Mantik Journal, 8 (1) (2024), ISSN 2685-4236 (Online)

Published by:Institute of Computer Science (IOCS)

Jurnal Mantik

Journal homepage: www.iocscience.org/ejournal/index.php/mantik

The development of an android-based English tenses learning application for Fakfak State Polytechnic

Titing Magfirah[1], Riyadh Arridha[2], Muh. Fachruddin[3], Wa Rahmi[4], Manistasyaroh[5]
[1]Civil Engineering, Fakfak State Polytechnic, Indonesia
[2,3,4,5]Informatics Management, Fakfak State Polytechnic, Indonesia

A R T I C L E I N F O

Article history:

Received May 13 2024
Revised May 24, 2024
Accepted May 30, 2024

Keywords:

Android;
English Tense;
Learning Application;
Mobile Learning.

ABSTRACT

Currently, English has become a global language and almost every level of education studies English. One of the materials is grammar. Good grammar mastery can be used to communicate in English, writing letters, messages, and scientific writing. One of the materials in mastering grammar is Tenses. Tenses is a sentence pattern that is arranged based on the words to be created. However, tenses are considered difficult and quite boring to learn for some students at the Fakfak State Polytechnic, West Papua. To make it easier to learn tenses is the use of mobile learning to help users in learning something and it can be accessed easily. This research aims to develop an Android-based English Tenses learning application for students at the Fakfak State Polytechnic, West Papua. The method used in this research is the Waterfall method, where a software development model is carried out sequentially where one stage is carried out after the previous stage has been completed. The black box testing results show that the application can work well. Meanwhile the questionnaire result about application performance revealed that 91% of respondents strongly agreed that with this application become an effective way to increase student motivation in learning English Tenses.

Corresponding Author:

Titing Magfirah,
Civil Engineering,
Fakfak State Polytechnic,
Jl. Mambruk, Fakfak, West Papua, 98011, Indonesia.
Email: titin.magfirah@gmail.com

1. INTRODUCTION

As an international language, English is widely used in various fields so that it is a requirement for everyone to learn English (Nurvrita, 2020; Zein et al., 2020). In Indonesia, English is the first foreign language studied as a compulsory subject from junior high school to college (Lauder, 2020). Fakfak State Polytechnic is one of the vocational colleges located in Fakfak, West Papua, where English is taught as a compulsory subject for students. Learning English for students who have a non-English background is a challenge for the lecturers who teach the course (Madkur, 2018).

English learning at Fakfak State Polytechnic studies basic English skills such as listening, speaking, reading, and writing. To master these four skills, students are required to master Grammar, where one of the most important elements is Tenses (Sinclair, 2010). Tenses are one of the basics in learning English. Tenses are used to

convey an intention, purpose, desire, statement, news, event, action or other verbally or in writing so that it can be understood or understood clearly and correctly (Brown, 2000). However, for students who are not majoring in English (non-English students) it takes more effort to master Tenses (Arianti, 2021; Hidayati, 2018). This is also experienced by students at Fakfak State Polytechnic who do not understand the use of Tenses in sentences. It is proven by the difficulty faced by the students when consructing English sentences into paragraph, some students write a paragraph without considering the use of verbs based on the time rules in Tenses. Besides, the students still have less motivation to learn English and consider English tenses is difficult to learn. Consequently, these problems also affect their score achievement on English course. In general, most students consider Tenses very difficult and boring to learn so that it becomes a bugbear for some students (Listia & Febriyanti, 2020). In addition, the available material is still in the form of modules/handouts/summaries of material that are limited to the provision of printed materials (hardcopy). Thus, lecturers need to use effective and interactive media that can attract students' interest in learning. One effective way is the use of technology in learning. As Supriyanto et al found that there is a significant increase on students learning outcomes when they use mobile learning than convensional learning in learning mathematics (Suprianto et al., 2019). The results of this study indicate that mobile learning media is feasible and effective to be used in learning.

This is considered very relevant and provides a connection that will be very useful in the learning process (Shadiev & Yang, 2020). Therefore, one interesting solution to implement is mobile learning. Mobile learning makes it easier for users to learn new things (Ahdan et al., 2020; Yulianti & Sulistiyawati, 2020). This is in accordance with Faqih's opinion stating that one alternative learning supplement that can provide students with the opportunity to learn independently which is done anywhere and anytime is by using mobile learning (Faqih, 2020). This opinion is supported by Magfirah et al who stated that Android is software used on mobile devices to facilitate the use of applications (Magfirah, Arridha, Lanja, et al., 2022). Android can be used as an alternative in the learning process because it can be used to learn anytime and anywhere (Sari & Cahyono, 2020; Sunarto et al., 2020)

Several studies related to the development of mobile learning in classroom learning activities have been stated to be able to help students and teachers, including in giving assignments and working on questions/quizzes (Basuki et al., 2022; Ramos et al., 2022) Rahmat also proved that the use of mobile learning can increase students' interest in learning and also improve student learning outcomes (Rahmat et al., 2019). Furthermore, a similar study conducted by Ajisoko using the Duolingo application to improve vocabulary showed significant results in increasing student vocabulary (Ajisoko, 2020). In addition, Arsyad & Lestari have conducted research to determine the effectiveness of using Android-based mobile learning media on the history of the industrial revolution in Europe on improving the learning outcomes of IKIP Budi Utomo students and it was found that the use of Android-based mobile learning media can improve the learning outcomes of students in the history and sociology study programs of IKIP Budi Utomo Malang (Arsyad & Lestari, 2020). Several studies related to the use of mobile learning in learning also show positive impacts (Magfirah, Arridha, & Ismail, 2022; Maskanah & Sae, 2021; Putri, 2019).

Based on the description above, the researcher developed an android-based learning media application that provides interactive and interesting Tenses learning materials and practices. This application will be used by students of Fakfak State Polytechnic in learning English, especially Tenses.

2. RESEARCH METHOD

a. Design Method

The application development in this research using Waterfall method where the stages are carried out sequentially (Anggoro, 2023).

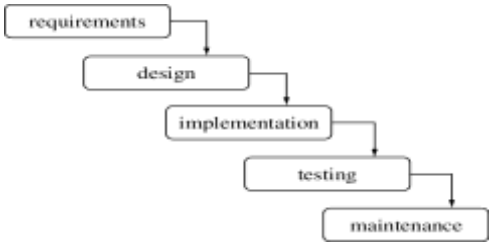

Figure 1. Waterfall Method

b. The analysis of System Needs

Based on the waterfall method, the first stage of this research is literature studies, field studies, and problem analysis. Next, conduct a needs analysis to provide an overview of solutions and needs in system development. This is done to solve a problem faced by researchers as the results of the previous process. Android-based learning media which are very closely related to students are determined as learning solutions that can be applied. In this stage, Tenses material is also prepared and adjusted to the needs of mobile devices.

c. System Design

This stage is carried out to formulate a system design that will be used or implemented with program code. Furthermore, writing the program code is carried out after the results of the system design have been tested and agreed to be feasible to be implemented using program code in its development on mobile devices. If the design is done completely, the code writing process can be carried out properly and in a structured manner.

1). Use Case

A use case is an interaction or dialogue between a system and a user, including the exchange of messages and actions carried out by the system.

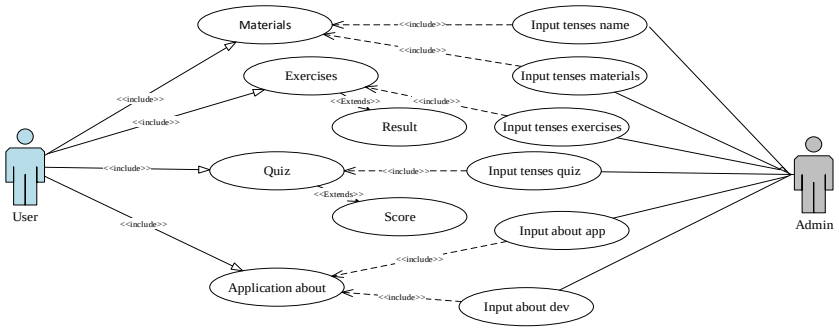

Figure 2. Use Case

2). Activity Diagram

Activity diagram or activity diagram is a technique for depicting the procedural logic and workflow of a designed application. Activity diagrams are also used to model workflows and process activities. The figure 3 below describes the procedure logic and application work flow that is designed when the user enters the application

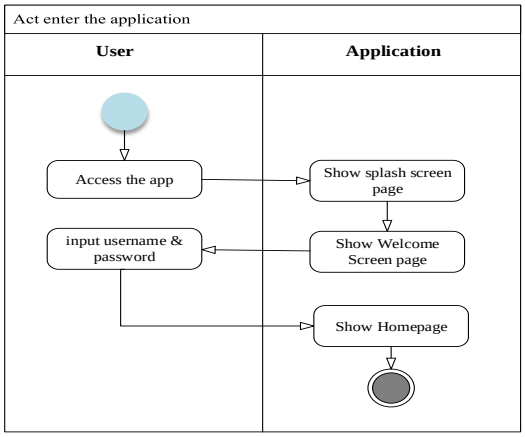

Figure 3. Activity Diagram of application access

Next, the figure 4 below describes the procedure logic and application work flow that is designed when the user enters the page about the application.

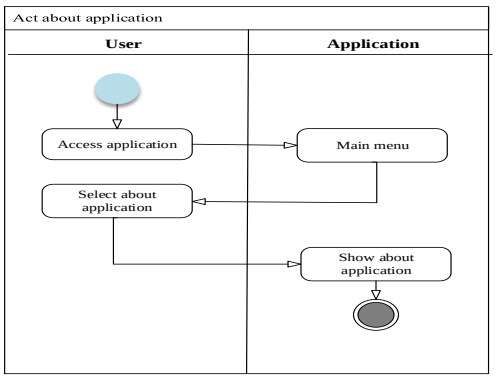

Figure 4. Activity Diagram About Application

The figure 5 below describes procedural logic and application workflow that is designed when the user enters the quiz page.

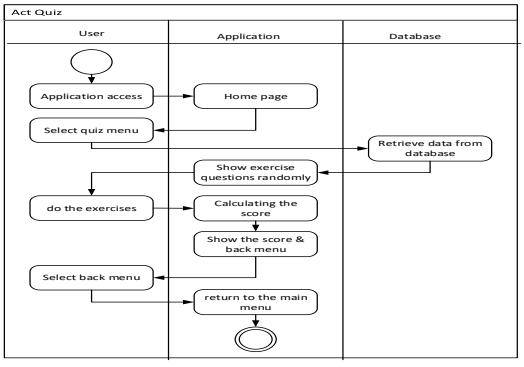

Figure 5. Quiz Activity Diagram

The figure 6 below shows the procedure logic and application work flow that is designed when the user enters the page about the application.

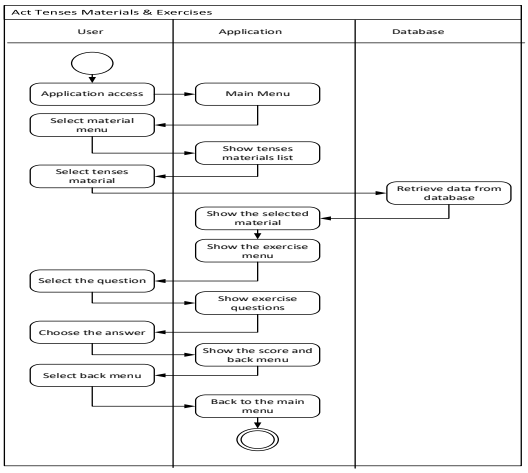

Figure 6. Activity Diagram of Material

3). ERD

Entity relationship diagram (ERD) is a conceptual model used to visualize database structure. ERD describes entities (objects or concepts) in a system and the relationships between these entities. In this application, using built-in Android database (SQLite Database) for storing the quiz data.

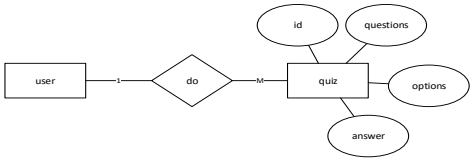

Figure 7. ERD

4) Firebase Implementation

Firebase is a service from Google that offers convenience and even makes it easier for developers to create application. Almost of data in the application are stored in Google Firebase.

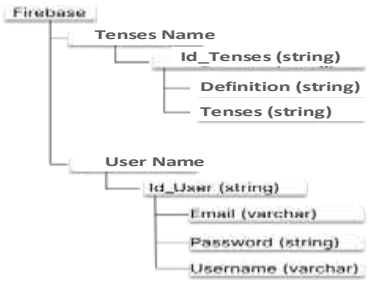

Figure 8. Firebase Implementation

d. Implementation

In this stage the researchers began to build the application according to the needs analysis of the application design. The design was translated into machine-readable form. In this stage, the program code is generated. Program code writing was carried out after the results of the system design have been tested and it has been greed that it is feasible to implement using program code in its development on mobile devices. As a result, the design is done completely, then the process of writing code can be done and structured.

e. Sistem Testing

Application testing is carried out to ensure that the program code that has been created runs well. The testing process focuses on the internal logic of the software to ensure that all statements have been tested, and on external functions, namely directing testing to find errors and ensure that with limited input, actual results will be obtained as needed. Testing is carried out using the black box method. Several things are the aim of testing this system, namely checking that no errors occur when the application is run, checking the compatibility between the application design and the implementation results of the program, and ensure that materials, video materials and quizzes can be viewed and carried out.

Meanwhile for user testing is conducted by distributing questionnaire to users regarding their perceptions of the android-based tenses learning application, as many as 30 students of the Fakfak State Polytechnic respondents answer the questionnaire based on their experience using tenses application. There are 10 items in the questionnaire that need to be filled and the score is calculated based on the Likert Scale, they are Strongly Agree (SS)=5, Agree (S)=4, neutral (N)=3, Disagree (TS)=2, and Strongly Disagree (STS)=1. The result later is to be used as the measurement that this application is worth using by the students.

f. System Maintenance

Lastly, the implementation and maintenance of the system are carried out to ensure that the application can be used widely by students who take part in the lecture process. At this stage, monitoring will be carried out and waiting for user feedback that the system can run well and normally or vice versa. The maintenance process will be carried out if at any time the application does not run as it should.

3. RESULTS AND DISCUSSIONS

a. System Development Results

After going through the system development process, an android-based tenses learning application was produced, its features include the main page, home page, present tense activity page, past tense activity page, future tense activity page, about application page, material display, the display of quiz and quiz results. The following are the results of the system:

1) Main Page

Figure 9 shows Splash View. It is the initial view when the application is opened or run.

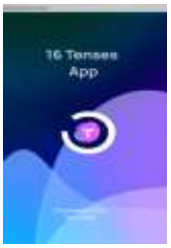

Figure 9. Splash Screen

After that, on Figure 10 and 12 below, there are Sign Up and Login View which are a view that contains username, email and password for Sign Up and username and password display for login which are used to enter the main content or homepage.

Figure 10. Sign up page

Figure 12. Login page

2) Home Page

Figure 13 is the home page which displays menus such as materials, quizzes, admin, about the application, logout and others.

Figure 13. Home Page

3) Tenses Activity Page

Figure 14 shows buttons view that lead to material pages about the types of present tense, past tense, and future tense.

Figure 14. Activity Page of Tenses

4) About Application Page

On the figure 15, it is the About page, a page which contains an explanation about the application.

Figure 15. About Application Page

5) Materials Page

Figure 16 shows the materials content. It is a display that contains about learning materials and video of tenses.

Figure 16. The Display of Tenses Materials

6) Quiz and Score Pages

Figure 17 and 18 below are the quiz display contains questions from the tenses material that has been studied as well as a live score display to find out the score obtained.

Figure 17. Quiz View

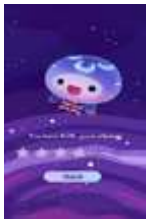

Figure 18. Score Result View

7) Application Testing Results

Application testing using the Blackbox method ran smoothly without any disruptions or errors as seen in the table 1 below.

Tabel 1. Blackbox Testing Results

Testing Method	Scenario	Result	Explanation
Sign in Application	Going to Splash Screen Page	showing Login Page	Succeed
Sign Up	Enter username, email and password	displaying login page	Succeed

Login	Enter username, email and password	Login dan display the home page	Succeed
Materials	Enter the material list page	Displaying video material pages, discussions, formulas and examples	Succeed
Quiz	Select the Answer	Displaying score page	Succeed
Main Quiz	Select the Answer	Displaying score page	Succeed
About Admin	Go to the about admin page	Displaying admin page	Succeed
About Appplication	Go to about application page	Displaying about application page	Succeed
Admin	Go to admin page	Displays the admin page which contains a list of materials and a list of users.	Succeed
Add Material	Input Material	Displaying new material in the material list	Succeed
Edit Materi	Edit Material	Display edited material in the material list	Succeed
Delete Materi	Select the material you want to delete	Material has been deleted	Succeed
Logout	Click logout button	Exit the application	Succeed

8) User Testing Results

Based on the results of the questionnaire that has been distributed to users regarding their perceptions of the android-based tenses learning application, as many as 30 students of the Fakfak State Polytechnic respondents provided responses and the following results were obtained.

Tabel 2. Questionnaire Results

Item	Respondents					Scores	Index Percentage
	SS	S	N	TS	STS		
P1	20	10	0	0	0	140	93%
P2	13	16	0	0	0	132	88%
P3	12	8	4	4	2	114	76%
P4	17	11	2	0	0	135	90%
P5	18	10	2	0	0	136	90%
P6	17	13	0	0	0	137	91%
P7	19	9	2	0	0	135	90%
P8	15	14	1	0	0	134	89%
P9	19	10	1	0	0	138	92%
P10	19	10	1	0	0	138	92%

Based on Table 2 above, the results of the questionnaire were obtained with a total of 30 respondents and 10 questions for each questionnaire. In each question asked, each has 5 assessments, namely SS (strongly agree) with a scale of 5, S (Agree) with a scale of 4, N (neutral) with a scale of 3, TS (disagree) with a scale of 2, and STS (strongly disagree) with a scale of 1(Rahmawati et al., 2022).

In terms of material, 93% of respondents stated that they strongly agreed that the material presented was in accordance with the competencies being studied. Then, in terms of the suitability of the material with the video provided, 88% of respondents agreed that the video provided was appropriate. From the results of the questionnaire, it can be concluded that this application can be easily used without difficulty, this is evidenced by the results of the questionnaire which stated that 76% of respondents agreed that this application was easy to use.

Furthermore, 90% of respondents strongly agreed that the features provided could run smoothly. Meanwhile, in terms of supporting tenses learning, 90% of respondents strongly agreed that this application can support tenses learning well. In addition, 91% of respondents strongly agree that this tenses application is effective as a

learning medium because it can be easily accessed via mobile phones and does not require carrying relatively thick and heavy books, while regarding the interface design 90% of respondents strongly agree that this application has a unique and attractive interface display and varied colors so that it supports the enthusiasm for learning for users, and of course this application is easy to use/user-friendly, 89% of users strongly agree that this application is user-friendly, both as a school learning medium and for adult users, 92% of respondents strongly agree and can understand the use of buttons and instructions in the application. Overall, in terms of user satisfaction, 92% of users strongly agree that this application is satisfying and can be a guide in learning tenses.

4. CONCLUSION

Based on the results of the research that has been carried out, an application for students an android-based English tenses application Fakfak State Polytechnic Students has been developed well. This application was created using the Android Studio application using Java programming language. Besides, this application was created to have many choices of materials that are still related to tenses and 16 tenses material as the main content. The 16 Tenses application has been made to help English learners understand tenses with a simple application and can be done anytime and anywhere. This research only privode an application to learn tenses but not implemented yet for teaching and learning process in Fakfak State Polytechnic. The further research might be the implementation of the application to measure the students' outcome in learning English Tenses.

ACKNOWLEDGEMENTS

Thank you to all parties involved in the completion of this research.

REFERENCES

Ahdan, S., Putri, A. R., & Sucipto, A. (2020). Aplikasi M-Learning sebagai Media Pembelajaran Conversation pada Homey English. *SISTEMASI: Jurnal Sistem Informasi*, *9*(3), 493–509.

Ajisoko, P. (2020). The use of Duolingo apps to improve English vocabulary learning. *International Journal of Emerging Technologies in Learning (IJET)*, *15*(7), 149–155.

Anggoro, B. (2023). APLIKADI EDUKASI BELAJAR MEMBACA DAN MENGHITUNG STUDI KASUS TK DAN KOBER AL-KARIM ISLAMIC SCHOOL. *Jurnal Teknologi Pintar*, *3*(8).

Arianti, A. (2021). A study of students' efforts to improve the ability in English. *Surakarta English and Literature Journal*, *4*(1), 1–10.

Arsyad, M. N., & Lestari, D. E. G. (2020). Efektifitas penggunaan media mobile learning berbasis android terhadap hasil belajar mahasiswa ikip budi utomo malang. *Agastya: Jurnal Sejarah Dan Pembelajarannya*, *10*(1), 89–105.

Basuki, B., Purwanto, J., & Jatmoko, D. (2022). Pengembangan Media Pembelajaran Berbasis Android bagi Guru SD Muhammadiyah Purwodadi. *Jurnal Abdi Masyarakat Indonesia*, *2*(6), 1721–1732.

Brown, H. Douglas. (2000). *Principles of Language Learning and Teaching*. Aadison Wesley Longman, Inc.

Faqih, M. (2020). Efektivitas penggunaan media pembelajaran mobile learning berbasis android dalam pembelajaran puisi. *Jurnal Konfiks*, *7*(2), 27–34.

Hidayati, T. (2018). Student language anxiety in learning English: Examining non-English major students in rural area. *IJELTAL (Indonesian Journal of English Language Teaching and Applied Linguistics)*, *2*(2), 95–113.

Lauder, A. F. (2020). English in Indonesia. *The Handbook of Asian Englishes*, 605–627.

Listia, R., & Febriyanti, E. R. (2020). EFL learners' problems in using tenses: an insight for grammar teaching. *IJET (Indonesian Journal of English Teaching)*, *9*(1), 86–95.

Madkur, A. (2018). The non-English major lecturers speak English: The barriers encountered by adult learners. *Journal on English as a Foreign Language*, *8*(1), 39–56.

Magfirah, T., Arridha, R., & Ismail, O. Z. (2022). Android-based Introduction to Indonesian Heroes Application. *Jurnal Mantik*, *6*(3), 3880–3891.

Magfirah, T., Arridha, R., Lanja, S., & Rumanama, N. (2022). Android-based English teaching material application at State Polytechnic of Fakfak. *Sinkron: Jurnal Dan Penelitian Teknik Informatika*, *7*(1), 136–146.

Maskanah, I., & Sae, H. L. (2021). Efektivitas Penggunaan Teknologi Dalam Pembelajaran Daring Di Masa Pandemi Covid-19. *Jurnal Jendela Pendidikan*, *1*(04), 279–285.

Nurvrita, A. S. (2020). Otonomi Pembelajaran Bahasa Inggris Kampus Merdeka–Merdeka Belajar. *JPAK: Jurnal Pendidikan Agama Katolik*, *20*(2), 107–126.

Putri, D. P. E. (2019). Penggunaan Media Pembelajaran Berbasis Android untuk Meningkatkan Hasil Belajar Kognitif Siswa. *Edugama: Jurnal Kependidikan Dan Sosial Keagamaan*, *5*(2), 104–111.

Rahmat, R. F., Mursyida, L., Rizal, F., Krismadinata, K., & Yunus, Y. (2019). Pengembangan media pembelajaran berbasis mobile learning pada mata pelajaran simulasi digital. *Jurnal Inovasi Teknologi Pendidikan*, *6*(2), 116–126.

Ramos, O. R., Rodríguez, E. F., Fernández, I. L., Marbán, R. M., & Porres, J. B. (2022). The impact of the M-learning methodology on university students. *JOTSE*, *12*(1), 121–131.

Sari, T. T., & Cahyono, A. H. (2020). Pengembangan E-Learning Berbasis Android "Fun Math" Sebagai Alternatif Belajar Matematika di Tengah Pandemi. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, *4*(2), 1283–1298.

Shadiev, R., & Yang, M. (2020). Review of studies on technology-enhanced language learning and teaching. *Sustainability*, *12*(2), 524.

Sinclair, C. (2010). *Grammar: A friendly approach*. McGraw-Hill Education (UK).

Sunarto, M. J., Hariadi, B., Sagirani, T., Amelia, T., & Lemantara, J. (2020). MoLearn, a web-and android-based learning application as an alternative for teaching-learning process in high schools. *International Journal of Instruction*, *13*(1), 53–70.

Suprianto, A., Ahmadi, F., & Suminar, T. (2019). The Development of Mathematics Mobile Learning Media to Improve Studentsâ€™ Autonomous and Learning Outcomes. *Journal of Primary Education*, *8*(1), 84–91.

Yulianti, T., & Sulistiyawati, A. (2020). The Blended Learning for Student's Character Building. *International Conference on Progressive Education (ICOPE 2019)*, 56–60.

Zein, S., Sukyadi, D., Hamied, F. A., & Lengkanawati, N. S. (2020). English language education in Indonesia: A review of research (2011–2019). *Language Teaching*, *53*(4), 491–523.