# The Use of Mobile Applications in Digital Project-Based Learning to Improve Students' English Speaking Skill

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**Abstract**

*Background:*
For Indonesian teachers and students alike, learning to speak English is still a significant difficulty. The use of media, especially mobile applications in English language learning can help draw in learners, boost motivation, and encourage creativity.

*Methodology:*
Convergent parallel mixed-methods was employed with 40 students as participants in this research. The data used was tests, documents, observation, and interview which analyzed quantitatively and qualitatively through statistical Wilcoxon signed ranks test, coding, and thematic analysis.

*Findings:*
Mobile applications used in this research were YouTube, Tiktok, Instagram, Duolingo, Talk, Elsa, Seesaw, Cake, Pixton, Speech to Text, and Capcut. The implementation process was divided into 5 stages; planning stage, implementation stage, evaluation stage, reflection stage, and follow-up stage. The pre-test and post-test results showed that the value of the asymptotic sign (2-tailed) $0.000 < 0.05$ indicated that the use of mobile applications could greatly enhance students' speaking skill. The students' perception showed that mobile applications in the classroom made learning more convenient, students could use them to practice English skills, complete assignments, find out information, or even receive the materials their lecturers offer them.

*Conclusion:*
The use of technology, such as mobile applications, can be a useful aid in the study of the English language, giving students more exposures, practices, and individualized instructions.

*Originality:*
This research reveals the implementation, effectiveness, and students' perceptions of mobile applications used in digital project-based learning. It is possible to maximize the benefits and minimize the drawbacks.

## 1. INTRODUCTION

Students from Indonesia have some issues with their ability to speak English. Indonesian students frequently experience speaking difficulties in English because it is not their mother tongue. It might be difficult for students to speak smoothly because of the distinctions between Indonesian and English in pronunciation, intonation, and syntax (Geria, 2022). Another difficulty Indonesian students have in speaking English is a limited vocabulary. It may be challenging for students to communicate successfully because they may not have enough words to fully explain their thoughts and ideas (Irma, 2020). One of the main issues Indonesian students have when speaking English is a lack of confidence (Mubarok, 2017). Students' ability to talk eloquently may be hampered by embarrassment or fear of making mistakes (Farhani et al., 2020; Fitri & Abbas, 2023). English teachers also struggle with their ability to teach the students in English speaking skill.

English speaking skills are a difficult subject for Indonesian English teachers to teach (Arbain & Nur, 2017). Competence and effective performance are requirements for the teachers (Inayah & Miftakh, 2022). As a learning process including both teachers and students, teaching is exceedingly complex. Teachers should get more understanding about the material, the students, the curriculum, the pedagogy, and also their performance as part of the learning process. The proper teaching strategy must be used by the teachers. It is crucial that the adopted/adapted plan be pertinent to their requirements and preferences (Sudrajat & Apriliani, 2022). In teaching of speaking, producing, receiving, and processing information are all steps in the interactive process of meaning construction that is in spoken language. The brain encodes ideas and sends them to the mouth when it has an idea. The spoken text is created by the mouth's articulation system. In addition to verbal communication, diverse interactions also entail paralinguistic speech components like pitch, stress, and intonation. Nonlinguistic components, such as gestures, body language, and facial expressions, may also be used to support speech or to convey meaning on their own. It presents difficulties for the teachers because proficiency in language use in social situations is necessary for efficient oral communication (Irma, 2020).

Since teachers nowadays are educating students who were born into the digital age, technology may aid in the teaching of English speaking skills. Students can become more independent in the classroom through the use of technology in language learning. It brings about fundamental structural changes that greatly increase production. Support for teaching and learning is provided through it. It can also revolutionize education by introducing a new linked teaching approach (Kuning, 2019). Technologies for teaching speaking help students

establish rapport, improve their fluency and accuracy, reduce their worry and trepidation, and gain confidence. The technology utilized in speaking instruction can be connected with the communicative approach to education, enabling students to express themselves in a skillful and competent manner. Technology is now used as an additional instructional tool to help teachers improve their students' speaking skill (Sosas, 2021). The technology used is not only computer assisted language learning but also mobile application assisted language learning.

Students' speaking skill could be greatly improved by using mobile applications to teach English speaking. Students may benefit from tailored learning opportunities provided by mobile applications. Students can pick the subjects that interest them and proceed at their own pace.  Students can practice speaking English whenever and wherever they choose with the help of mobile applications (Raj & Baisel, 2022). Students can practice speaking in their free time or while traveling. Mobile applications may offer interactive learning experiences that are advantageous to students. Students can take part in speaking activities, listen to native speakers, and receive feedback on their word pronunciation. The adoption of mobile applications can boost students' motivation to learn English. Learning may be made more enjoyable and engaging by using gamification and prizes. Mobile applications can increase students' enthusiasm in learning English. Even outside of the classroom, the use of mobile devices can promote student engagement, contextualized learning, community building, effective interaction, and communication (Ameri, 2020; Ekoç, 2021; Raj & Baisel, 2022). The use of mobile apps can improve students' capacity for critical thought. Students can use the information they obtain from the program to enhance their speaking abilities by analyzing and evaluating it (Kusmaryani et al., 2019).

Students' speaking skill can be enhanced by project-based learning via mobile applications. Empirical studies highlighted the potential of mobile applications use through digital project-based learning. Students' speaking abilities were improved through the creation of short plays about phone calls, which were then put on Instagram, as part of a project-based learning strategy (Qisthi & Arifani, 2020). In a study involving 30 students in an informatics management degree, creating video lessons as project-based learning was found to be useful in enhancing students' speaking abilities. The study discovered that the experimental groups mean score in the areas of pronunciation, grammar, vocabulary, and fluency was greater than the control groups (Tyas & Fitriani, 2021). At the International Burch University in Sarajevo, Bosnia and Herzegovina, a project was created to create a multilingual speaking guide application. Users of the software can easily obtain Turkish, Bosnian, and English translations

of words and phrases. Those who travel overseas and need to immediately answer linguistic conundrums may find this kind of software beneficial (Arslan, 2020).

The purposes of this research were to investigate the implementation of mobile applications in digital project-based learning to improve students' English speaking skill, reveal the effectiveness of mobile applications in digital project-based learning to improve students' English speaking skill, and describe how students perceive mobile applications in digital project-based learning to improve English speaking skill.

## 2. METHODOLOGY

This research employed Convergent Parallel Mixed-Methods. A convergent parallel design required that the researcher simultaneously performed the quantitative and qualitative portions in the same stage of the research process, balanced the methodologies, independently analyzed the two components, and combine the results (Creswell, 2015). This research used purposive sampling 40 students (the total students who took the course) in Speaking for Informal Interaction course at a university in Kalimantan island, Indonesia. It was to investigate the opportunity to improve students' English speaking skill through the use of mobile applications in digital project-based learning. In this research, the researchers collected data from tests, documents, observation, and interview (Cohen et al., 2018). The test was administered in two phases: the pre-test and the post-test adopted from International English Language Testing System (IELTS), pretest talking about personality and post-test talking about science and technology. The findings of this test were used to determine whether using mobile applications to learn English had a substantial impact on speaking English. Students' speaking skill in terms of fluency, pronunciation, vocabulary, grammar, and comprehension were measured in this test (Brown, 2004). The test was administered as a solo performance in which the student presented an individual speaking on a specified subject (pre-test: personality, post-test: science and technology). The documents in this study focused on learning syllabus documents, learning plans, learning materials, and learning evaluation. This observation was conducted to examine the use of mobile applications for learning the English language that could enhance speaking skill. The researcher used open observation sheet to observe the implementation of mobile applications in digital project-based learning in improving students' speaking. The use of mobile applications, speaking practice, student learning motivation, stages of using mobile applications, interactions between lecturers and students, interactions between students, evaluation of learning, as well as other pertinent findings, were all examples of the

types of findings that researchers recorded in class using open observation sheets, which gave observers more room to do so. As a follow-up to the findings of the document review and classroom observations, this interview was done. In order to understand more about the use of mobile applications for learning English that could enhance English speaking abilities, interviews were conducted. Interview was conducted with 3 respondents who were representative from low level, fair level, and good level students. The interview focused on student's opinion, mobile applications used, advantages, weaknesses, speaking progress, understanding digital project-based learning, and suggestions on the use of mobile applications in digital project-based learning. Quantitative data analysis was done through statistical Wilcoxon signed ranks test to see the effectives (King et al., 2017). Qualitative data analysis was done through coding and thematic analysis to reveal the implementation and the students' perception of mobile applications in digital project-based learning to improve students' English speaking skill (Leavy & Nathan, 2014).

## 3. FINDINGS

### 3.1 The Implementation of Mobile Applications in Digital Project-Based Learning to Improve Students' English Speaking Skill

The first purpose of this research was describing the implementation process of mobile application in digital project-based learning to improve students' speaking skill. This findings were taken from observation data in the treatment process. From the document analysis, in this course, the syllabus was focused to apply the major of linguistics to the aspect of human language, such as sounds, words, sentences, and meaning, the students were expected to be able to speak in a variety of informal settings with the topics or issues provided. They were also expected to be responsible for using their knowledge of small group communication theory and skills in information sharing and decision-making discussion. Learning methods were varied from Small Group Discussion, Role-Play and Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, and Project Based Learning. In this research was focused on digital project-based learning. The media used was Computer and LCD Projector, Smartphone, Online apps, Mobile apps, Learning Websites, and YouTube. Mobile applications used in this research were YouTube, Tiktok, Instagram, Duolingo, Talk, Elsa, Seesaw, Cake, Pixton, Speech to Text, and Capcut.

There were 5 stages that need to be considered in using mobile applications in learning English which could improve students' speaking skills, namely the planning stage, implementation stage, evaluation stage, reflection stage, and follow-up stage.

*a) Planning Stages*

In this stage it was necessary to understand the true learning objectives and learning outcomes that would be carried out. Selection of learning methods, learning media and learning resources also needed to be well designed. Learning scenarios also needed to be designed so that learning time could be used effectively. The learning scenario started from the initial activity, core activity and closing activity.

*b) Implementation Stages*

In this stage the lecturer did what had been made in the lesson plan. The lecturer carried out the learning scenario that had been made. There were three activities namely initial activity, core activity, and closing activity. The initial activity began with greeting students, praying, checking student attendance, providing motivation and apperception, conveying learning objectives and learning achievements before carrying out the main activity. In the core activities, the lecturer provided material that was appropriate to the learning objectives by using appropriate learning methods, learning media and learning resources. Lecturers also organized core activities by making pairs to practice speaking short conversations, and forming small groups to practice speaking short conversations. In this core activity students were also given the flexibility to explore the learning media used to be able to explore their speaking skills. Interactions between lecturers and students as well as interactions between students and other students made it possible to optimize students' English speaking skills. In the closing activity the lecturer and students summarized what they had learned together, made corrections related to inaccurate English pronunciation, corrections related to grammatical errors, strengthened new vocabulary, and provided motivation to continue to practice speaking English not only in lectures but in follow-up up off campus.

*c) Evaluation Stages*

Evaluation was carried out twice, namely at the mid-semester exam and the final semester exam. In the mid-semester exam, students created a digital project duet this video using the Capcut application. In this project students made interactive video conversations that could be used as a medium for practicing speaking English where in the video students invited the video audience to speak a duet with them in English on topics of daily conversation. There was a transcript of the conversation included in the video so that viewers could practice

speaking English. Students made English conversation transcripts in two different colors, for example blue for the person speaking in the video, and yellow for the audience who wanted to speak in response to the person in the video. The lecturer assessed the video using a speaking assessment rubric that focused on aspects of fluency, word pronunciation, vocabulary coverage, grammar, and speaking comprehension. In the final semester exam, the lecturer conducted interviews with each student to evaluate the ability to speak with various topics of daily conversation that had been studied for one semester. The assessment still focused on aspects of fluency, word pronunciation, vocabulary coverage, grammar and speaking comprehension.

### d) Reflection Stages

The reflection stage was carried out at the end of each lecture every week. In this stage the lecturer made notes on the successes and deficiencies that were carried out during the learning process at each meeting, notes related to the learning process according to the lesson plan or there were unexpected changes. Lecturers also noted the weaknesses of the learning methods, learning media and learning resources used. The lecturer also noted what obstacles students had in speaking English.

### e) Follow-up Stages

This stage was carried out after the reflection stage by using the lecturer's reflection notes to re-design a better learning scenario at the next meeting by reconsidering the use of learning methods, learning media, and learning resources used.

### 3.2 The Effectiveness of Mobile Applications in Digital Project-Based Learning to Improve Students' English Speaking Skill

The second purpose of this research was to reveal the effectiveness of mobile applications in digital project-based learning to improve students' English speaking skill. The researcher used test data from pre-test and post-test. The test was administered in two phases: the pre-test and the post-test adopted from International English Language Testing System (IELTS), pretest talking about personality and post-test talking about science and technology. The findings of this test were used to determine whether using mobile applications to learn English had a substantial impact on speaking English. Students' speaking skill in terms of fluency, pronunciation, vocabulary, grammar, and comprehension were measured in this test (Brown, 2004). The followings were the results of students' pre-test and post-test and the statistical analysis of the effectiveness through Wilcoxon signed rank test.

**Table 1. Tests of Normality**

**Tests of Normality**

|  | Kelompok | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
|  |  | Statistic | df | Sig. | Statistic | df | Sig. |
| Nilai | Pre-test | .184 | 40 | .001 | .897 | 40 | .002 |
| Speaking | Post-test | .129 | 40 | .091 | .950 | 40 | .078 |

a. Lilliefors Significance Correction

The normality test used in this research was the Shapiro Wilk normality test because in this research the sample used was a small sample of <100 students. The data was said to be normally distributed if the significance value was > 0.05. From the table above, the pre-test data showed the significance value of Sig. $0.002 < 0.05$, which meant that the data pre-test values were not normally distributed. The post-test values from the table above showed the significance value of Sig. $0.078 > 0.05$, which meant that the post-test values were normally distributed. Seeing the results of the normality test indicating the presence of abnormal data, the alternative hypothesis and null hypothesis testing were carried out using a non-parametric statistical test using the Wilcoxon signed ranks test.

**Table 2. Wilcoxon Signed Ranks Test**

**Ranks**

| | | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| Posttest - Pretest | Negative Ranks | 0[a] | .00 | .00 |
| | Positive Ranks | 37[b] | 19.00 | 703.00 |
| | Ties | 3[c] | | |
| | Total | 40 | | |

a. Posttest < Pretest

b. Posttest > Pretest

c. Posttest = Pretest

Based on the table above, the negative ranks showed a value of 0, which meant that no students experienced a decline in their scores from the pre-test and post-test results. From the table above, it showed that the positive ranks showed a value of 37, which meant that in using mobile applications helped the students improving speaking skills, it could be seen that 37 students who took the speaking for informal interaction course succeeded in improving their

speaking skills. From the results of the table above, it also showed ties at number 3, which meant there were 3 students who did not experience changes in their speaking skills from their pre-test and post-test scores. These 3 students did not experience changes because they did not attend several meetings and did not do several independent assignments.

**Table 3. Test Statistics**

| **Test Statistics[a]** | |
|---|---|
| | Posttest - Pretest |
| Z | -5.420[b] |
| Asymp. Sig. (2-tailed) | .000 |

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Based on the output statistical values above, Asymp. Sig. (2-tailed) showed a value of $0.000 < 0.05$, so it could be concluded that the alternative hypothesis was accepted and the null hypothesis was rejected, which meant that the use of mobile applications could significantly improve students' speaking skills. There were differences in learning outcomes from the pre-test and post-test scores which had been carried out to measure the progress of students' speaking skills by giving the treatment using mobile applications during the learning process. There was a significant influence in the use of mobile applications on students' speaking skill.

### 3.3 The Students' Perception of Mobile Applications in Digital Project-Based Learning to Improve Students' English Speaking Skill

The last purpose of this research was to describe how students perceived mobile applications in digital project-based learning to improve English speaking skill. The researchers used interview data to capture students' perceptions. The interview focused on student's opinion, mobile applications used, advantages, weaknesses, speaking progress, understanding digital project-based learning, and suggestions on the use of mobile applications in digital project-based learning. The students' perception showed that the use of mobile applications in the classroom made learning more convenient for everyone, especially non-native English speakers who could learn more than they could have from a book alone and more completely than they could have understood through a smartphone.

*S3: Oh opinion, it's make me to it use to make easier when I study and that's have positive for everyone who doesn't have skill in English and now they can learn just from application not*

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*just the book but we just also see the phone and we can learn more than the book and it's more complete lengkap gitu and we can understand easily. (Opinion)*

The use of mobile applications was very easy; students could use them to practice English skills, complete assignments, find out information, or even receive the materials their lecturers offer them.

*S1: The use of mobile applications is really simple but we only use for doing a task or getting information or even getting the materials that the lecturer gives us, and I think that's explain more how we use this application mobile learning. (Opinion)*

Mobile applications helped students improved their English by listening to every conversation or discussion regarding English and then allowing users to translate or even utilized a dictionary application if they did not know the English vocabulary.

*S1: How this technology improve my English is that by listening every conversation or everything about English and then if I don't know the English words I can translate it or even use the dictionary, and I think that's how I improve my English more and more every day and every time. (Speaking Progress)*

*S3: Positive thing is it depends on how you use, but for me the positive thing is I can make a note, what is my mistake when I learn English and how to improve my English and how I can improving my vocabulary and so on. (Advantage)*

The students' strong self-esteem helped them avoid feeling insecure and allowed them to speak English more fluently since they were able to elaborate on their English, conducted further research, and learned everything about the project by using mobile applications.

*S1: The positive thing that I have the high self-esteem so I don't really insecure and then that improve my English speaking because by this project I can elaborate my English then searching even more or explore everything about this kind of lecture and I that's explain. (Advantage)*

The students learned how to make interactive duet videos to improve their speaking skill, increase their vocabulary with dictionaries, and sharpen their reading and writing skills through comic strip apps, etc.

*S2: Based on used pixton I can use how to make comic and also make the sentence and also speak how to speak fluency and the stress words and sentences. (Digital project through mobile apps)*

*S3: Ohh oke, first the positive in digital based learning is I can make me more confident in front of camera and then I can more explore my vocabulary when I speaking and third I will thinking fast when I speaking in front of camera that's not make a mistake that challenging for me (Advantage)*

By following their favorite content creators who posted about English language learning on social media sites like Tiktok, Instagram, and Facebook, the students were also able to learn the language.

*S3: Maybe like I said watching the content creator about the video how to speak confident and how to speak clearly and that up to me and I try to apa try to practice. (Suggestion)*

They learnt how to improve their grammar, expand their vocabulary, correct their mispronunciations, and practice speaking, reading, and writing.

*S3: Ya because cake not just we improve our skill speaking but we can also learn how to speak correctly by the watching video and cake just not like we write is the word in the blank but we can watching like Tiktok and the content more fun too and that's make me easily to understand. (Digital project through mobile apps)*

The drawback of smartphones was that they made students addicted to playing games, particularly social media, which cause them to lose track of time and priorities in life, and cause the eye problems from prolonged scrolling and viewing of smartphone information. The vulnerability of these mobile applications was that they were frequently breached by individuals acting without authorization, who then utilized them for their own gain, such as selling personal data to anyone who was not responsible for it.

*S1: The weaknesses or negative effect of this mobile application is that they often get hacked by enemy or people with the without any permission, and then use for his own advantage such as selling his everyone information for his enemy or even for everyone that doesn't have accountability of this, well I think that's the explaining. (Weakness)*

*S2: The use of mobile application is the negative thing is like we spent too much our time on epic mobile application and instead of using that we can also learn in real life not only spent too much time in mobile application and also it can decrease health eyes health. (Weakness)*

## 4. DISCUSSION

In recent years, using mobile applications to learn the English language has grown in popularity. Numerous research have been done to determine how well mobile apps work for language acquisition. Ameri (2020) asserts that English language instructors can use mobile devices to boost their students' enthusiasm. According to Ekoç (2021), mobile language learning programs have altered the way languages are learnt and have given prospective students new avenues to explore. Kacetl and Klímová (2019) show that mobile applications used for English language learning are efficient at enhancing language abilities, particularly in terms of remembering new vocabulary. Polakova and Klimova (2022) explain that students who experienced blended learning, which involved mobile applications in the language-learning process, outperformed those who only received traditional, face-to-face instruction. The integrated English language learning method has shown the value of mobile learning applications. Ameri (2020) adds that technology can improve the learning abilities of English language learners. Furthermore, Kacetl and Klímová (2019) say that mobile learning is growing in importance in education since it offers excellent opportunities for language

acquisition. The development of the learner's cognitive abilities, motivation to study in formal and informal settings, autonomy, and confidence, as well as the promotion of personalized learning, which aids low-achieving students in achieving their academic objectives, are some of its main advantages. In this research, the researchers found that the use of mobile application in the form of digital project-based learning could help the students improve their English skills especially their productive skill, speaking. The implementation process should pay more attention to the implementation stages such as planning stage, implementation stage, evaluation stage, reflection stage, and follow-up stage. This process needed good cooperation and collaboration between the teacher and the students. Despite the fact that mobile learning generally appears to be beneficial, based on this research findings, it is advisable to develop, plan, and implement it cautiously, in accordance with students' needs, and to teach different language skills in real-world learning contexts.

When it comes to speaking the language, students who are studying English as a foreign language frequently encounter a number of issues. Students frequently fear speaking English incorrectly, which can result in lack of confidence and shyness. The inability to speak English confidently is another issue that many students encounter. When required to talk in English, students could experience anxiety and fear, which may hinder their ability to express well. Another element that may have an impact on students' English-speaking abilities is shyness. Speaking in front of people can make students feel uneasy, which can make it challenging for them to improve their communication skills. Students' limited vocabulary is another issue they have when speaking English. It may be difficult for students to express themselves verbally, which can make it challenging for them to communicate clearly. Another typical issue students have while speaking English is poor grammar. English grammar can be difficult for students, which might hinder their ability to speak clearly (Chand, 2021; Soreh et al., 2022). This research also revealed that the students' main areas of difficulty were fluency, vocabulary, and grammar.

The use of mobile apps is a potential method for raising students' speaking abilities when learning English. Numerous studies have looked into this topic's applicability for mobile devices. In order to help students develop their speaking abilities and critical thinking while learning English, Kusmaryani et al. (2019) looked into the impact of mobile applications as learning aids. Online dictionaries, language translators, speech to text, speaking English, English grammar, critical thinking, WhatsApp, Google Chrome, YouTube, Weebly, and Gmail were among the mobile applications used. A convergent parallel mixed method design was

employed in the study to collect both quantitative and qualitative data. The findings demonstrated that using mobile apps helped students' critical thinking and speaking abilities. Using mobile applications, Criollo-C et al. (2022) suggested a hybrid methodology to enhance speaking abilities in English language acquisition. To improve students' speaking abilities, the system makes use of mobile technologies and educational applications. The study shows the portability, accessibility, and personalization advantages of mobile learning in the teaching of English as a second language/foreign language. The relevance of adopting mobile applications to improve English speaking abilities is emphasized by (Raj & Baisel, 2022). The development of language skills should be the main objective, and the programs used should be made to aid students in doing so. Ameri (2020) also talks about many attitudes that aid English language learners by enhancing their learning abilities through the use of technologies. According to the previous study and this study, using technology can improve learning abilities for English language learners. Overall, using mobile applications to learn English has produced encouraging outcomes in terms of raising students' speaking abilities.

There are several benefits and drawbacks of utilizing mobile applications to learn English based on the previous research and findings of this research (Ameri, 2020; Criollo-C et al., 2022; Kacetl & Klímová, 2019; Kusmaryani et al., 2019). The benefits are mobile applications make it easier for students to practice their English language abilities anywhere and at any time, students can focus on areas where they need to improve by using mobile applications that can be tailored to match their specific needs, students' motivation to learn can rise as a result of mobile applications that can make learning English more interesting and enjoyable, and numerous studies have revealed that using mobile apps can help users remember new terminology. The drawbacks are mobile apps might not offer as much engagement as face-to-face contact, which could restrict students' opportunity to practice speaking in a natural setting, students could become overly dependent on technology and fail to acquire the skills needed to communicate effectively in everyday settings, students may not receive fast feedback from mobile applications regarding their speaking abilities, which might make it challenging for them to pinpoint areas that require improvement, and mobile apps might not offer thorough instruction in English grammar, which could limit students' capacity for successful communication. To guarantee that students receive thorough education on all facets of the English language, mobile applications should be used as a complement to conventional language learning techniques. In this research, the disadvantage of smartphone was that they led to game addiction in students, especially with regard to social media, which made it difficult

for them to prioritize their lives and keep track of time. Additionally, extended scrolling and reading of smartphone information caused eye problems. These mobile applications were vulnerable because they were routinely hacked by those operating illegally, who then used them for their own gain, such as selling personal data to anyone not legally liable for it.

The use of mobile learning applications has been found to help with a wide range of learning trends, including vocabulary, pronunciation practice, listening and speaking skills, English reading with personalized intelligence, and many other mobile learning activities that enhance contextual language experiences. Students can practice their English speaking skill specifically in a convenient, interesting, and individualized way with the help of mobile applications. Teachers can assist students develop their speaking abilities and boost their willingness to learn English by integrating mobile applications into their lessons.

## 5. CONCLUSION

This research focused on investigating the use of mobile applications in digital project-based learning to improve students' English speaking skill. This research employed convergent parallel mixed-methods to reveal the implementation process of mobile applications in digital project-based learning to improve students' English speaking skill, the significant effect of mobile applications in digital project-based learning to improve students' English speaking skill, and the students' perception of mobile applications in digital project-based learning to improve students' English speaking skill. The participants of this research were 40 students at English education department Universitas Borneo Tarakan in Speaking for Informal Interaction course. The researchers collected data from documents, tests, observation, and interview which were analyzed quantitatively through statistical analysis normality test and Wilcoxon signed ranks test and qualitatively through coding and thematic analysis. The results showed that mobile applications used in this research were YouTube, Tiktok, Instagram, Duolingo, Talk, Elsa, Seesaw, Cake, Pixton, Speech to Text, and Capcut. The planning stage, implementation stage, evaluation stage, reflection stage, and follow-up stage are the five stages that must be taken into account when using mobile applications to learn English and improve students' speaking abilities. The effectiveness of mobile applications in digital project-based learning to improve students' English speaking skill can be seen from statistical analysis result through Wilcoxon signed ranks test which showed that the value of the asymptotic sign (2-tailed) 0.000 < 0.05 indicated that the alternative hypothesis was accepted and the null hypothesis was rejected, indicating that the use of mobile applications can greatly enhance students' speaking

abilities. The students' perception showed that the use of mobile applications in the classroom makes learning more convenient for everyone, especially non-native English speakers who can now learn more than they could have from a book alone and more completely than they could have understood had they only used a smartphone. The use of mobile applications is very easy; students can use them to practice English skills, complete assignments, find out information, or even receive the materials their lecturers offer them. Students' speaking abilities can be enhanced by using mobile applications for digital project-based learning. The findings of this study point to the potential educational benefits of using mobile applications like YouTube, Tiktok, Instagram, Duolingo, Talk, Elsa, Seesaw, Cake, Pixton, Speech to Text, and Capcut and creating multilingual speaking guide applications. The development of students' speaking abilities can also be accomplished through collaborative learning systems and project-based learning models.

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