



Mediating Quizzes as Assessment Tool through WhatsApp Auto-response in ELT Online Class

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ABSTRACT

Although extensive studies have been conducted on the use of WhatsApp in language teaching and learning, little empirical research has been conducted to explore the use of WhatsApp modified with artificial intelligence called auto-responder as a media for assessment. To fill this void, this research aims to explore the use of WhatsApp Auto-response developed by the teacher to mediate quizzes as the assessment tool in an online English class. This research was carried out in a Vocational High School in Banyumas Regency, Indonesia, with an English teacher and his 36 students. The researchers used documentation, structured interviews, and open-ended questionnaires to collect the data. The researchers found that modifying WhatsApp with auto-responder made the online assessment more objective, accountable, transparent, easy-to-access, and easy-to-operate for both teacher and students. WhatsApp Auto-response could encourage students' autonomous learning because they could directly know their scores and the discussion of each question. Thus, students had more interest and motivation to get a higher score. However, unstable internet connection and slow response from the application should be resolved to make it better for learning. The findings imply that supporting teaching with the technological advancements of artificial intelligence in WhatsApp can provide students with realistic self-guided learning. With WhatsApp's popularity as a learning tool nowadays, its features can be embedded with chatbots that can give many advantages as a teacher assistant, especially for facilitating assessments.

1. Introduction

One of the applications of technology in education that teachers can use is the application on a smartphone. It is because the mobile device is a massive part of the technology transformation. Not only that, but it also becomes a huge need for people, including students and other young people. The trend currently is that the use of the mobile application in language learning is mainly used as support for language acquisition (Kacatl & Klímová, 2019; Persson & Nouri, 2018). Therefore, when a teacher can use a mobile application to teach the English language, it is one of the positive things to do. More focus and participation from students would be possible in the teaching process. Cell phones, smartphones and tablets have become crucial for everybody because of their accessibility and effectiveness in language learning when they are used effectively (Alsied, 2019; Gautam, 2014; Jati, 2018; Kacatl & Klímová, 2019).

Among the numerous mobile applications, WhatsApp is considered to be the most direct, most common, low cost, and most effective tool that teachers can use

(Barhoumi, 2015; Cetinkaya, 2017; Kheryadi, 2018; Urien et al., 2019). WhatsApp is a free messaging application that operates through various platforms and is commonly used by students to share multimedia messages such as images, videos, and audios along with simple text messages (Lenhart et al., 2007). WhatsApp is available to communicate with students and teachers online, send an image, text, or even voice to each other. Besides, almost all students now also use WhatsApp on their smartphones to communicate globally. The simplicity offered by WhatsApp makes it easier for students to use the app since they typically use it daily. In language learning, Kartal (2019) investigated 37 empirical studies related to WhatsApp and language learning. The results showed that the studies concluded WhatsApp could be used to enhance students' language proficiency, motivation, attitudes, learning autonomy, and reduce their anxiety.

The presence of technological development, particularly mobile-assisted language learning, should be considered by the teachers to assist them in the teaching and learning process. Hence, the teachers are needed to be more innovative and creative to facilitate their students in improving academic performance. WhatsApp is a famous social media platform used by students nowadays. With the features within, WhatsApp can be developed and modified to be an acceptable, effective learning media in online classrooms.

As one of the messaging platforms, WhatsApp does not have an automatic response inside its features, but it needs another application to the link between WhatsApp and message autoresponder (Jain et al., 2018). Autoresponder for WhatsApp is an automated response to predefined messages containing few words or equal to a message. WhatsApp Auto Responder is also called WA ChatBot. Chatbots are artificial intelligence integration systems that simulate and sustain a certain degree of conversation with real people (Colace et al., 2018; Tamayo et al., 2020). Jain et al. (2018) described chatbots as text-based, turn-based, and task-filling programs that are embedded within existing platforms. The developers can set up custom responses for different messages. Each time a user enters a message, the library saves the text they entered and the text to which the message was replying (Nagender & Patil, 2017). As ChatterBot receives more feedback, the number of comments it can respond to and the accuracy of each answer concerning the feedback statement will increase. The code obtains a precise response to the actual search statement. It results in an acceptable response statement depending on how many the individual issues each response the bot interacts with (Nagender & Patil, 2017). Chatbots use pattern matching to identify text and provide a response. In order to be able to reply typical questions asked by students, the intelligence of the chatbot relies on how these predefined patterns are described as well as how the text is interpreted and processed (Smutny & Schreiberova, 2020).

Since the launch of smartphones and mobile applications, soon-to-be apps, the term chatbot is often used for messaging apps rather than for pure computer programs (Brandtzaeg & Følstad, 2017). The term "chatbot" consists of the words "chat" and "robot." Initially, the term chatbot was used for a computer program that simulates human language using a text-based dialogue system (Zumstein & Hundertmark, 2017). Chatbots include a text input and output mask that enables smartphone users to attach to the software behind them and build a sense of talking to a real human

being (Fei & Petrina, 2013). Besides, Chatbot may also answer the questions by reading the text typed on the keyboard by the user. As a language instructor, a chatbot will reinforce a relationship between the students and the teacher by providing students with a character that does not get bored or lose patience (Fei & Petrina, 2013).

Regarding the use of WhatsApp in language teaching and learning, there are several studies conducted to investigate the effectiveness of WhatsApp as a media for learning (Ahmed, 2019; Gon & Rawekar, 2017; Mbukusa, 2018; Minalla, 2018; Nuraeni & Nurmalia, 2020; W. Mwakapina et al., 2016). Integrating WhatsApp in the teaching and learning process could make the students have attitudes (Dewi, 2019; Hamad, 2017; La Hanisi et al., 2018), confident, and enthusiasm (Kheryadi, 2018) because of its simplicity, fun, challenging, and usefulness (Gon & Rawekar, 2017; Urien et al., 2019; W. Mwakapina et al., 2016). Through WhatsApp, the students could improve their vocabulary, verbal interaction outside the classroom, and writing skills (Ahmed, 2019; Minalla, 2018). However, there were still some disadvantages in using WhatsApp groups such as message flooding, eyestrain (Gon & Rawekar, 2017), less participation in the group discussion (Hamad, 2017), and redundant post within the group (Cetinkaya, 2017).

From the previous research, there was still limited research exploring the utilization of WhatsApp as the media for assessment. W. Mwakapina et al. (2016) examined WhatsApp as media for quizzes. However, it was administered in WhatsApp group that the message flooding cannot be avoided due to many members of the group. Mediating quizzes, as an assessment tool, has also been conducted by Salas-Morera et al. (2012) through Moodle. The research concluded that the use of online quizzes showed a positive effect on students' academic performance. Furthermore, Andújar-Vaca & Cruz-Martínez (2017) examined WhatsApp for speaking assessment by permitting voice message only in WhatsApp group. They found that after being treated by only use voice message in WhatsApp class group, it can reduce students' anxiety and improve their speaking skills.

Another research conducted by Tamayo et al. (2020) who designed and employed a chatbot called *EconBot* to serve teaching and learning environment and found that the students enjoyed the learning process with the conversational tool offered in the chatbot and it could support them in autonomous learning modalities. In this study, WhatsApp has been updated using artificial intelligence called an auto-responder. WhatsApp Auto-response in this research is privately accessed via students' mobile devices, not in the classroom WhatsApp group. It can avoid flooding messages that have been problems while using WhatsApp as learning media as reported by some researchers (Cetinkaya, 2017; Gon & Rawekar, 2017; Minalla, 2018; Rosenberg & S. C. Asterhan, 2018). WhatsApp group is better to be used to share information to maximize the interaction between the teacher and students not to administer the assessment. WhatsApp Auto-response, which was investigated in this study, was used as an online assessment medium.

This research focused on investigating the utilization of WhatsApp Auto-response that has been modified by the teacher in order to be available to use in the teaching and learning process, especially in mediating quizzes as an assessment tool. Besides, the strengths and weaknesses of the application were also explored to gain information for future research.

2. Method

This research used a qualitative approach and emphasized on a case study to identifying problems that required a deep background of the time and situation in question, appropriated to the field conditions via a descriptive process. In this study, the researchers attempted to explore how is the use of WhatsApp Auto-response in English language teaching at a vocational high school in Banyumas Regency, Indonesia, and the students' experiences of learning English with this application.

The data of this research was conducted at a vocational high school in Banyumas Regency, Indonesia. The primary data sources in this research were obtained from 12th grade English teacher of a vocational high school in Banyumas Regency, Indonesia, and his 36 students of 12th grade of Motorcycle Engineering 3. The teacher was recruited because he used and developed WhatsApp Auto-response in the learning process, particularly as the assessment tool. The teacher was interviewed to get the data on how to operate WhatsApp Auto-response as the assessment tool. The students were given open-ended questionnaires to give their experiences in using the application. The secondary data sources in this research were obtained from the assessment process, while the students use WhatsApp Auto-response by screenshots documentation.

In gathering the data, the researchers used some techniques of data collection. They were interviews, open-ended questionnaires, and documentation. The researchers used structured interviews to collect data. Structured interviews are oral conducted interviews in which a list of predetermined questions is answered, with little to no variation and no longer for follow-up questions to answers that need more clarification (Griffie, 2012). Structured interviews meant that all the questions were prepared to collect information relevant to the study. The researchers used the list of questions for interviews so that the discussion could be concentrated on. The researchers interviewed the 12th grade English teacher of a vocational high school in Banyumas Regency, Indonesia, and the developer of WhatsApp Auto-response in that school to gather highly-personalized data. The interview was conducted through face-to-face and chat interview with WhatsApp. The researchers did the face-to-face interview twice and chatted with WhatsApp for several times until the researchers got comprehensive information.

In collecting data from the students, the researchers also distributed open-ended questions that do not provide participants with a predetermined collection of answers, instead of encouraging participants to provide answers in their terms (Allen, 2017). To develop an initial draft of the questionnaire, representative interview transcripts were used. The items of the questionnaire consisted of 5 questions about the students' perception and experiences as the users in utilizing WhatsApp Auto-response as the tool of assessment.

Documentation is about documenting or tracking things that are influenced by an image, file, written text, and others that are used to collect facts from a researcher. It is important to note here that qualitative research involves rigorous data collection techniques and the documentation of the research process (Bowen, 2009). The researchers used some documentation in the form screenshots of the display of WhatsApp Auto-response used by the students, photographs of making

the application developed by the teacher, and list of the questions on the assessment.

In analyzing the data, the researchers used Miles and Huberman model (Miles, M.B & Huberman, 1994). The steps were data reduction, data display, and conclusion. To reduce the data, the researchers collected the data through interviews, open-ended questionnaires, and documentation, then chose the appropriate data with the focus of the research and removed unnecessary data. The researchers used a narrative explanation, tables, and figures to display the data that have been reduced. All data displayed were then analyzed with the connection of the theories and previous studies to conclude.

3. Findings and Discussion

3.1. Findings

The English teacher, as the subject in this research, has a strategy to teach English for his students by modifying WhatsApp Application to be learning media and assessment tool. The application was developed to be easier to assist the students in learning English. The application then was named WhatsApp Auto-response. However, the researchers focused on the use of this application as the tool of assessment.

Starting with some of the obstacles encountered in teaching, the teacher made this application to overcome these problems. This application has also been running for more than two years, starting from the beginning of its application until now. As reported by the teacher, this application is always modified as evaluation and improvement by adding varied features and contents so that the learning process becomes more effective.

Apart from that, there are also several reasons why the teacher made this application. The teacher wanted to make it easier for students to learn English, easy to access materials and do the assessment, and students can have more time for school practice outside school hours. Moreover, students can also open it anytime and anywhere because learning with this application is suitable for distance learning or is done online. The teacher reported:

"Another reason why I developed this application is that I want students to be able to learn English easier, students can also easily access English training materials and questions that they can get through the WhatsApp Auto Response application, and the students also can have more time outside of school hours considering the hours of studying at school are very short with a variety of activities that they must follow as practical activities in each expertise program that can take up their times. Therefore, the learning can be done online."

The teacher also reported the purpose of using WhatsApp Auto-response as a learning supplement, especially in English learning at a vocational high school in Banyumas Regency, Indonesia, is to enhance the students' motivation to use appropriate technology for learning. Besides, the teacher could monitor students' activities in learning English at home through WhatsApp by giving the materials and exercises.

3.1.1. Developing WhatsApp Auto-response

The application requires some steps that the teacher needs to take to ensure that the application can be correctly used and run smoothly and can be accessed in compliance with the directions that the teacher has prepared. The application that serves as a learning supplement is a desktop computer application that can automatically respond to messages.

The initial preparation of the teacher is the beginning of the tasks that the teacher has to schedule before it is finally used for the assessment tool. The first step that needs to be planned is an application that has been pre-installed on a PC server (teacher) and is active for 24 hours. Besides, Internet access is used to exchange knowledge or teaching needs with the WhatsApp Auto-response application. The device must be wired to the internet so that it can automatically receive and send WhatsApp messages. In addition to being installed on a school computer, this application can also be installed on a cloud computing site, which is a 24-hour site service. The PC or device consumer is not at the location of the school or organization that uses this application but is on the Google Cloud company server.

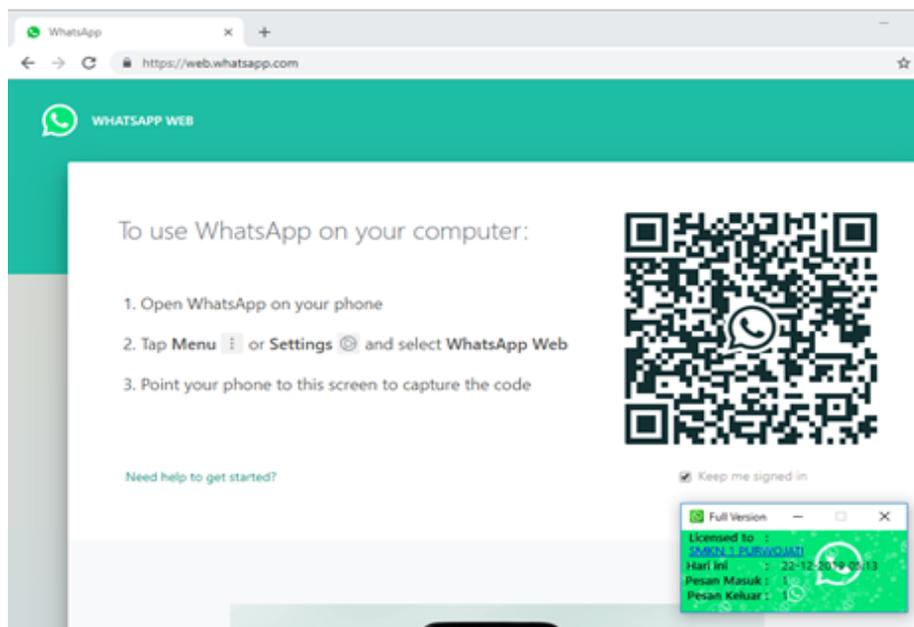


Figure 1. Visual Screen Design WhatsApp Application on PC

The second step is setting the application relevant to the instructions to be used that need to be modified so that it can be understood by students who will have access to them later. Besides, the access code/keyword must also be prepared as a means for students to acquire knowledge that is communicated by the teacher, either in the form of learning materials, exercises, or assessment. The teacher used Google Sheet as a database to analyze learning, exercises, and assessment questions. This application is the same as Microsoft Excel; it can only work on the internet network. The teacher also needs a supporting application, namely the WhatsApp Auto-Reply App, which is useful for synchronizing Excel data on Google Sheet with WhatsApp. So this application is a bridge between WhatsApp and Google Sheet.

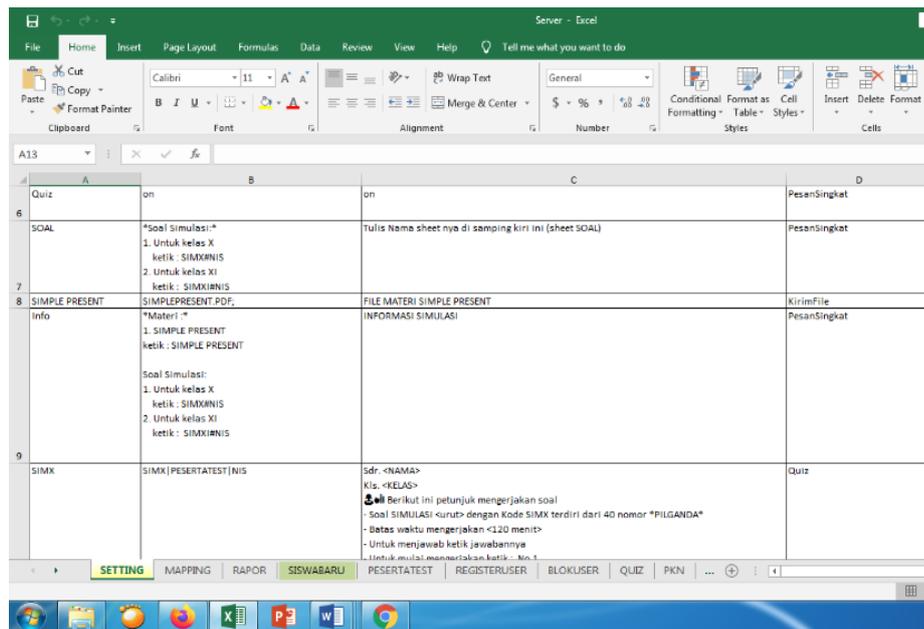


Figure 2. Making Instructions and Codes in Microsoft Excel

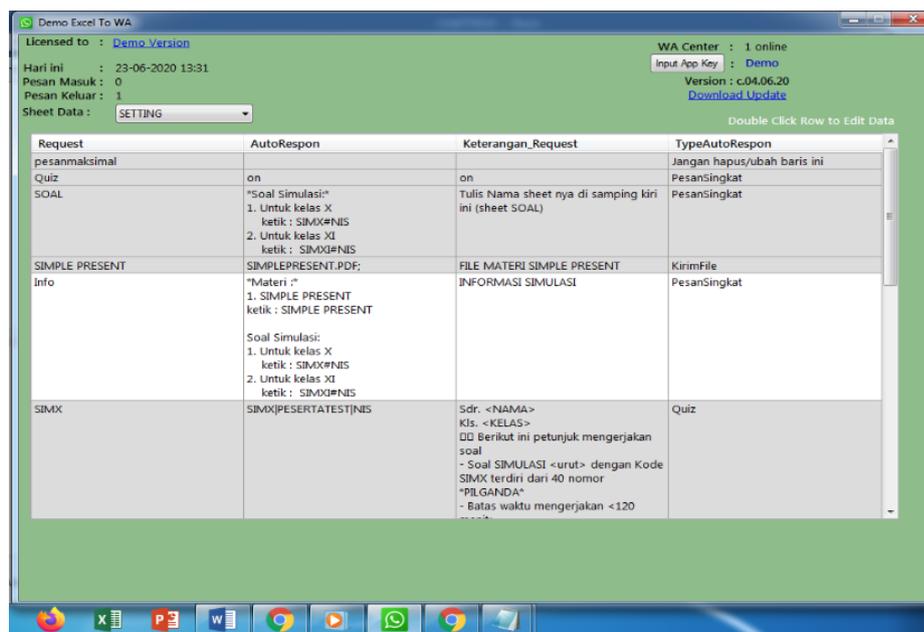


Figure 3. Visual Display of Instructions and Code on the Application

There were no particular contents used by the teacher to be used as instructional materials that would later be provided to students. The teacher was more versatile in changing the requirements of students and in using materials that were appropriate and convenient for students to understand. In addition to materials taken from textbooks as learning resources, the teacher could also draw from other sources, such as those available on the internet or on the web, which help and provide learning materials for students to use. The app is also available to provide audio, picture or even file material (pdf, doc, etc.).

3.1.2. Assessment Process through Quizzes

There is no particular content used by the teacher to be used as instructional material that would later be distributed as an assessment to students. Teachers are

more versatile in changing the conditions of students and in using materials that are appropriate and convenient for students to understand. In addition to materials taken from textbooks as learning tools, teachers may also draw from other outlets, such as those available on the internet or on the web, which help and provide learning materials for students to use. The application is also available to provide audio, picture or even file material (pdf, doc, etc.). Students only need the WhatsApp and Internet connection to access this application. As reported by the teacher:

“In order to learn how to use the WhatsApp Auto-response feature, students just need the WhatsApp application installed on their mobile phones and access to the internet. While both are open, students can access the material and quizzes or assessments distributed in the WhatsApp Auto-response.”

The teacher started the quizzes as an assessment process by sharing the information accessing WhatsApp Auto-response through the classroom WhatsApp group that the students must follow the provided instructions. The students should open WhatsApp Auto-response server that they had the link from WhatsApp group and enter the code shared by the teacher into WhatsApp Auto-response server to access the application. Then, the application would automatically reply to the initial instructions before the core quizzes or assessments. This application can be accessed repeatedly so students can open them whenever and wherever they want. The teacher said:

“I usually provide information to students through the WhatsApp group since I have a group of WhatsApps for each class. So I can make it easier for you to know that I'm going to share something with WhatsApp Auto-response.”

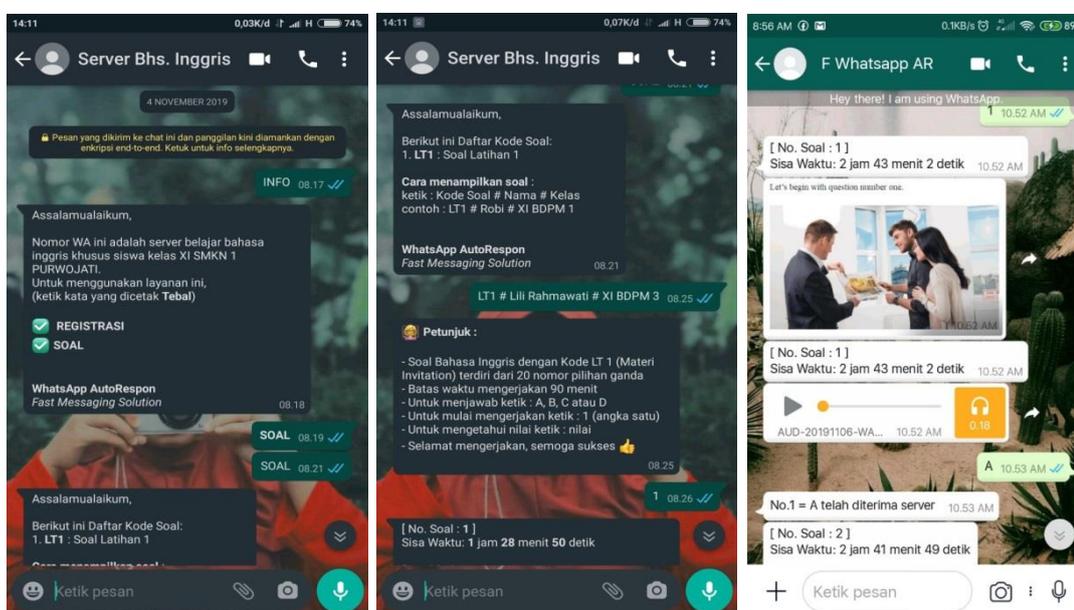


Figure 4. Visual Display of Quizzes in WhatsApp Auto-response

In using this application, the teacher played two crucial roles, as facilitator and supervisor. As a facilitator, the teacher provided learning materials and quizzes to allow students to carry out learning activities independently using online platforms that they can access in their respective homes and, finally, to enhance their autonomic learning.

3.1.3. Users Perception of WhatsApp Auto-response

This part consists of the students' perceptions as the application users in using WhatsApp Auto-response in learning English, where the researchers take this data using open-ended questionnaires. The questionnaires were divided into two significant points of discussion, including the students' perceptions in using this application and the difficulties experienced by students.

The selection of WhatsApp as the assessment media is because of its popularity, simplicity, and easy-to-use. The students have been already using it as the media of classroom interaction. Through this application, the students did not need to relearn how to operate the application in a basic way to operate it because of its popularity in their daily lives. As the answer from one of the respondents:

"In my opinion, using WhatsApp is easy to use in my learning process. No need for another application anymore which could be needed more space memory of our phone. Moreover, we always use WhatsApp for communication in our daily life."

This application was also used to share the materials and further information. Students received learning materials exchanged by teachers, either in the form of text messages or in PDF format. Through this, students can gain additional information that they can study privately outside of school, such as in their own homes.

In the assessment process using this application, the students assumed that the assessment and exercises distributed by the teacher in the WhatsApp Auto-response were objectives, transparent, and accountable. Besides, it can also be repeated continuously to react and provide input and discussion so that students can assess what they have done and rework it before they can strengthen and understand it. These benefits could be seen from the question items that were related to the materials given. Also, the students can directly know their scores after finishing the assessment or exercises. As the students answered:

"The teacher gave the exercises related to the materials. Not only that, but also after we have done all the exercises, we could check the score that we made immediately and check the wrong answers so we could correct our answers and know which was right in the future or the next question that probably has the same form."

The suitability of the applied application is running parallel to something called "economical". The fact that the WhatsApp application is one of the apps that is frequently used as a starter card provider as an application that can be accessed using internet quota makes it easier to not use more money for buying the quota. They are not too worried that they will need a wide Internet access quota to make it more effective. Unlike other online learning applications, students or parents need to pay more money more frequently to purchase an Internet quota. The following opinion represented the students' feels to respond to the benefits of WhatsApp Auto-response.

"So many. Especially in buying the quota. By using this application, WhatsApp, we did not need to have many quotas, download another application, or bla bla bla. We just needed a chat quota then we could use and join the online class through WhatsApp on our phone. And there are still other benefits...."

From the open-ended questions, the students were asked if this application helped them to learn English or not and why. Most of the students also answered that they got motivated and felt compelled to learn English after joining online learning using this application. One student explained the reason why he became more motivated to learn English:

"Yes. By using WhatsApp Auto Response, I can easily understand word by word, and I didn't get confused when I did the quiz or question. If I didn't know the meaning, I'd be able to interpret quickly using a dictionary. I prefer to use this application instead of using workbooks. I'm also motivated to get a higher score every time I do the quizzes because it's like a game."

Regarding the problems experienced by the students, there were two big problems encountered, namely lack of stable internet signal and slow response of the application. For some students, the availability of signals in their homes was sometimes lacked stable internet power or even not exists. Thus, it affected to run the WhatsApp Auto-response application when they begin to do the quizzes. For the students who were in that situation, they had to find or go to a place where there was a better and more stable signal so they could use the application smoothly without obstacles.

"There is a challenge that I sometimes face, namely unstable signal, since it is in my place that is difficult to have a good signal. Although it can run sometimes, but it may slightly impede smooth running. Often the server just reads my request without any response, even though I'm working seriously, but my attention is split when the server doesn't respond to the answer that I sent to proceed with the next query."

The performance of the WhatsApp application server, which students sometimes felt, has errors when working. The request often has a pause in responding to students' answers or even does not reply. If an error happened on the server, students had to wait without knowing when it will return to normal. Students felt awkward when there was a flaw in the application when they were working on a limited time. A student said:

"The challenge of using this application has sometimes been slow to respond. It made the students wait for the answers, without knowing the exact time when they answered. Too long to wait has made us lazy to learn."

In addition, the cause of the error was a signal. Starting with the availability of unstable signals from students, there might be errors on the server or codes or keywords that may not fit the student input. The slow response of the application might be since many students have access at the same time. This inference was drawn by the students, given that they were aware of it and understood if not only one class was used, but another class also used this application for the same reason, since the teacher who taught English was also the same.

3.2. Discussion

In recent years, the use of mobile devices has increasingly been considered to use in language learning. Assisting language learning using mobile devices has been identified as beneficial, improving language skills, and encouraging autonomous and

peer learning (Alshammari et al., 2017; Alzahrani, 2015; Fitriani, 2020; Hazaea & Alzubi, 2016; Lyddon, 2016; Wu, 2015). WhatsApp is one of the most popular mobile devices used by the teachers as media for learning. However, the application on mobile devices used has to be versatile enough to be responsive and exchangeable from context to context, from teachers to students, and from students to students (Palalas, 2011). Thus, WhatsApp is needed to be modified to meet the benefits of WhatsApp for learning to encourage students' autonomous learning and enhance their language skills. WhatsApp modification can be established by connecting to WhatsApp Auto-Reply and Excel Spreadsheet applications in which it is not too sophisticated to construct. Teachers will have the challenge to build creative learning media if they do not have adequate technological competence.

WhatsApp Auto-response was found quite successful in facilitating the teacher in delivering English materials, administering the assessment, and overcoming problems experienced by the teacher and students. WhatsApp Auto-response application in online English learning can also speed up learning time in the classroom quickly, enhance the students' participation, improve their enthusiasm, and solve safety problems even in classroom facilities such as the availability of LCD projectors. The growing popularity of facilitator, low cost, simplicity, and accessibility anywhere anytime has rendered WhatsApp a modern and comfortable platform for teaching-learning activities (Bouhnik & Deshen, 2014; Gon & Rawekar, 2017; Hamad, 2017).

In online teaching, teachers should consider media features when choosing media types to provide a meaningful learning process. Ifewulu & Goeman (2017) found three primary considerations in selecting online media for teaching as the most popular media attributes found in the studies reviewed, namely interactivity, media richness, and flexibility. Similarly, WhatsApp Auto-response in this research reveals the significance of the interaction between the teacher, the learners and the instructional material. The features of WhatsApp Auto-response help to explain confusing information by discussion in each question and improve learning. Besides, the flexibility of WhatsApp Auto-response allows learning to take place anywhere and at any time. On the other hand, Hashim & Hashim (2015) proposed availability of the media, user preferences, and media stability as the media measurements for media selection in distance learning.

Students' technical knowledge of the media should also be concerned with selecting and preparing instructional media. Therefore, selecting the media that are readily available and mostly used by the users (Hashim & Hashim, 2015) will lead the students not to become stuck because they do not have access to the information they need. Failure to operate the media is a source of discomfort for the students and not efficient (Mariko, 2015). WhatsApp is the media that the students are already using for various purposes, including for language learning. Selecting and modifying this application in language learning will give some advantages for them to promote their autonomous learning and meet their needs and wishes. Moreover, Kartal (2019) found that WhatsApp can be used to develop four language skills, integrated language skills, and vocabulary. In his review, WhatsApp has also been shown to be effective in enhancing students' attitudes and motivation, promoting learner autonomy, and reducing language anxiety.

In term of WhatsApp chatbots, developing WhatsApp Auto-response is not too sophisticated that every teacher can do. Besides, through WhatsApp Auto-response, teachers do not need more time to deliver the quizzes as assessment per each student regularly. Delivering the quizzes to each student needs an inefficient time and preparation. The automatic responses to the request input developed by the teacher in this research allow him to manage the time more effectively and efficiently (Zumstein & Hundertmark, 2017). Nagender & Patil (2017) concluded that the ChatterBot on WhatsApp Auto Responder makes it easy for developers to create chatbots and automate conversations with users. Using WhatsApp Auto-response can be the alternative online media to assess without too much time consumption and preparation as encountered by some researchers.

This application also gives notification to the teacher while the students have done quizzes so that the teacher can monitor students' participation. In contrast with face to face learning that the teacher can easily monitor students' engagement during the learning process, in online learning, the teacher should make an effective way to check students' participation and attention. Using a WhatsApp group as a teaching tool sometimes is challenging to check the students' discipline and engagement (Hamad, 2017; Rosenberg & S. C. Asterhan, 2018). By the notification delivered from WhatsApp Auto-response, it is more efficient for the teacher to check students' discipline.

After finishing the quizzes through this application, the students can directly get the score and know the wrong answers. It makes this application transparent and accountable. Furthermore, the application can improve students' enthusiasm, motivation to get higher scores, and academic performance. Salas-Morera et al. (2012) concluded that online quizzes had been shown to have a positive effect on student academic success. Channeling their passions and making the most of their favourite pastime by using social networking platforms such as WhatsApp and using technology as a learning tool will help students enjoy learning activities (Justina, 2016). Mediating quizzes through bots could help the students to self-guided learning and improve their academic achievements. As Tamayo et al. (2020) reported that the students have new learning habits to support their self-guided learning in passing the exams.

There are some benefits and strengths of WhatsApp Auto-response found in this research. There are, however, several difficulties faced by students when using this application. Technical issues have been identified as major problems, such as poor internet connection and slow response from the application. As far as the barriers related to technological issues are concerned, there needs to be further progress in order to prevent problems. Using chatbots that are part of the instant messaging program is still in its early stages to become an artificial intelligence assistant. Nevertheless, chatbots have a chance to be self-guided learning in the future (Smutny & Schreiberova, 2020; Tamayo et al., 2020).

From the findings of the research, it can be implied that WhatsApp Auto-response can be a teacher assistant for mediating assessment in an online classroom. Artificial intelligence integrated with WhatsApp can promote students' autonomous learning; even they will have more interest and higher motivation to achieve a higher score. As far as online assessment is concerned, WhatsApp Auto-response can be a

useful tool to facilitate quizzes because of the efficiency of time, accessibility, simplicity, and interest.

4. Conclusion

The findings showed that the teacher should have technological competence to develop creative online media for assessment based on WhatsApp. This research found some of the advantages of using WhatsApp Auto-Response to mediate quizzes as an assessment instrument, such as simplicity, objective, straightforward, easy-to-use, self-guided learning, and improving students' motivation and academic performances. However, the technical issues that have arisen when using this application should be resolved and enhanced in order to be readily available. Besides, it is necessary to develop this application to be an assessment media for essay questions. Assisting teaching with the technical advances of artificial intelligence in the use of mobile devices will provide students with practical self-guided learning. With the popularity of WhatsApp being a learning tool nowadays, its features can be inserted with chatbots that can offer several advantages to be a teacher assistant, particularly for mediating assessments. The limitation of this research was that the modification of WhatsApp using artificial intelligence was merely for mediating quizzes in online assessment. Thus, it is recommended for future research to investigate WhatsApp chatbots for the learning process, including handling the typical application request of students, tracking their progress, and guiding teachers to develop WhatsApp as an assessment media, such as for essay questions.

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