Developing Mobile Learning Application as Instructional Media for Reading Comprehension

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Abstract: Students nowadays are no longer enjoy reading printed books. They mostly read from their mobile phone or computers' screens. Teachers need to encourage students to read and comprehend texts. Teachers should adopt and adapt technology in teaching reading comprehension to students in light of the rapidly changing existence of technology. The purpose of this research is to develop appropriate media for learning reading. This research has employed Research and Development design based on ADDIE model. This model is used for media development by requiring 5 stages, namely: 1) Analysis, 2) Design, 3) Development, 4) Implementation, and 5) Evaluation. The research subjects are the tenth graders and the English teacher. Both the media and language experts validated the developed product. The instruments used in the needs analysis are questionnaires for the students and interviews with the English teacher. The final result is in the form of a mobile application that suits the needs of teachers and students. This media consists of 63 slides. The size of this mobile application is 52 Mb. The developed application consists of three main menus and eleven sub-menus. They are the intro page, loading section, menu page, materials page, core competence page, vocabulary building page, learning summary page, exercise page, glossary page, verb form page, user's guide page, lesson plan page, description of the product page, and exit page. The result of this research could be seen in the enthusiasm, development, and students' interest in mobile application media. Therefore, it is recommended for teachers to use mobile applications in teaching reading and for other developers to develop applications for the learning process.

Keywords: *Reading comprehension; research and development; mobile learning application*

A. INTRODUCTION

The use of technology in the learning process, especially internet access to explore students' knowledge and willingness to participate in educational resources, is common in education in order to create an effective and efficient learning process. One of the great benefits of education technology is the enhanced use of learning media in the classroom. Technology-based learning media to support students' learning is essential because it can help them understand the material and reduce. As a result, the primary purpose of learning media is to assist students in comprehending the learning materials (Khan et al., 2016; Lowerison et al., 2006).

The use of technology in English teaching English is not new. With the previous pandemic occurrence, using technology is essential. Most online classes must use technology to deliver language classes through synchronous or asynchronous learning. The concern is how or what is the best way to get students to learn online despite the challenges of devices and network service. According to (Metruk, 2022), a modern era is characterized by the widespread use of technology, it is unsurprising that technology has found its way into the field of education on a global scale. Most educational institutions have now incorporated a significant amount of technology into current and future curricula (Ranjbari et al., 2021).

Teachers will benefit students' learning achievement when they use proper and enjoyable new technology in the learning process. One example is a mobile phone, which has an application that can increase student motivation in the learning process (Zaim & Hum, 2016). Mobile phones empower education because they are viewed as media that provide learners with a wide range of information that the teacher may not have control (Muhfiyanti et al., 2021). In other words, learning does not have to occur in a classroom because these technologies allow learning to occur somewhere (Ypsilandis, 2019). These technologies also give the learner control over their learning process. A mobile phone can help to improve teaching and learning. Students can use mobile phones to share more information and to develop literacy skills, such as critical literacy skills. It is a valuable tool for research, composition, and depression

At senior high school, teaching English, especially in teaching reading as a second language in Indonesia, is classified as teaching reading comprehension. It aims to improve the skills of students who have been able to read in the first language and EFL

in understanding the meaning of the written text. Teaching reading focuses on helping the students acquire the skills needed to try to construct meaning. The teacher has an essential role in assisting students to acquire the necessary skills from experience to written material. The teacher should motivate the students to actively participate in the reading class (Pardosi et al., 2021).

However, in reality, many EFL students struggle to overcome their reading comprehension problems. Students face many issues in understanding the text, such as vocabulary knowledge, background knowledge, problem's grammatical knowledge and poor reading strategies, which are fundamental to reducing the difficulty. The teacher must also pay attention to the given text model in teaching reading. Most students have problems comprehending English texts because the teachers do not provide many model texts for them. The teachers sometimes only use model texts from the students worksheet that the school provides rather than looking for model texts from various sources (Khalif Rizqon et al., 2021).

Related to the use of media to solve the problem in the teaching and learning of reading, Cobb (2015) argued that teachers could use technology to improve their teaching strategies by using attractive learning media. This way can help teachers in teaching reading so that the class becomes more attractive. If the teacher only relies upon the textbook, the learning process will result in monotonous learning (Agustini et al., 2018; Tomlinson, 2013). The students will also be familiar with textbooks and if one day they are faced with digital learning it will not be easy. For all these reasons, technology is needed to improve the quality of the learning process, especially in learning English. Technology plays a vital role in the learning process not only for students but teachers are also required to optimize the existence of this advanced technology to create a learning environment that is not boring.

There is a tremendous amount of previous research about developing android-based learning related to the current study. Setiadi (2015) developed an Android application for teaching listening. The research found that the use of mobile-based learning media can be applied to learning English and improve student learning outcomes. In addition, using this media can also increase student interest in learning in terms of pleasure, attention, interest, and student involvement. The other research was from Dwiaji (2016), who developed an M-learning application for improving speaking skills. In his study,

several activities in the application encourage the students to practice the language orally as well as possible. It was considered good and useful to be used as one of the supporting media to learn, especially in speaking for students. The next research from (Abdalqadir, 2017) who had developed a mobile application to teach English, and the result was that the application should make it easy to learn English as a second language.

Rahmanita et al (2021) have also suggested that developing English learning mobile android-based applications helps students interested in learning English language quickly and efficiently because of its coupled interactive features, which have been shown to be very effective in mobile learning activities. Hence, this recent research has developed appropriate mobile learning applications as media in reading comprehension for tenth graders based on the ADDIE model of development (Drljača et al., 2017).

B. RESEARCH METHOD

The researcher employed the research and development (R&D) method in developing mobile learning as media in reading comprehension of the tenth graders of SMA Al-Muniroh Ujung Pangkah in the second semester of the academic year 2020/2021. The reading media was developed using ADDIE (Analysis, Design, Development, Implementation, Evaluation) model (Maharcika et al., 2021; MZ & Syafi'i, 2021; Thim-Mabrey, 2006). The stages of the development are presented below:
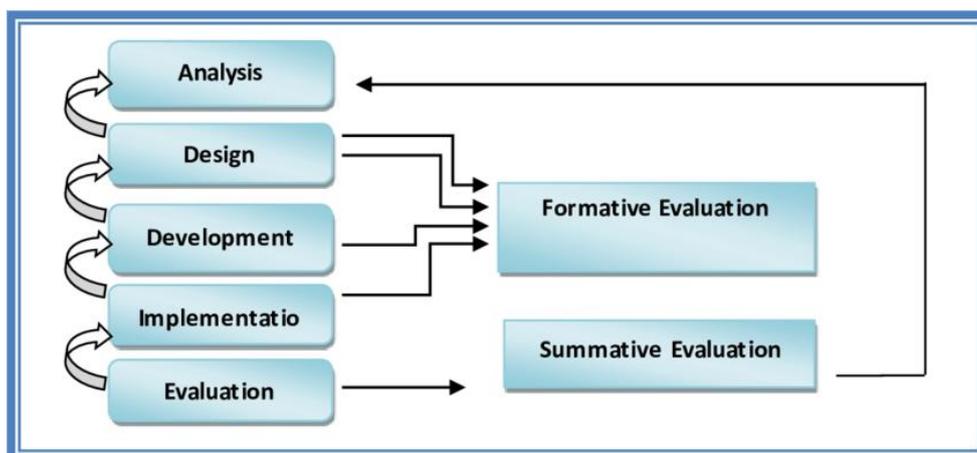
Picture 1. **The Stages of the Development**

Need analysis

The first stage was analysing basic information about tenth graders and the English teacher using questionnaires and interviews (Haque, 2014; Indrasari, 2016). The researcher gave a questionnaire to the English teacher and tenth graders. Both the instruments had different contents. The teacher's questionnaire consisted of 43 questions which were divided into eight aspects. The first aspect was the teacher's background consisting of nine questions. The second aspect was learning sources consisting of five questions. The third aspect was teaching reading composed of 8 questions. The fourth aspect was problem in teaching reading. The fifth aspect was student condition in reading class consisting of seven questions. The sixth aspect was activity in teaching reading consisting of 2 questions. The seventh aspect was media in teaching reading consisting of five questions. The last aspect was application as media consisting of six questions.

Students' questionnaires had 30 questions divided into 8 aspects. The first aspect was the student's background. The second was student's opinion in English consisting of five questions. The third aspect was the students' reading learning process consisting of three questions. The fourth aspect was difficulties in reading consisting of two questions. The fifth aspect was activities in reading consisting of two questions. The sixth aspect was reading materials consisting of three questions. The seventh aspect was reading media consisting of four questions. The last aspect was student's opinion about the application consisting of 10 questions.

The second instrument was an interview. The interview was conducted with an English teacher in the tenth grade. The interview was formed in semi-structured to support detailed data collection. It also allowed for unexpected additions to questions. This interview consisted of 30 questions which were divided into five aspects. The first aspect was the student's background consisting of two questions. The second aspect was teaching reading process consisting of 12 questions. The third aspect was problems in teaching reading consisting of seven questions. The fourth aspect was media in teaching reading consisting of four questions. The last aspect was application as media consisting of five questions.

Designing

Four steps must be done, designing templates, mapping the materials, designing the materials and validation.

1. Designing Template

    The researcher designed an application template/layout using PowerPoint. The application display was created and customized to make it easier to use. The component of the template also contained the activities that were used in. In this step required ISpring Suite 9 to make it easier to create the more interactive template.

2. Mapping the materials

    The researcher mapped the materials based on effective weeks in learning English. The researcher also mapped the activities according to the number of meetings in reading skills. The syllabus and content standards are also required for the mapping process. The syllabus and content standards were obtained from schools based on the 2013 curriculum.

3. Designing the materials

    After mapping the materials, the next step was designing the materials. After obtaining information to map the materials, the researcher made an outline the materials and forms of activity to be made. This step was used to make it easier for the researcher to design the materials into an application.

4. Validation I

    The last step was validation. Three experts carried it out: a language expert, a design expert, and an English teacher. two Qomaruddin University lecturers carried out expert validation. First, an IT lecturer validated the design aspect, who assessed the template and application design. The language aspect was validated by one of the lecturer who has been teaching reading and English for a long time at the high school level and above. The last validator was from the English teacher of Al - Muniroh High School, who teaches tenth grade. She assessed several aspects of the suitability of the materials.

Development

The next stage was development. There were several steps: finding the materials, selecting the materials, arranging vocabulary building activities, typing materials, converting, validation, and re-converting.

1) Finding the materials

The materials were taken from several sources. The first was offline sources from "*English for SMA/*MA". The materials were also searched in online sources from six website online such as "*Bahasainggris.com*", "*Britishcourse.com*", "*sman3simpanghilir.sch.id*", "*and FreeEnglishCourse.info*", "*Literature.my.id*", "*beritaenglish.blogspot.com*". All activities were based on the 2013 revised 2018 curriculum. Main activities were arranged based on student needs and motivation.

2) Selecting the materials

After finding the material, the researcher selected the material used. In selecting the materials, the researcher arranged and divided the materials in each unit. The purpose of this step was to make it easier for the researcher to group each materials.

3) Vocabulary Building Activity

Vocabulary building activity was the third step. This step was designed to help students understand specific vocabulary in each material.

4) Typing the materials

Typing the materials was the fourth step. All the selected materials are organised in each part of the application template. All the obtained data in the form of information or materials was included in the template created before. In this step, the researcher used Ispring9 to make an Activity Menu. Ispring9 can make the student's activity more enjoyable.

5) Converting I

The fifth step, the researchers converted the product from PowerPoint into an application. Product in form of PowerPoint was converted into HTML 5 with support from iSpring Suite 9. After becoming HTML 5, it was converted into an application using Website 2 APK Builder.

6) Validation II

The researcher validated the materials and product in the sixth step. After the product was in the application form, the product must first be validated by the experts. They were a media expert, a language expert, and an English teacher. They installed an application and then validate it. Each expert gave an assessment in questionnaire about several aspects.

7) Revision I

The results of validation were used as a reference for revising the product. The researchers revised the seventh stage. At this stage, she made several revisions given by the validator—modified aspects in the form of media, language, and material content.

8) Converting II

The last step was reconverting. After validating and revising the product, the researcher re-converted the product into an application. Product in the form of PowerPoint was converted into HTML 5 with support from iSpring Suite 9. After becoming HTML 5, it was converted into an application using Website 2 APK Builder.

Implementation

The next stage was implementation. At this stage, the media was implemented in the classroom. After the implementation in the classroom, an evaluation was given to provide feedback on the learning media. There were five steps in the implementation stage: try-out I, revision, converting, try-out II, and final product. These steps were explained as follows:

1. Try-out I

In this step, the application was implemented for students in class. Each student installed the application on their smartphone. The teacher also had to install the application. The aim of the try-out is to determine the materials' suitability and effectiveness. The application was implemented in the classroom.

At this step, the researcher as an observer and used several instruments to observe the class. At this stage, the teacher and students were given a questionnaire to get responses and suggestions for the application. The results of the try-out, observations and questionnaire form was determined in the next stage.

2. Revision II

After doing the try-out, the researcher revised the application. This revision was conducted based on data from the try-out I. Inappropriate aspects in the application were revised.

3. Converting III

The last step was converting. After revising the product, the researcher converted the product back into an application. Product in the form of PowerPoint

was converted into HTML 5 with support from iSpring Suite 9. After becoming HTML 5, it was converted into an application using Website 2 APK Builder.

4. Try-out II

After second revision, the researcher conducted the try-out II. At this stage, if the students score above the passing grade (KKM), the materials were in accordance with the teacher and students' needs.

5. Final Product

The last one was the final product. After taking various steps, the final product was produced. The researcher made some improvements to the application media. Some components were fixed such as color, image, location, size, etc. It was to provide a better visual of this application media.

Evaluation

The last stage was evaluation. This evaluation was called summative evaluation. At this stage, the researcher measured the results of using application media by comparing student results from tryout one and the final results. The comparison between tryout one and two resulted in differences in the average achievement of students.

C. FINDINGS AND DISCUSSION

Findings

Need analysis

The researcher conducted a need analysis in the early stage of developing media by, interviewing the teacher and giving a questionnaire to the students. The interview for the teacher consisted of 43 questions and was divided into eight aspects. These aspects included teacher's background, student learning resources, teaching reading process, problems faced in teaching reading, condition of students in reading class, activities in reading class, reading media and opinions about applications as learning media.

The interview resulted in the English teacher graduating from English Language Education Study Program. She usually teaches reading skills once or twice a week. Therefore, there were 10 reading lessons in one semester with 45 minutes each meeting. In teaching reading, the teacher often uses scanning and skimming techniques by applying reading aloud, giving multiple choices, and providing necessary vocabulary. In the aspect of problems in teaching reading, students had difficulty reading lengthy text. Some students did not read the text and answered the questions directly. Students argued

that if the teacher gave a long reading text, it made them difficult and lazy to read. At the same time, the teacher gave reading materials that followed the current curriculum and assignment instruction.

In teaching reading, the teacher often uses video as a learning medium. Students were more interested in different visual media. However, it also had obstacles. Sometimes teacher had to ensure that the sound speaker was ready to use. There were also several suitable media in teaching reading, such as PowerPoint, video, and Android. Thus, the teacher also believed that in this digital era, students needed to give mobile learning applications as media, especially in the reading activity.

The last aspect was the application as a learning media. The teacher said that students would respond well to mobile learning application. During the covid-19 pandemic, students do online learning so they often used mobile phone. Thus, students would easily operate media applications on their mobile phones. The teacher also suggested that the English learning application should be adapted to the materials. Other offers were about the colour and font size of the application.

In addition, the students' English mastery was at a moderate level. In the summative test, many students still had scores below the lowest passing grade score, or they still had score under 75. The result was presented below:

Table 1. **The Score of the Summative Test**

NO.	NAME	SUMMATIVE TEST			
		UNIT 6			
		1	2	3	4
1	AHA	72	60	80	70
2	AFL	79	80	80	80
3	ARA	72	60	80	70
4	DAR	79	80	80	80
5	HZ	65	60	100	60
6	IR	65	80	80	70
7	LFS	86	100	100	70
8	MUM	65	60	80	80
9	MI	65	80	80	70
10	NR	86	80	100	80
11	NHM	72	80	80	70
12	WK	86	80	100	90
13	SNI	79	60	80	60
14	AK	86	80	80	70
15	AFF	65	60	80	90
16	AKW	86	80	100	80

| 17	**BKZ**	72	60	80	60
18	**FF**	79	100	80	80
19	**HI**	79	80	100	80
20	**MS**	72	80	80	80
21	**MAR**	65	60	80	70
22	**NS**	86	80	100	80
23	**PNA**	72	60	80	70
24	**SR**	79	100	80	80
25	**SNA**	65	60	80	60
26	**TR**	79	80	100	80
27	**UF**	79	80	80	90
28	**TRU**	58	60	80	50
	TOTAL SCORE	**2093**	**2080**	**2400**	**2070**
	MEAN ACORE	**74,75**	**74,29**	**85,71**	**73,93**

The English teacher of this high school also stated that this problem happened since the media and materials from the book were not under the students' needs, and also, students lacked vocabulary. Therefore, the teacher looked for suitable materials from the internet and YouTube.

The teacher never compiled the materials for teaching by herself but more often looked for it from other sources. Teachers also rarely used different media. To help students in the learning process, sometimes the teacher gave questions through Google Forms to make it easier for students to do their assignments. Sometimes the teacher gave a video as a medium for teaching recount and other texts. Overall, students were more interested in media that included different visuals.The teacher had also provided learning media in the form of PowerPoint, but the teacher had never provided learning media based on android applications.

The following instrument for collecting the need analysis data was a student questionnaire. The result was presented below:

Chart 1. App media in teaching reading

Chart 2. Impact of using App
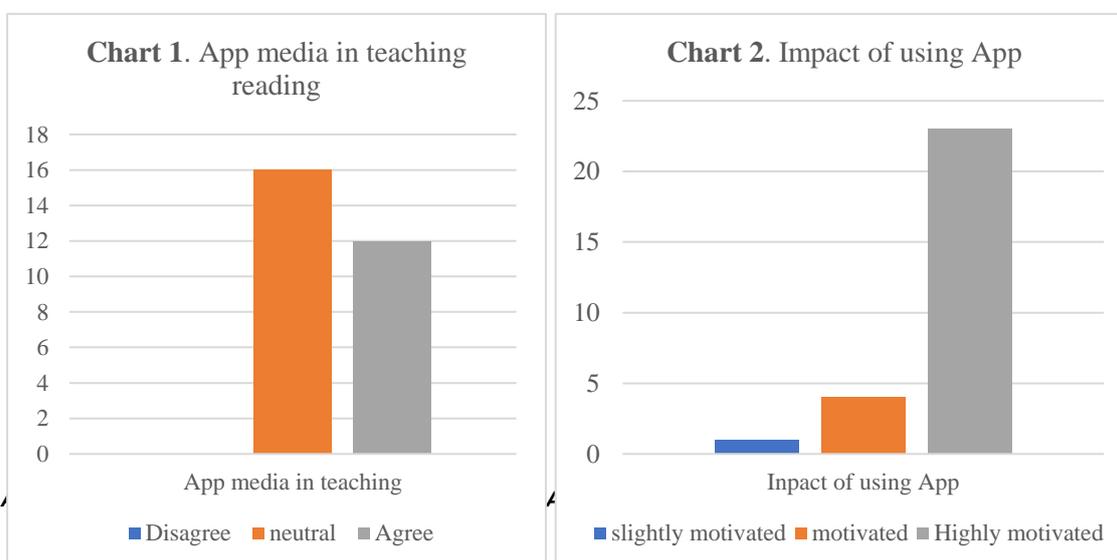
There were 16 students said 'normally' if there was an application media, but 12 students said that they were 'delighted' if there was an application media. Then, they gave an opinion about the impact of using the application. 23 students said that they would be 'highly motivated'by the used of the application, four said 'motivated' and only one said 'slightly motivated'.

Chart 3. Reading application apperance

Chart 4. App media in teaching reading
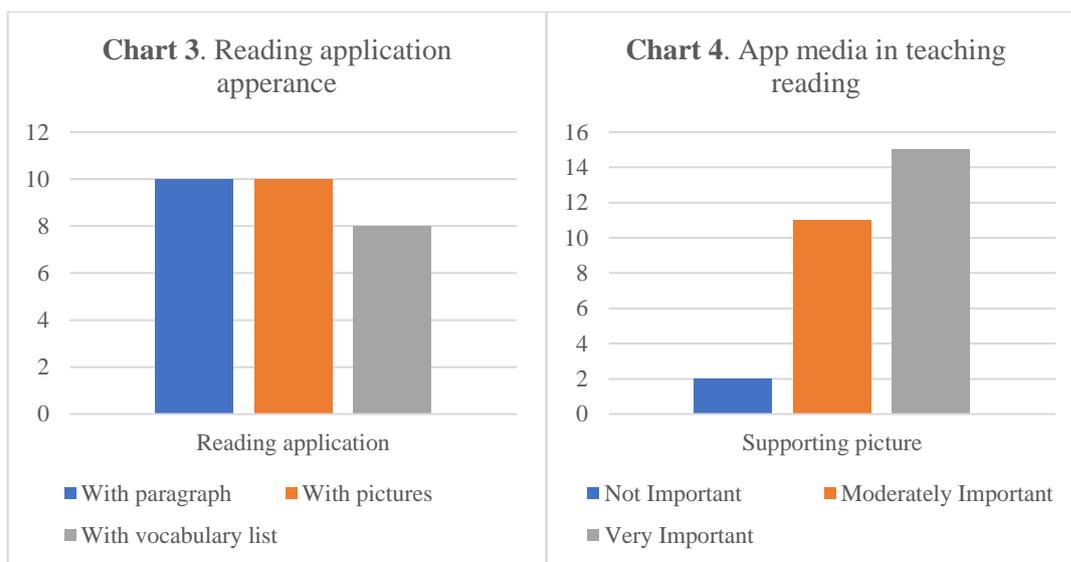
In the aspect of reading applications, 10 students said that the reading text consisted of paragraphs, 10 chose to read text with pictures, and eight wanted the reading text accompanied by a vocabulary list. Then the students asked about the supporting pictures. There were 15 students said that the display of pictures would be very important to support understanding of the materials, 11 students said that 'moderately important'and 2 others selected'not important' in having pictures in supporting the understanding.

Chart 5. Lay out design

Chart 6. Button of the application
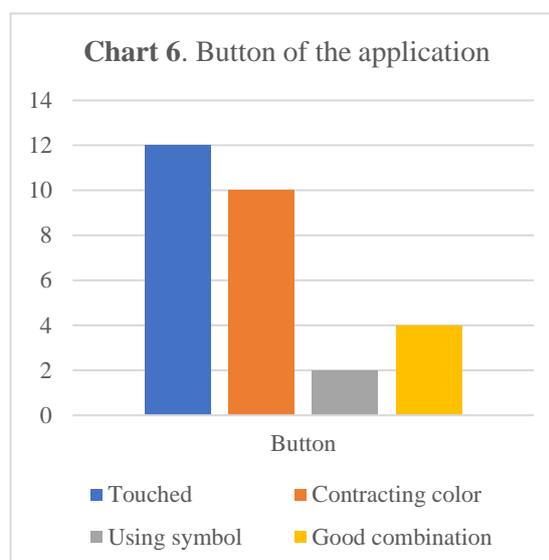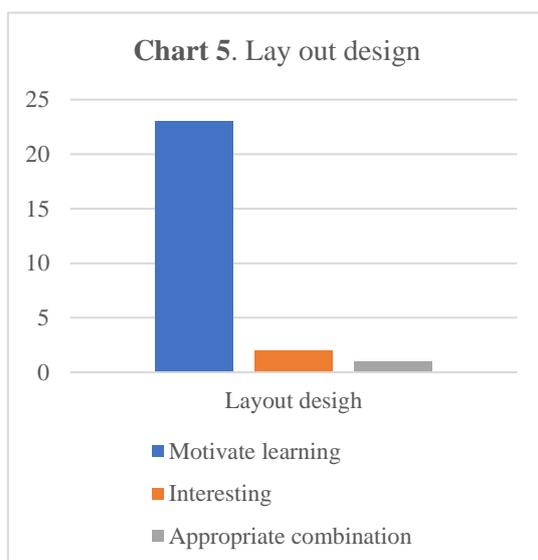
The next aspect was the application layout design. These 23 students said that the application layout should be able to "motivate learning", two students said it should be 'interesting', and one said it should have the "appropriate combination'. The buttons in the application were also according to the wishes of students. Twelve students said that when the button was touched, it had to make a sound, ten students said that the application had a contrasting colour, and two suggested using symbols. Four students suggested giving a good combination. Students suggested colours with a predominance of green. In the process, the application was given the appropriate font, and size and had a suitable variety for the application design.

Designing media and materials

In designing the template, the researchers designed the template based on the limitations of the product and the students' and teacher's questionnaires to suit students' needs and interests. At this stage, the most crucial point was the font selection, font size, animation, audio, colour, picture and, picture's size. Some of the fonts used such as Times New Roman, Calibri, Arial Unicode MS, Britannic Bold, Arial Black, Bernard MT Condensed, Candara and, Berlin Sans FB. The image consisted of a background image, buttons, icons, and several other supporting images. The image fitted to the theme and colour on the background of each menu. Some of the images used include Icon applications, logos, schools, clouds, windows, doors, books, people, the background of travelling, battle, temple, and war. The use of colour was not far from the students' choices. In the questionnaire, most students' chose green as a feature of this

learning application. However, different options from other students were used in another menu. In some aspects, the researcher gave animation effects to support the visuals of the product. Likewise, the audio did not use loud voices because it would interfere with the learning process. In addition, the most important aspect was the size. Images and fonts had to pay attention to the screen's size to make it look proportional. Some of the fonts' size used such as 12 pt, 14 pt, 16 pt, 18 pt, 20 pt and 24 pt.

The researchers mapped the materials and collected information about the syllabus and effective week. From the teacher's questionnaire results, it was found that there were ten meetings for learning reading in one semester. In semester two, each unit had one or two reading meetings depending on the materials being taught in four units. Syllabus came from a school based on the latest 2013 curriculum. It could be seen in the Table 2:

Table 2. Mapping the Materials

Unit	Titles	Objectives	Indicators
1.	Trip to Borobudur Temple	● To build the students' knowledge about how to used past tense and perfect tense ● To give the students practice of reading using past tense and perfect tense	Students were able to: ● Understand the form of past tense and perfect tense in recount text ● Identify the word of past tense based on recount text
2.	History of Bung Tomo	● To build the students' knowledge about the historical event and biographical recount text ● To give the students practice of reading historical event and biographical recount text	Students were able to: ● Understand the text about historical events ● Understand the text about biographical recount
3.	Once Upon a Time Ago	● To build the students' knowledge about the legend (narrative text) in Indonesia ● To give the students practice of reading legend (narrative text) in Indonesia	Students were able to: ● Understand the narrative text about the legend in Indonesia
4.	Sing a Song	● To build the students' knowledge about song ● To give the students practice of reading a song	Students were able to: ● Understand of song

At designing the materials, the researcher made an outline of the materials for making activities. The researcher suited activities from teacher's and students' questionnaires. The researcher also chose several activities that according to the

activities chosen by the teacher. These activities were selected based on the model activity from Brown (2004). They read aloud, written responses, multiple choice, picture-cued items, matching tasks, gap filling tasks, closed tasks, and short answer tasks. Some activities that students chose were multiple choices, fill-in-blank, true or false. The researcher also matched activities to the syllabus, content competencies and basic competencies based on the curriculum. Here is the materials design table:

Table 3. Designing the Materials

Unit	Titles		Activities
1.	Trip to Borobudur Temple	1	Identify the verb according to the recount text.
		2	Choose the correct verb according to the previous text.
		3	Give statement True or False according to recount text about holiday.
		4	Give statement True or False in form verb question according to the text before.
2.	History of Bung Tomo	1	Answer the question based on the biographical text of Bung Tomo.
		2	Match the vocabulary with the correct definition.
		3	Choose the correct answer with past form.
		4	Arrange the sentences became a good paragraph.
3.	Once Upon a Time Ago	1	Match the picture with a simple definition of the legend story.
		2	Give statement True or False in form verb question according to the text before.
		3	Answer the question based on the legend narrative text.
		4	Choose the correct answer based on the legend narrative text.
4.	Sing a Song	1	Categorize verbs according to their respective tenses based on the song's lyric about peace.
		2	Answer the question based on the song's lyrics about peace.
		3	Give statement True or False based on the song's lyrics about peace.
		4	Choose the correct answer based on the song's lyrics about nature.

Developing Media

The next stage was media development. There were eight steps at this stage. They were finding the materials, selecting the materials, vocabulary-building activities, typing the materials, converting I, Validation II, Revision I, and Converting II.

The researcher looked for materials from several sources. They were from offline and online. Off-line learning resource was from the students' workbook for senior high school published by Medali. The researcher also taken online sources from several websites. They were, *"Bahasainggris.co.id"*, *"Britishcourse.com"*, *"sman3simpanghilir.sch.id"*, *"FreeEnglishCoure.info"*, *"Literature.my.id"*, *"beritaenglish.blogspot.com".* Finally, the researcher looked for materials appropriate to the lesson in class 10, semester two. After finding the appropriate materials, the researcher copied them into Microsoft Word and then proceeded to the next stage.

After finding the materials, the next step was choosing materials that matched the syllabus and basic competencies. Materials selection also fitted the results of students' questionnaires. Students chose many words in reading activities. Most of them decided the 100 - 200 word range, while others chose the 200-300 or 300-400 word range. After selecting the materials, several sources of online and offline materials were obtained. The researchers chose the appropriate materials from all the books and websites.

In addition, there was a vocabulary-building activities stage in the development media. There were several steps to make vocabulary-building activities: vocabulary selection, downloading the audio vocabulary, merging the audio files, and compressing audio. In the vocabulary selection stage, the researcher looked for about 30 English vocabulary words in each unit. Then, the English teacher selected whether one should be included or not. Unselected vocabulary was still included in the glossary menu. After selecting the vocabulary, the researcher looked for the pronunciation audio on the online website. "Voicemaker.com".

The researcher chose a female voice with an American accent. On the website, the researcher changed several settings to maximise the audio quality. The downloaded audio format was WAV. There were two audio versions downloaded. They were English and Indonesian audio. After all the audio were collected, the English and Indonesian audio were merged with the 'Filmora' application. English audio was played at the beginning of the sound, then Indonesian audio. After merging the audio, the researcher compressed the audio so that the application capacity was not too large. The researcher used the online website "Compress.com" to reduce the size of the audio. After that, the researcher inserted the audio in PowerPoint. After the process was completed, the researchers audited linguists to assess the quality of audio pronunciation

then typed all the materials into PowerPoint and converted it to APP. After completing all the stages, the experts validated the media and the materials.

The first validation was about the design template. The expert assessed the media template used as a learning media in this validation. In the second validation, the media expert assessed the application design. The media expert validated from the first page to the end page of the application. Media experts argued that the design of this application was good with a few small things that had to be revised before the next process. The result is as follow:

Table 4. **Validation of design and template**

No.	Indicators	Scale			Note
		Poor	Fair	Good	
1.	The screen display is clear			√	
2.	The screen display is proportional			√	
3.	The color variation used is harmonious			√	
4.	The images in this multimedia is appropriate			√	
5.	The text in this multimedia is appropriate			√	
6.	The typeface used in this application is appropriate.			√	
7.	The font size used in the text is not too big or too small.			√	
8.	The text and image layout			√	
9.	The navigation buttons on this multimedia are placed consistently.			√	
10.	The navigation buttons on this multimedia are easy to use.		√		Change the symbol of "back" button because it is like "refresh" button symbol.
11.	Existing navigation buttons work well.			√	
12.	There are shortcut keys such as to return to the main menu and exit this application.			√	

The second validation was carried out to assess the language of the materials. Language expert validated the language of the materials with several aspects. They were the content of the materials, the language of the materials and the suitability of the media. For the content of the materials aspect, the language expert rated it as 'Fair' for each indicator. She gave notes to add activities in the form of differentiating grammar between past tense and present perfect, and some activities had to be reduced in number of questions because there were too many. Language expert also suggested to be more varied in making activity models. For the language aspect, she assessed all indicators as

'Good', meaning that the grammar used was easy and clear to understand at the high school level. Regarding media suitability, language experts rated all indicators as 'Good'. She judged that the design, graphics, text and all aspects of the application were appropriate and attracted students' learning motivation.

Table 5. Validation of Language of the Materials

1. Content Aspect

No.	Indicators	Scale			Note
		Poor	Fair	Good	
1.	The content of the material will be easily understood by students.		√		
2.	The activities in each material will have an impact on students' motivation to read.		√		Add some tasks about simple past and present perfect
3.	The activities in the material are already organized in a logical progression from easy to difficult.		√		There are too much number in each activity
4.	The materials are relevance to the worksheet		√		Give more worksheet variation

2. Language Aspect

No.	Indicators	Scale			Note
		Poor	Fair	Good	
1.	The language used is easily understood.			√	
2.	The instructions for each activity are clear and easy to understand.			√	
3.	The language used is appropriate for the ability level of high school students.			√	
4.	The language used uses proper grammar.			√	

3. Appropriate Media Aspect

No	Indicators	Scale			Note
		Poor	Fair	Good	
1.	The design used can attract student motivation.			√	
2.	The design of the application media is in accordance with the material.			√	
3.	The material image is clearly visible.			√	
4.	The picture is in accordance with the activity developed.			√	
5.	The text on the app is clear to see.			√	
6.	The overall visual design is attractive.			√	

The third validation was carried out for audio vocabulary. The audio quality assessed by language expert consisted of five indicators. They were clarity, appropriateness, speed, compatibility with native speakers, and audio rhythm. The result was presented below:

Table 6. **Validation of Audio Vocabulary**

No.	Indicators	Scale			Note
		Poor	Fair	Good	
1.	The clarity of the audio vocabulary		√		Fix some unclear audio
2.	Audio is in accordance to the vocabulary			√	
3.	Audio/pronunciation speed			√	
4.	The speaker is similar to the native		√		
5.	Audio rhythm			√	

On the audio clarity indicator, a language expert rated it as 'Fair' with a note to replace the audio because there were some less clear audio. On the indicator of compatibility with native speakers, she rated it as 'Fair' because the bot's voice did not precisely match a real human's voice. Language experts rated three other indicators as 'Good': compatibility with vocabulary, pronunciation speed and rhythm.

The Implementation of the Tryout 1

Tryout 1 was conducted for two days, on 23 and 24 June 2021. The tryout was conducted face-to-face or offline at school. There were four units being tried out, each unit consisted of four activities. The following was the schedule and the result of tryout 1;

Tabl 7. The Schedule of Tryout 1

Date	UNITS (TITLE)		TASK
23rd of June 2021	Trip to Borobudur Temple	1	Identify the verb form (verb 2 and verb 3)
		2	Choose the correct verb form according to the tense.
		3	Give statement True or False according to recount text about holiday.
		4	Give statement same or different form verb question according to the text before.
	History of Bung Tomo	1	Answer the question based on the biographical text of Bung Tomo.
		2	Match the vocabulary with the correct definition.
		3	Choose the correct answer with past form.
		4	Arrange the sentences became a good paragraph.
24th of June 2021	Once Upon a Time Ago Sing a Song	1	Match the picture with a simple definition of the legend story.
		2	Give statement True or False in form verb question according to the text before.

	3	Answer the question based on the legend narrative text.
	4	Choose the correct answer based on the legend narrative text.
	1	Category verbs according to their respective tenses
Sing a Song	2	Answer the question based on the song's lyrics about peace.
	3	Give statement True or False based on the song's lyrics about peace.
	4	Choose the correct answer based on the song's lyrics about nature.

Table 8. Result of Tryout 1

NO.	NAME	UNIT				MEAN SCORE
		6	7	8	9	
1	AHA	60	60	75	80	68,75
2	AFL	80	60	100	100	85
3	ARA	60	80	100	80	80
4	DAR	80	80	100	100	90
5	HZ	60	60	80	80	70
6	IR	80	60	80	100	80
7	LFS	70	88	100	100	89,5
8	MUM	60	68	80	80	72
9	MI	80	60	80	100	80
10	NR	80	80	100	80	85
11	NHM	80	60	100	100	85
12	WK	80	85	100	100	91,25
13	SNI	60	80	80	100	80
14	AK	80	60	80	100	80
15	AFF	60	80	100	80	80
16	AKW	80	80	100	100	90
17	BKZ	60	80	80	100	80
18	FF	100	60	100	100	90
19	HI	80	80	80	80	80
20	MS	80	100	80	80	85
21	MAR	60	60	100	100	80
22	NS	80	80	80	100	85
23	PNA	60	100	80	100	85
24	SR	100	60	80	100	85
25	SNA	60	80	100	80	80
26	TR	80	60	100	100	85
27	UF	80	80	100	100	90

| 28	**TRU**	60	60	70	80	67,5

The Implementation of the Tryout 2

The second tryout was carried out for only one day because only five activities were tested. The subjects of the tryout were the tenth graders of SMA Al Muniroh, with a total of28 students consisting of 12 science class students and 16 social science class students.The tried-out activities were activity 1, 2, 4 unit 6, activity 4 unit 7, and activity 1 unit 9. All activities were tried at once according to the sequence of units.

Table 9. The Schedule of Try-out 2

Date	UNITS (TITLE)		TASK
22nd of July 2021	Trip to Borobudur Temple	1	Identify the verb form (verb 2 and verb 3) based on the texts.
		2	Choose the correct verb based on previous text.
		4	Give statement of True or False based on previous text.
	Recount text	4	Arrange the sentences became a good paragraph.
	Sing a Song	1	Categorize verbs based on their respective tenses relates to the song's lyric about peace

There were five activities that were tried out in try out two, including activities 1, 2, and 4 in unit 6, activity 4 in unit 7, and activity 1 in unit 9. In activity 1 unit 6, students got an average score 92.07. In activity 2 unit 6, the average score of students was around 90. In activity 4 unit 6, students got an average score of 87.14. In activity 4 unit 7, students got an average score of 88.57. In activity 1 unit 9, students got an average score of 94.64. In this tryout, the students' average results reached 90.49 of the students' success scores in answering the questions. Thus, students completed all activities in this tryout well.
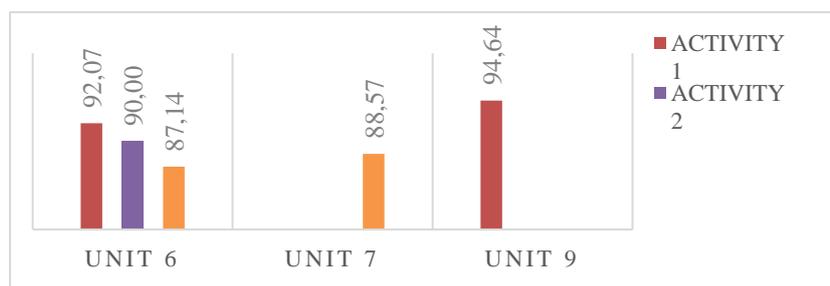
Picture 2. Result of Try - out 2

In unit 6, the average of students' results in tryout 1 was 77.17 with each activity having an average of 74.75 – 74.29 – 85.71 – 73.93. While in the final result, the average of students' results in unit 6 was 88,73 with each activity having an average

of92,07 – 90 – 85,71 – 87,14. In unit 7, the average of students' results in tryout 1 was 84,46, with each activity having an average of 86.43 – 86.43 – 90,71 – 74,29. While in the final results, the average of student results in unit 7 was 88,04, with each activity having an average of 86,43 – 86.43 – 90,71 – 88,57. In unit 8, the average of students' results in unit 8 students was 93,21, with each activity having an average of 100 – 90 – 87,86 – 95. In this unit, students did not do tryout 2 because they had reached the minimum score. In unit 9, the average of student result in tryout 1 was 87,10 with each activity having an average of 74,82 – 88,57 – 92,14 – 92,86. While in the final result, the average of student result in unit 9 was 92,02 with 94,64 – 88,57 – 92,14 – 92,86.

In tryout 2, students got an average increase in several units. Some activities in 3 units was re-tested in tryout 2. In unit 6, researchers re-tested several activities, such as activities 1, 2 and 4. Therefore, students got an average increase in unit 6 by 6%. In unit 7, the researcher re-tested activity 4. As a result, students got an average increase in unit 7 by 2%. In unit 8, students did not re-test because students got scores above the minimum score. In unit 9, the researcher re-tested activity 1. Hence, students got an average increase in unit 9 by 2%. Students got increase the results in each unit, thus the use of application media in the learning process was effective for students, especially in reading material.

The Final Product

The product produced in this research was a learning media in the form of a mobile application called "*ReadMe Apps*". The researcher made this product for the English subject of class 10 semester 2 SMA Al – Muniroh Ujung Pangkah, especially on reading comprehension. The researcher provided learning products that experts and teachers had validated. Therefore, the products that students used followed expert's and teacher instructions. The product was produced using three software, namely PowerPoint, ISpring9, and Website APK 2 Builder.

This final product consisted of 63 pages consisted of an intro page, loading section, menu page, materials page, KI or KD page, vocabulary building page, learning summary page, exercise page, user's guide page, teacher's guide page, lesson plan page, description of the product page, and exit page. The size of this product was 52 MB and the android version that could be used was at least version 5.0 (Lollipop). Several supporting elements were such as font, animation, audio, colour, image and size suitted

to the suggestions from students, teachers, and experts. The supporting element data on the application media is as follows;
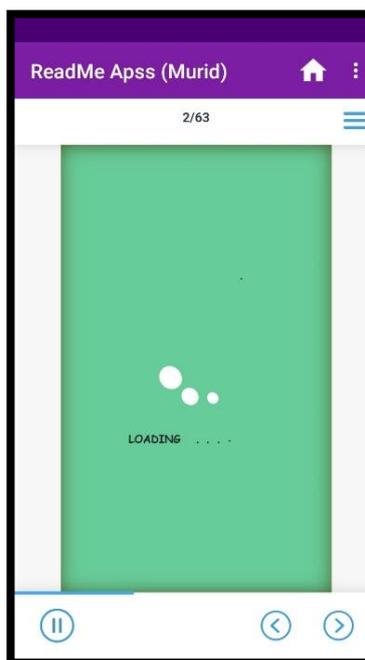
Table 10. The Component of Media Application

Fonts	Animation	Audio	Color	Picture	Size
Times New Roman	Float in (from top)	Click on (original from PowerPoint)	Green	All the picture credit from Freepik.com and edited in Photoshop. original shape from PowerPoint	12pt
Calibri	Animation original from PowerPoint		light blue		14pt
Arial Unicode MS			Orange		16pt
Britannic Bold			Red		18pt
Arial Black			Yellow		20pt
Bernard MT Condensed			All the color original from PowerPoint		24pt
Candara					(All the size off original font from PowerPoint
Berlin Sans FB					
All the fonts original from PowerPoint					

Each page on the application media had different elements. The intro page consisted of the icon, the application's name, the logos, and the developer's name. The loading section consisted of a rotating circular shape and the 'loading' word. In the menu page, it consisted of several buttons such as materials, user's guide, glossary, verb form, description of the product and exit menu. Each button directed the user to the intended menu. The display of the main menu is as follows:
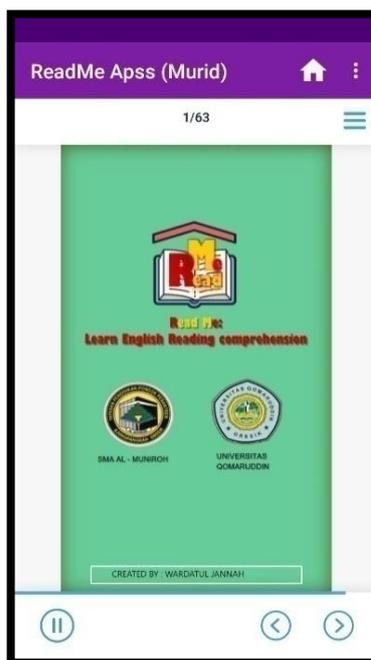
| **Picture 3. Intro Page** | **Picture 4. Loading Section** | **Picture 5. Menu Page** |

In this product, it consisted of 4 units. Each unit consisted of KI or KD, vocabulary building activities, learning summary, and exercise. In the KI or KD menu, the learning objectives and activities to be provided were shown. In vocabulary building consisted of 15 vocabularies related to the materials. In addition, there were audios in each vocabulary so that students could practice the pronunciation.

The researcher developed the materials in each unit suit with the syllabus and k13. Each unit consisted of 4 activities. The researcher used activities based on (Brown, 2007). The activities include reading aloud, multiple choice, picture cued, matching tasks, and short answer questions. There was a "Glossary" menu consisting of vocabularies and their meaning from all units. There was also a "Verb Form" menu consisting of changes to verb 1-2-3 and their purposes. In the user's guide menu, the researcher provided instructions for using each button. In this menu, there was a menu for teacher, namely the lesson plan menu. This menu purposed to make it easier for teacher to carry out the learning process. There was also a menu about the Apps. This menu contained descriptions of products in English and Indonesian. In the exit menu, the researcher gave the option to exit the application media or not.

The researcher developed the media application appropriate with the needs of students and teacher. This product was designed as attractive as possible. Therefore,

students could increase their motivation in reading process. This product also had a process of data analysis, product design, expert validation, and a long revision process. Therefore, the product in the form of learning media in this application was considered inappropriate with the needs of teacher and students of tenth grade in semester 2 at SMA Al -Muniroh, especially in learning reading comprehension.

D. CONCLUSION

The feasibility/quality of the mobile learning application to teach English reading comprehension based on expert judgement; digital media expert, language expert, and audio vocabulary experts concluded that this media was excellent. As a result, this mobile application was competent in enhancing the reading comprehension of SMA Al-Muniroh tenth graders. The material and content of the product suit students' needs, interests, and abilities. The selection criteria also suit the syllabus, curriculum, and questionnaires. The materials consist of 4 units and four activities in each unit. The sources are taken online and offline. All visual and audio presentations of the product are suited to the results of the analysis and conformity to all elements.

Students were engaged in active learning through application media in the learning process. The teacher advised students on how to work well on the questions to answer the task efficiently. The final result of the tryout shows an increasing score of the students. They also show a good response to learning media based on Android applications. It means that the product is suitable and effective in terms of understanding, materials, and visual quality.The researcher believed that the media was very good as a whole. There were four indicators in this aspect: the design and visuals, the use of language in media; the instructions; and the pictures. All of these indicators were rated as "good" and had been implemented in the tryout stage. In addition, the teacher also said that the glossary menu and the vocabulary list had a good impact on students. This makes the students easily learn vocabulary and understand verbs.

However, this research developed an Android application using App iSpring9, so it had to be done online and tested before bringing it online. It also has some limitations if we use the free software without purchasing it. For example, during converting the PowerPoint to the application, the researcher needed several times to trial because sometimes after converting it, some of the menus did not work well. The other limitation

is that of multimedia. When it comes to data storage, the images, audio, or videos inserted into the application should be no more significant than the file size. Due to some weaknesses in iSpring9, future researchers should use the newest version of iSpring10 or use other programs.

REFERENCES

Abdalqodir, P. S. (2017). *Development of a mobile application to teach English: sunrise 12* [Near East University]. http://docs.neu.edu.tr/library/6529867975.pdf

Agustini, S., Wardhani, N. P., Kurniawan, M., & Amalina, E. N. (2018). Mobile application for English reading comprehension. *IPTEK Journal of Proceedings Series*, *0*(6). https://doi.org/10.12962/j23546026.y2018i6.4627

Anak Agung Meka Maharcika, Ni Ketut Suarni, & I Made Gunamantha. (2021). Pengembangan modul elektronik (E-Modul) berbasis flipbook maker untuk subtema pekerjaan di sekitarku kelas IV SD/MI. *PENDASI: Jurnal Pendidikan Dasar Indonesia*, *5*(2), 165–174. https://doi.org/10.23887/jurnal_pendas.v5i2.240

Brown, H. D. (2007). Princple of language learning and teaching. In *Encyclopedia of the Sciences of Learning* (pp. 1743–1745).

Cobb, T. (2015). *Technology for teaching reading technology for teaching Reading TESOL Encyclopedia*.

Drljača, D., Latinović, B., Stanković, Ž., & Cvetković, D. (2017). *ADDIE Model for development of E-Courses*. *June 2018*, 242–247. https://doi.org/10.15308/sinteza-2017-242-247

Dwiaji, B. H. (2016). Easy English learning android application (EEL): An M-learning model to learn speaking skill for grade XI students [SANATA DHARMA UNIVERSITY]. In *Skripsi* (Vol. 7, Issue 1). https://www.researchgate.net/publication/269107473_What_is_governance/link/548173090cf22525dcb61443/download%0Ahttp://www.econ.upf.edu/~reynal/Civil wars_12December2010.pdf%0Ahttps://think-asia.org/handle/11540/8282%0Ahttps://www.jstor.org/stable/41857625

Haque, M. N. (2014). *A brief study on needs analysis Mr . Nurul Haque English Language Department Jazan University , Kingdom of Saudi Arabia , Jazan Email : ashrafnei@yahoo.com*. *1*(1).

Indrasari, N. (2016). English for specific purposes: A need analysis at the second semester of physics education students of IAIN raden intan lampung in the academic year of 2015/2016. *Jurnal Tadris Bahasa Inggris*, *9*(1), 161–172.

Khalif Rizqon, M., Andreani, S., & Astuti, U. P. (2021). The problems faced by senior high school students in reading narrative text. *JoLLA: Journal of Language, Literature, and Arts*, *1*(11), 1508–1522. https://doi.org/10.17977/um064v1i112021p1508-1522

Khan, M. S. H., Bibi, S., & Hasan, M. (2016). Australian technical teachers' experience of technology integration in teaching. *SAGE Open*, *6*(3). https://doi.org/10.1177/2158244016663609

Lowerison, G., Sclater, J., Schmid, R. F., & Abrami, P. C. (2006). Are we using technology for learning? *journal of educational technology systems*, *34*(4), 401–425. https://doi.org/10.2190/er58-3h7p-y8fk-u8f7

Metruk, R. (2022). Smartphone English language learning challenges: A systematic literature review. *SAGE Open*, *12*(1), 1–15. https://doi.org/10.1177/21582440221079627

Muhfiyanti, M., Mulyadi, D., & Aimah, S. (2021). Android-based mobile learning media in teaching reading of report texts. *Getsempena English Education Journal*, *8*(1), 177–191. https://doi.org/10.46244/geej.v8i1.1311

MZ, A. B., & Syafi'i, I. (2021). The development of learning media of Islamic education based on flipbook in covid-19 pandemic at elementary school. *Halaqa: Islamic Education Journal*, *5*(1), 43–62. https://doi.org/10.21070/halaqa.v5i1.1209

Pardosi, W. Y., Tarigan, L. D., Pasaribu, E., & Saragih, E. (2021). *Reading teaching strategies in the senior high*. *1*(02), 64–71.

Rahmanita, R. A., Ratminingsih, N. M., & Juniarta, P. A. K. (2021). Developing an android-based English reading material for the eighth grade students in MTSn Karangasem. *The art of teaching English as a foreign language*, *2*(1), 102–112. https://doi.org/10.36663/tatefl.v2i1.179

Ranjbari, M. N., Tabrizi, H. H., & Afghari, A. (2021). The future of teacher education making : efl pre-service teachers and teacher educators ' perceptions of professional preparation. *Journal of Moderd Research in English Language Studies*, *8*(1), 141–167. https://doi.org/10.30479/jmrels.2020.12471.1544

Setiadi, A., Yuliatmojo, P., & Nurhidayat, D. (2015). Pengembangan aplikasi android untuk mendukung pembelajaran. *Jurnal Pendidikan Vokasional Teknik Elektronika*, *I*(1), 1–5. https://doi.org/10.21009/jvote.v1i1.6886

Thim-Mabrey, C. (2006). Sprachwandel in übersetzungsbearbeitungen zwischen 1846 und 1999. *Neuphilologische Mitteilungen*, *107*(3), 361–373.

Tomlinson, B. (2013). *Developing Materials for Language Teaching* (Second Edi). Bloomsbury Academic.

Ypsilandis, G. S. (2019). *Course on language education and technology*. *27*(2), 53–74.

Zaim, P. M., & Hum, M. (2016). *The power of multimedia to enhance learners ' language skills in multilingual class*. 22–29.