills.

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