

# WHATSAPP FOR MATHEMATICS EDUCATION STUDENTS' ACTIVENESS IN LEARNING ENGLISH FOR MATHEMATICS: A CASE STUDY

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## Abstract

During the implementation of online learning in the new normal era, lecturers conducted the teaching and learning process by utilizing recent technology that could maximize the quality of the teaching and learning process. *WhatsApp* is one of the tools that is used as a teaching and learning medium in this new normal era. This is a case study that is aimed to explain whether the use of the *WhatsApp* application gave some effects on Mathematics Education students' activeness in learning English for Mathematics. The participants of this research were the 4th semester Mathematics Education students' who were studying English for Mathematics. The data from this study were obtained from observation and Focus Group Discussion. The findings revealed that the use of *WhatsApp* as an online learning medium affects students' activeness in learning English for Mathematics in terms of speaking practice, students' involvement, and students' confidence.

**Keywords:** English for Mathematics, case study, students' activeness, *WhatsApp*

## INTRODUCTION

In the new normal era, most schools and universities still conduct online learning to support the teaching and learning processes. Online learning is described as the use of technology such as the internet and computers in teaching and learning activities (Mohammadi et al., 2011). With the internet, educators can easily find various learning resources and information quickly and free of charge (Cai, 2012). The use of technology in learning activities certainly has benefits and challenges. The benefits of using technology in teaching and learning activities are student-centered learning, flexible, collaborative, effective, cost-effective, interactive, and motivating (Al-maqtri, 2014). Online learning certainly provides tremendous benefits for the world

of education because online learning makes teaching and learning activities more accessible. However, there are several shortcomings of online learning, namely reducing social interaction, technical obstacles that interfere with learning activities, and teachers who are less qualified in online learning making learning less effective (Zboun & Farrah, 2021). Lack of online learning, especially those related to technical problems, is usually caused by an unsupported internet connection which affects the concentration level of students. Online learning also causes chaos in learning activities. The chaos, in this case, is when learning activities take place, educators cannot control the activities of students, so students can do things outside of learning activities such as playing games or watching movies (Daneshdoust & Hagh, 2012).

Online learning is implemented with the help of technology. Advances in technology make the use of communication and information media at various levels of education increase drastically. Computers, the internet, tablets, and smartphones are not new to learning activities. In this era, all these devices become a means of supporting learning activities. For this reason, educators are expected to be technology literate to be able to maximize the use of technology in learning activities (Richards, 2015).

The use of technology in the learning process has positive impacts, for example, technology makes teaching and learning activities more flexible. The use of technology in the learning process makes the learning process more flexible because the learning process can be done anytime and anywhere (Usman, 2017, Subekti, 2020). The use of technology allows the implementation of distance learning which means, educators and students are in different places. In this system, the learning process can be carried out without meeting face to face but is carried out by utilizing internet technology so that both lecturers and students can interact in a technology room (Khotimah et al., 2019, Subekti, 2020). Technology also provides unlimited access to learning resources (Ahmadi, 2018). In this case, technology allows educators and students to access various learning resources that are relevant to learning. In addition, technology provides an interesting learning experience, so that students become more motivated in learning (Ahmadi, 2018). The use of technology makes students interested and enthusiastic during the learning process.

A mobile phone is one of the technology tools that is widely used for learning because of its features and flexibility. The benefits provided by mobile phones make them widely used in teaching and learning processes, including in language learning, which is commonly known as Mobile-Assisted Language Learning (MALL). In this kind of language learning, students can have flexible learning environments where they can learn anytime and anywhere and they do need to study in the classroom. This kind of learning offers many benefits for language learning in terms of vocabulary, listening, grammar, pronunciation, and reading comprehension (Miangah, 2012). It is stated that mobile phones can facilitate students' learning. It can help students learn by doing some practices on their mobile phones, improve their listening comprehension by downloading some video materials and doing some English listening exercises, learn grammar by doing grammar exercises installed on their mobile phones, learn how to pronounce words correctly and practice communicating in English by using text to speech feature, as well as enhance their reading comprehension by reading some texts on a reading application installed on their mobile phones (Miangah, 2012). MALL also provides some advantages for students which can be summarized as follows, improving students' motivation, allowing students to develop communication skills, encouraging students to use practice the language for communication, and facilitating students' learning through exploration, analysis, and discovery learning, facilitating students to communi-

cate with their classmates inside and outside the classroom at the same and different school, as well as facilitating students to have fun learning (Panagiotis & Krystalli, 2021)

These technological advances affect learning activities to make students become active, creative, and participative in learning activities. Learning technology can improve the quality of learning, technology-based learning can run effectively and controlled, the lecturers do not only take part as teachers but also learning facilitators for students (Ummayah, 2018). Thus, students become learners who are not only filled with knowledge, but also play an active role in honing their skills through interesting learning.

*WhatsApp* is one of the examples of technology that can be used as a learning medium to teach English. *WhatsApp* is an application that has recently become very familiar for people to use to communicate. Complete features make *WhatsApp* one of the most popular communication applications. Even *WhatsApp* is an alternative learning media in this new normal era. *WhatsApp* application is an internet technology-based application for both sending and receiving text messages as well as for making phone/video calls (Solihin, 2021). As a modern communication application, *WhatsApp* provides features that can be used to communicate such as texts, group chat, voice calls, video calls, and *WhatsApp* on the web and desktop (Surani & Chaerudin, 2020). Over time, *WhatsApp* has updated its features by adding several features that can support communication activities as well as help English teachers to conduct teaching and learning activities. These features certainly provide significant benefits if *WhatsApp* is used as a learning tool (Napratilora et al., 2020). The benefits of using *WhatsApp* in learning activities include facilitating collaboration and cooperation between students who take online and offline lectures and helping students and lecturers to convey information and discussions both through the text message feature and the voice message feature (Barhoumi, 2015). *WhatsApp* also becomes an alternative for more interactive e-learning classes, it motivates students to learn English, helps students to be more confident in communicating in English in a discussion and sharing session, makes students become more confident, and helps students to learn from their classmates' mistakes (Nuraeni & Nurmalia, 2020). In addition, *WhatsApp* offers cheap and easy learning (Napratilora et al., 2020).

In general, *WhatsApp* chat feature is commonly used as a tool for learning. This feature is a means where a teacher/lecturer can convey information to a group of students/students in a certain class so that the information can be accessed by all members of the group. The group feature also facilitates all group members to discuss interactively because each group member can convey information either through text messages or voice messages. Of the various advanced *WhatsApp* features, the group chat feature is considered the most ideal discussion and information delivery feature (Surani & Chaerudin, 2020). The use of the group chat feature in this learning process can facilitate discussion and delivery of information, provide convenience in the delivery of information and knowledge, increase learning motivation, form study groups that build and develop knowledge, increase collaboration and participation in the learning process, as well as provide a pleasant learning atmosphere (Susilawati & Supriyatno, 2020). By using *WhatsApp*, the delivery of information becomes easier and more effective so it can help lecturers and students communicate with each other. It allows students to have real-time communication between teachers and students outside the classroom (Salem et al., 2018). More and more teachers are interested in exploring the possibilities of using *WhatsApp* in language learning. *WhatsApp* provides many features that give chances for teachers to use it as teaching media when they teach English skills (Solihin, 2021). The features enable teachers to design

many interesting activities to teach writing or speaking such as asking the students to describe emojis (Solihin, 2021). *WhatsApp* can be used as the medium to share reading materials and enrich speaking skills by providing activities such as presentations and role-play (Surani & Chaerudin, 2020). *WhatsApp* can be used as a tool to teach speaking effectively and to improve students' participation (Amry, 2014). It improves students' engagement in the teaching and learning activities, especially in classroom discussions (Mistar & Embi, 2016).

An example of the use of *WhatsApp* in English learning is *WhatsApp* as a learning medium in English for Mathematics Education students. The English subject in the Mathematics Education Program is English for Specific Purpose (ESP). ESP is an approach to learning English that has a specific purpose to facilitate students to learn English according to their needs (Indrasari, 2016). In addition, ESP is also defined as teaching English that is used for professional purposes or teaching English for certain purposes (Kurniawati & Malasari, 2022). In general, ESP learning aims to equip students with English language skills at a certain level where the language skills will be used. ESP teaching is aimed at preparing students to use English in academic, professional, or work contexts. Therefore, ESP learning is focused on helping students develop competencies that are appropriate to their disciplines. The main target is to develop the ability to communicate in English for non-English students so that later students can apply English skills in the field of knowledge they are studying.

ESP in Mathematics Education is called English for Mathematics. English for Mathematics is a compulsory subject that is taught in the even semester. It is a subject that involves learning classroom language, ways of teaching Mathematics in English, strategies for teaching word problems in English, giving advice, how to communicate with parents, and teaching Mathematics using English. By taking this subject, the students are required to be able to understand the basic Mathematical terms in English, use the English Mathematical terms in a simple conversation in the field of Mathematics teaching, understand simple Mathematics texts in English, write a simple text using Mathematical terms in English, and demonstrate how to teach Mathematics in English. Those course objectives require students to be able to communicate in English both written and spoken. In this case, mastering English is beneficial for Mathematics Education students since they can meet the demands of the professional workplace, especially if they want to work for an international school or a school. It is common to use English to teach academic subjects at schools that use English as a medium of instruction (Lestari, 2020).

At the university level, ESP is commonly known as an English course for students majoring in non-English departments (Kusumanungputri, 2010). Therefore, at the tertiary level, English courses are implemented mandatory because it is to meet the demands of the world of work (Kurniawati & Malasari, 2022; Kusumanungputri, 2010). In general, English courses provide benefits to students in the context of academic and non-academic achievement as well as preparation for the world of work. In an academic context, students gain listening, speaking, reading, and writing skills in English according to their discipline. Meanwhile, in non-academic contexts, students gain English language skills in the context of everyday life. Then, the advantages associated with preparation for the world of work are very clear i.e., university graduates who have English language skills will be able to compete globally.

There have been many previous studies about the use of the *WhatsApp* application as teaching media in English language learning (Ahmed, 2019; No & Lina, 2021; Surani & Chaeru-

din, 2020; Tirtanawati & Salsabila, 2021). Ahmed (2019) conducted a study about the use of *WhatsApp* to enhance students' reading and writing ability in English. The findings revealed that *WhatsApp* was an effective tool to improve students' reading and writing skills since it can facilitate the students to practice their English both inside and outside the classrooms. It is also stated that the use of *WhatsApp* enables students to learn from each other. No and Lina (2021) researched teacher's perceptions in utilizing *WhatsApp* for group presentations. The findings show that the *WhatsApp* group can be used as a tool for class communication, presentation, as well as improving the content of presentations by using various online activities. Nuraeni and Nurmalia (2020) conducted a study about utilizing *WhatsApp* to support English learning. The results show that *WhatsApp* can be used to support the English Language learning as the form of MALL implementation. Surani and Chaerudin (2020) conducted a study about the use of *WhatsApp* groups to improve students' English. The findings show that *WhatsApp* groups might help teachers improve students' English with a set of drills. It is also found that *WhatsApp* can improve students' activeness and English skills, especially reading, listening, writing and vocabulary. Most of the previous studies used qualitative methods. Since this study was a case study, therefore, qualitative method was also used to explain detailed and comprehensive data. In terms of participants, the previous studies mentioned that the participants were university students. In comparison to the previous studies, the participants of this study were Mathematics Education students who attended English for Mathematics course. In addition, the context of this study was a Mathematics Study Program in Universitas Tidar. Based on the rationale, this study aimed to explain whether the use of the *WhatsApp* application has some effects on Mathematics Education students' activeness in learning English for Mathematics.

## **METHODS**

### **Research design**

To explain whether the use of the *WhatsApp* application has some effects on Mathematics Education students' activeness in learning English for Mathematics, this study used a case study. A case study is a research method where a contemporary phenomenon is being investigated in-depth and based on the real-life condition (Yin, 2009). In this research, the data were obtained from the Focus Group Discussion (FGD). Before conducting the FGD session the participants were invited to fill out a form to indicate their willingness to participate in this study. Then, the FGD session was conducted online via teleconference at the last meeting on the subject. The FGD was conducted in Bahasa Indonesia to get detailed and comprehensive data.

### **Participants**

The subjects of this study were students of the Mathematics Education Study Program, Faculty of Teacher Training and Education, Universitas Tidar who learned English for Mathematics. There were two considerations in choosing the research participants: (1) all participants learned English for Mathematics and (2) they were active students in the class. The participants of the study were 10 students who participated actively during the teaching and learning processes.

### **Ethical considerations**

This data collection was carried out based on the willingness of the participants to fill out the questionnaire distributed to them. The questionnaire included an explanation for the participants about the purpose of the study, the benefits they can get, and the consent form.

## Data analysis

The collection technique used in this study was observation and Focus Group Discussion (FGD). Observations were made to observe and record phenomena related to the use of the *WhatsApp* application as a medium for learning English for Mathematics students. The observations in this study were carried out by monitoring the course via the *WhatsApp* group. The researcher also distributed questionnaires to the participants to indicate the participants' willingness to join this study. The questionnaires were created using a Google form and distributed to participants using the *WhatsApp* application. The FGD was conducted to obtain detailed answers that focused on the research objectives.

The results of the observations were collected and studied in detail, analyzed, and described. Then the FGD data was transcribed, analyzed, and described to find answers to whether the use of the *WhatsApp* application had an effect on student activity in the English class of the Mathematics Education Study Program.

## FINDINGS AND DISCUSSION

This part presents and discusses the findings of how *WhatsApp* application affects Mathematics Education Students' activeness in learning English. The discussion is presented based on the results of the observation and Focus Group Discussion. The observation and FGD showed that the use of *WhatsApp* application had a positive impact on the students' activeness in learning English for Mathematics. First, the use of *WhatsApp* facilitated the Mathematics Education students to actively practice speaking skills, Second, the use of *WhatsApp* motivated Mathematics Education students to learn English actively. At last, the use of *WhatsApp* made Mathematics Education students speak English confidently. Each impact is presented in detail as follows.

### The use of WhatsApp facilitated the students to actively practice speaking skills

The observation done in the classroom showed that the use of *WhatsApp* facilitated the students to actively practice speaking skills. Students practiced speaking in English when they asked or answered questions. On this occasion, students practiced how to pronounce English words. *WhatsApp* was used as a tool to teach speaking effectively and to improve students' participation (Amry, 2014). Participant 10 stated:

*"I think learning English using WhatsApp is interesting since it can help me practice communicating in English. I can learn how to speak and pronounce English words by using voice notes. It helps me a lot when I want to have an interactive discussion with my classmates and lecturer." (participant 10)*

Participant 8 stated that he had a similar experience in using *WhatsApp* application during English class in Mathematics Education Study Program. He stated that the teaching and learning activities were interactive. He explained that the lecturer shared the materials via *WhatsApp* document and explained the materials by using voice notes. After the explanation, students were allowed to practice speaking English by answering questions, presenting or describing things, as well as communicating in English by using *WhatsApp* features. By doing those activities, students had great chances to interact and communicate with their classmates actively. He added that he liked using *WhatsApp* because he had the opportunity to communicate in English. *WhatsApp* was used as the medium to share reading materials and enriched speaking skills by providing activities, such as presentations and role-play (Surani & Chaerudin, 2020).

*“I like to be active in every activity conducted on a WhatsApp group. The activities conducted were good. I like to read the shared ppt and listen to the explanation via WhatsApp voice note. I’m always excited to have a discussion and express my ideas in English. By doing those kinds of activities, I feel that I have the opportunity to practice communicating in English.” (participant 8)*

Moreover, participant 5 stated that he agreed with the previous two statements. He stated that the *WhatsApp* application was helpful for students who wanted to practice pronouncing words. The explanation given by the teacher was used as an example of how he pronounced the words. Then, he used the discussion time as a chance to practice pronouncing words and shared his ideas in English. He stated that he was encouraged to practice pronouncing words and communicating in English. He stated that by using a voice note he was able to record his voice and then played it to check his pronunciation. By doing that, he unconsciously practiced pronouncing English words correctly and practiced communicating in English continuously. *WhatsApp* can be used as a tool to teach speaking effectively and to improve students’ participation (Amry, 2014). It improves students’ engagement in the teaching and learning activities, especially in classroom discussions (Mistar & Embi, 2016).

*“WhatsApp encourages me to practice pronouncing words, especially those that I do not know how to pronounce. Since the lecturer gave the recording of the explanation via voice note, I can play it many times. I can repeat the explanations many times to know how to pronounce unfamiliar words. After that, I can practice pronouncing unfamiliar words by myself. I can record my voice and practice pronouncing the words until I can do them correctly. (participant 5)*

The other participants also stated similar opinions as the three participants. They stated that *WhatsApp* made them actively participate in the teaching and learning activities. They stated that the teaching and learning activities conducted via *WhatsApp* were interesting since they could communicate with both lecturers and friends easily and effectively. By using *WhatsApp*, the delivery of information became easier and more effective so it helped lecturers and students communicate with each other. It allowed students to have real-time communication between teachers and students outside the classroom (Salem et al., 2018).

### **The use of WhatsApp motivated Mathematics Education students to learn English actively**

*WhatsApp* also influenced students’ involvement in teaching and learning processes. The participants stated that they were motivated to participate actively in the teaching and learning activities since *WhatsApp* offered cheap and flexible learning. The use of *WhatsApp* had proven that students were willing to participate actively in the teaching and learning processes. The use of the group chat feature in this learning process facilitated discussion and delivery of information, provided convenience in the delivery of information and knowledge, increased learning motivation, formed study groups, as well as provided a pleasant learning atmosphere (Susilawati & Supriyatno, 2020). Participant 4 stated:

*“Whatsapp is an effective application that can be used to conduct online learning. The features make the activities more flexible. It enables me to convey my ideas easily. It also motivates me to be more active in the teaching and learning processes*

*since it offers cheap and accessible learning. For me, having such accessible learning is important to keep my learning mood.” (participant 4)*

Students' activeness and motivation were important roles in the teaching and learning processes. Therefore, giving motivation to students to be active in the class might become a great motivation for them. *WhatsApp* application provided various features that might have facilitated students to be more enthusiastic in joining the class discussion and other class activities. As a modern communication application, *WhatsApp* provides features that can be used to communicate such as texts, group chats, voice notes, video calls, and *WhatsApp* on the web and desktops (Surani & Chaerudin, 2020). Over time, *WhatsApp* has updated its features by adding several features that can support communication activities as well as help English teachers to conduct teaching and learning activities. These features certainly provide significant benefits if *WhatsApp* is used as a learning tool (Napratilora et al., 2020). Participant 9 stated:

*“WhatsApp features can make the teaching and learning activities more interactive. Therefore, it motivates me during the teaching and learning activities. The accessible features also increase my motivation in the class discussion because I can share my ideas in English with less distraction.” (participant 9)*

*WhatsApp* is a cheap and efficient learning medium that makes the students feel more comfortable in joining the teaching and learning activities. *WhatsApp* motivated the students to learn because it eased the students to access the materials and to participate in the teaching and learning activities. By using the *WhatsApp* application, students easily sent and received learning materials. This application motivated the students a lot, especially those who had difficulties in having a synchronous meeting using Google Meet or Zoom because of the unstable connection. *WhatsApp* is an alternative for more interactive e-learning classes, it motivates students to learn English, helps students to be more confident in communicating in English in a discussion and sharing session, makes students more confident, and helps students to learn from their classmates' mistakes (Nuraeni & Nurmalia, 2020). In addition, *WhatsApp* offers cheap and easy learning (Napratilora et al., 2020). Participant 2 stated:

*“I like using Whatsapp in online learning because I can still join the online learning even though I have an unstable connection. When the lecturer uses WhatsApp for online learning, my motivation increases because it makes the teaching and learning processes easier. In addition, it does not need to require much internet data to access the materials and join the activities. Therefore, I feel more comfortable when the teaching and learning activities are conducted via WhatsApp application.” (participant 2)*

The interview results of other participants also stated similar opinions as the previous ones. They stated that teaching and learning activities were more interactive so they were more motivated to join in every activity conducted. Besides, they were more motivated because they might increase their English skills through various teaching and learning activities. The features enable teachers to design many interesting activities to teach writing or speaking such as asking the students to describe emojis (Solihin, 2021). *WhatsApp* can be used as the medium to share reading materials and to enrich speaking skills by providing activities, such as presentations and role-play (Surani & Chaerudin, 2020). *WhatsApp* can be used as a tool to teach speaking effec-



tively and to improve students' participation (Amry, 2014). It improves students' engagement in the teaching and learning activities, especially in classroom discussions (Mistar & Embi, 2016).

### **The use of WhatsApp made Mathematics Education students speak English confidently**

*WhatsApp* made the students more confident in expressing their ideas in English. They stated that learning via *WhatsApp* was more private since they did not need to see their classmates on the screen. The interview results revealed that students felt more eager to express their ideas in English in front of others because they were able to listen to their voice and check whether they produced correct sentences before sending them to the class. It helps students to learn English, to be more confident in communicating in English in a discussion and sharing session, to make students more confident, and to learn from their classmates' mistakes (Nuraeni & Nurmalia, 2020). Participant 1 stated:

*"Sometimes I feel unconfident when I am asked to express my ideas in English. The use of WhatsApp in online learning helps me to be more confident because I can record my voice using a voice note and check it before sending it to the class or I can take my recording back. WhatsApp also enables me to express my opinion without being seen by my classmates."* (Participant 1)

*WhatsApp* made students feel more comfortable in online learning. They had more private learning since they did not need to activate their camera during the teaching and learning processes; they just had to record their voice using the voice note feature and express themselves freely. Therefore, they became more confident to practice speaking in English confidently. The benefits of using *WhatsApp* in learning activities include facilitating collaboration and cooperation between students who take online and offline lectures and helping students and lecturers to convey information and discussions both through the text message feature and the voice message feature (Barhoumi, 2015). Participant 7 stated:

*"WhatsApp makes me feel like having a private course. I can listen to the lecturer's explanation without any distractions. I can also ask questions to the lecturer without any interruption from my classmates. In addition, I can answer the lecturer's questions confidently since I only need to record my voice and send it to the class. It reduces my nervousness to 60%."* (participant 7)

WhatsApp facilitated students to be more active in every activity conducted by the lecturer. The students had many choices on how they participated in the teaching and learning processes because *WhatsApp* provided many features that can be used to facilitate the teaching and learning activities. In this case, *WhatsApp* voice notes played an important role for the unconfident student in expressing their opinions. *WhatsApp* provides features that can be used to communicate such as texts, group chat, voice calls, video calls, and *WhatsApp* on the web and desktop (Surani & Chaerudin, 2020).

*"It is difficult for me to express my opinion via Zoom or Google Meet since I am a shy and unconfident person. WhatsApp facilitates me to ask questions to the lecturers and express my opinions freely. Through the chat feature or voice note feature I can participate in the teaching and learning activities without having to open my camera and see the lecturer as well as my classmates."* (participant 9)

The other participants agreed that the use of *WhatsApp* made them more confident in practicing their English. They stated that *WhatsApp* was an effective tool to support them in practicing English. *WhatsApp* grouping is useful to improve the students' English skills with a series of drilling, as well as to improve students' activeness, and to improve students' ability to read, listen, write and improve vocabulary (Surani & Chaerudin, 2020)

## CONCLUSION

From the discussion, it can be concluded that the use of *WhatsApp* as an online learning medium affected students' activeness in learning English for Mathematics in terms of speaking practice, students' involvement, and students' confidence. Those positive impacts provided a great influence on developing students' English skills. While there were some limitations in the implementation of *WhatsApp* in English for Mathematics, the need for creating more active and innovative learning encouraged teachers to utilize *WhatsApp* in learning English for Specific Purpose. Therefore, teachers are encouraged to minimize the challenges of using *WhatsApp* for language learning. It is implied that teachers need to find more information related to more effective ways of implementing *WhatsApp* in their teaching and learning processes. Future study might discuss the use of *WhatsApp* application in teaching different subjects of ESP in the post-pandemic era.

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