

Development of Idiom Mobile Learning Application: Phraseology

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Abstract: Idiom Mobile Learning Application: Phraseology is an android platform application developed for primary schools aged 12 years old to improve their English knowledge because as we know, the English language has such an extensive vocabulary and complicated grammar, and students are rarely exposed to the slang words used by English speakers in everyday conversation. Hence, the Idiom Mobile Learning Application: Phraseology is proposed to provide an alternative way for primary school students to learn English idioms. The application not only provides the meaning of the idioms but also provides a video on how English idioms can be used in a conversation. The application is developed in the Android platform by using Unity 2020.3 with references to Agile methodology and it can be installed on any Android platform device.

Keywords: Idioms, English Language, Mobile Learning

1. Introduction

It takes time and dedication to learn every language there is in the world. English is not only important as a language in learning institutions but was also considered important within society [1]. In this new era of a developing world, learning the English language is a requirement to have effective communication that permits us to interact and exchange information with people all around the globe. Apart from that, as all the young children now are the ones who are going to grow up and lead the world, they need to learn the English language as early as they can speak. Most importantly, idioms are rarely used in everyday life. What we didn't know is that idioms play a great role in the enrichment of the English language. Thus, the objectives of this application are to design the content of the Phraseology learning application, to develop a Phraseology learning application mobile-based on the android platform, and conducting functional testing for children of age 12 years old.

Phraseology is a mobile learning application developed in android based on English for users. This learning application will consist of two main components, which are the tutorial module and the quiz module. The learning module will include all the common idioms, their meaning, and how the idioms are used in a sentence. To make the learning application more interesting, some pictures and audio will be provided in the application. This will help users understand the tutorial better. Besides that, a quiz

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module will be prepared for the user to refresh their memory after learning the tutorial. After the users have completed the quiz, the total score will be displayed.

In addition, the related work of the proposed application will be discussed in the next section including, domain case study background, learning model, mobile technology, and comparison of the existing applications. In section 3, Agile as the methodology is applied in the proposed application will be demonstrated. Section 4 will discuss the result and discussion of the application. Last but not least, the conclusion of the project will be summed up in section 5.

2. Related Work

2.1 Domain case study background

Each language has its collection of proverbs and phrases. These terms often have meanings that are not obvious just by looking at the individual words they contain. These terms are called "idioms". An idiom is a group of words in a fixed order that has a specific meaning that is different from the meaning of the individual words [2]. Idioms are categorized as a figurative language which is the use of words unusually or imaginatively. An idiom is a widely used proverb or phrase that has a metaphorical meaning that is different from the literal meaning of the sentence [3].

There are idioms learning applications that are already developed, and some of them lack of children's approach. Some of this idiom's application designs are more adult-like and have fewer pictures and images. Others are just a dictionary with a simple meaning of the idiom. Therefore, Idiom Mobile learning Application: Phraseology is proposed to be developed. Phraseology is designed to help younger children learn idioms in a fun and simpler way.

2.2 Learning Model

A learning model is described as a medium for learning new skills and information involving mental and physical mechanisms [4]. The learning model can be divided into several different styles and the primary being visual, auditory, and kinesthetic. The most interesting part of learning style is some people can change their style of learning based on the subject learn or sometimes by the comfort style of learning. For this project, visual and auditory learning styles have been chosen as the technology that will be used in the proposed application. Visual learner tends to envision the situation as if they were there, living in the situation. They use a lot of pictures, graphics, and colors, like a picture book for example [5], to help them express their ideas and thoughts whereas auditory learners learn most effectively by listening to the sound of a video or the teacher's voice. They like to read a text out loud and listen to them-self speaking [4]. This style of learning is also suitable for children to help them understand a subject.

2.3 Mobile Technology

Over the years, mobile technology has advanced at a neck break phase as a standard mobile device has evolved from being a call and messaging device to having a GPS, songs, FaceTime, and even a web browser to a console game and a PlayStation [7]. According to GSMA real-time intelligence data, the number of mobile device users in the world is 66.5% of the population, of which 2.71 billion out of 5.13 billion people own at least one mobile device [8]. Mobile technology has made everyday life becoming simpler and much easier [7]. It made it possible for a user in receiving and transferring files and data via the internet. With the presence of the internet also, gaining information has never been easier and it can be made from everywhere around the world with the tip of our finger. Nowadays, the student does not have to go through a hundred books and articles to search for information. People can also play video games on their computers rather than play them on their PC.

2.4 Comparison between Review Applications and Proposed Application

The feature and characteristics of the three mobile applications, English Idioms and Phrases [9], English Idioms [10], and Idioms and Phrases [6] are compared with the Phraseology Learning application. A variety of aspects will be compared which includes strengths, weaknesses, fonts used, and a lot more. The comparison result is tabulated in Table 1.

Table 1: Comparison of related application

Element	Idiom and Phrases	English Idioms and Phrases	English Idiom	Phraseology
Target User	For public use	For public use	For public use	For 12 years old
Multimedia element	Used text	Used text	Used text and sound	Used text and video
Animation	Does not provide animation	Does not provide animation	Does not provide animation	Provide 2D animation
Idioms	Show idioms from A to Z	Show idioms from A to Z	Show the idiom from A to Z and divide idioms into a different type	Divide idioms into four different types
Interactive Game	Choose the Idioms meaning	Complete the sentence with the correct idiom	Complete the sentence with the correct idiom	Choose the correct idiom based on the images given
Theme	Use only black color and white as the font color	Uses white and green as the main color without any background image	Uses bright colors without any background image	Uses pastel color and background image

3. Methodology

The methodology that has been chosen for this project is the Agile methodology. There are six phases in the Agile model which are the requirement analysis phase, design phase, development phase, testing phase, deployment phase, and review phase as shown in Figure 1. This methodology is chosen so that

the project can be improved in every stage of the development after it started and can be cycled through the process of designing, developing, testing, and deployment [11].

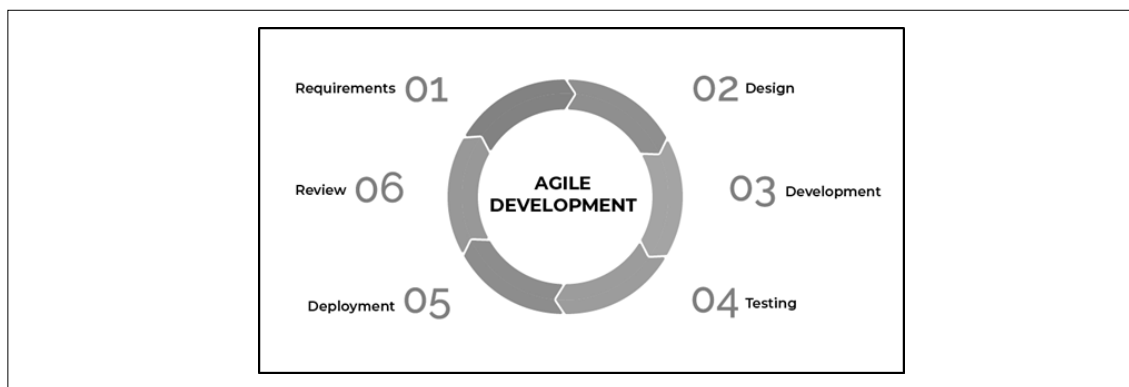


Figure 1: Agile Software Development Model [11]

3.1 Requirement analysis phase

In this phase, the requirements of the project including the problem statements, objectives, project scope, project significance, expected result, and project planning are determined. The user requirements were also collected by performing a user analysis. Questionnaires were designed and distributed to 30 target users who are in elementary school, aged 12 years old. This survey will help in gathering the target user’s behavior and the requirements of the proposed application. The result is shown in Figure 2. Moreover, a review of a similar existing application is conducted and a comparison is made to identify their strength and weaknesses. The reviews were considered as references for enhancing the proposed application

Throughout the survey, the Phraseology application is required to emphasize the use of English idioms in a conversation and sentence. The English syllabus of the students from standard 6 in primary school is not concerned with English idioms as much as other topics such as vocabulary, reading, and listening. Not only that, but the Phraseology application will also include the pronunciation and description of the English idioms.

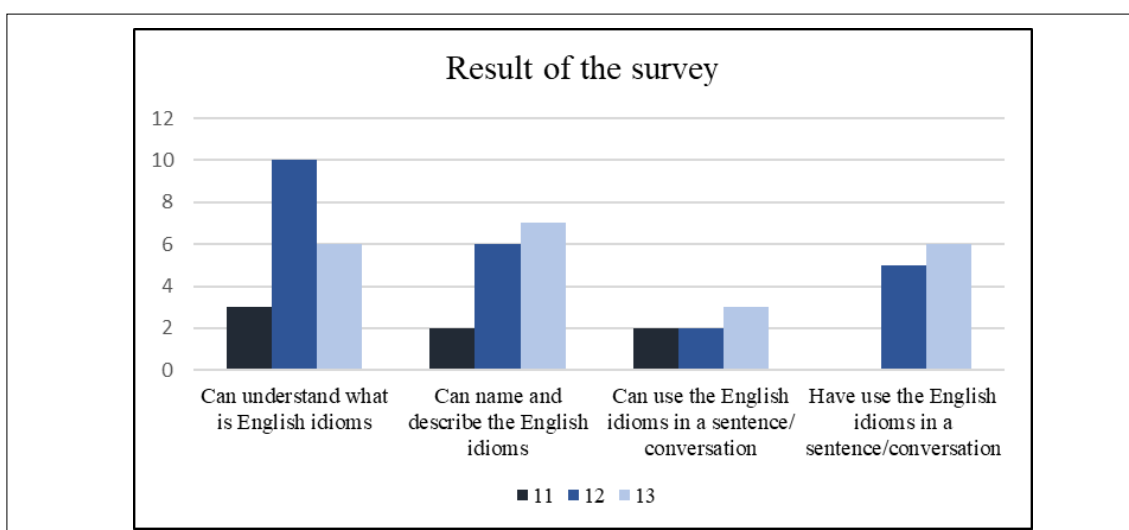


Figure 2: The results from the survey

Hence, at the end of this phase, the outcome is produced according to the task in this phase. Table 2 shows the result of the task in the requirement analysis phase.

Table 2: Task and outcome of the requirement analysis phase

Task	Outcome
<ul style="list-style-type: none"> Identify the target user 	<ul style="list-style-type: none"> Project proposal
<ul style="list-style-type: none"> Select the platform of the application. 	<ul style="list-style-type: none"> Gantt chart
<ul style="list-style-type: none"> Create a project schedule. 	<ul style="list-style-type: none"> Data requirement analysis from the respondents.
<ul style="list-style-type: none"> Requirement analysis form. 	
<ul style="list-style-type: none"> Identify the scope of the project. 	

3.2 Design Phase

For the design, the main goal and the learning outcomes of the Phraseology application are determined. The functional and non-functional requirements are proposed along with the hardware and software requirements that are used to create the application. The functional and non-functional requirements are shown in Tables 3, and 4 respectively.

Table 3: Functional requirements for the development

Functional	Description
Learning module	<ul style="list-style-type: none"> The system shall provide an appropriate button for the learning module. The system shall display the English idioms along with their meaning and how to use them in a sentence/conversation. The system shall display the English idioms with an audio button to play the sound. The system shall display how to use it in a sentence/conversation the English idioms in a form of audio.
Quiz module	<ul style="list-style-type: none"> The system shall provide an appropriate button for the quiz module. The system shall provide the right answer if users answer it wrongly. The system shall provide the mark of the quiz once users finished answering. The system shall provide the mark of the quiz once users finished answering.
User interaction	<ul style="list-style-type: none"> The system shall provide users with the ability to give input by touch screen on their Android mobile platform. The system shall provide users with the ability to navigate through the application by using appropriate buttons. The system shall provide users with the ability to play the audio for the English idioms.

Table 3: (continued)

Functional	Description
User interaction	<ul style="list-style-type: none"> The system shall provide users with the ability to play the video for how to use English idioms in a conversation or a sentence. The system shall provide users with the ability to answer the question given.

Table 4: Non-functional requirements for the development

Non-functional Requirement	Description
Performances	<ul style="list-style-type: none"> The response time of the button should not be more than one second for the user. The application shall be able to operate completely offline.
Legal	<ul style="list-style-type: none"> Users can only view the information about the idioms in the application without being able to modify the information.
Usability	<ul style="list-style-type: none"> The application’s interface is user-friendly and easy to use.
Cultural	<ul style="list-style-type: none"> This application will be using the English language.
Operational	<ul style="list-style-type: none"> The application shall be able to operate on any android device.

The design phase then continued with the user interface of the application designed by using wireframes for each interface page. Before designing the storyboards, flowcharts, depth structure and content structure are created to show the clear path of the application structure.

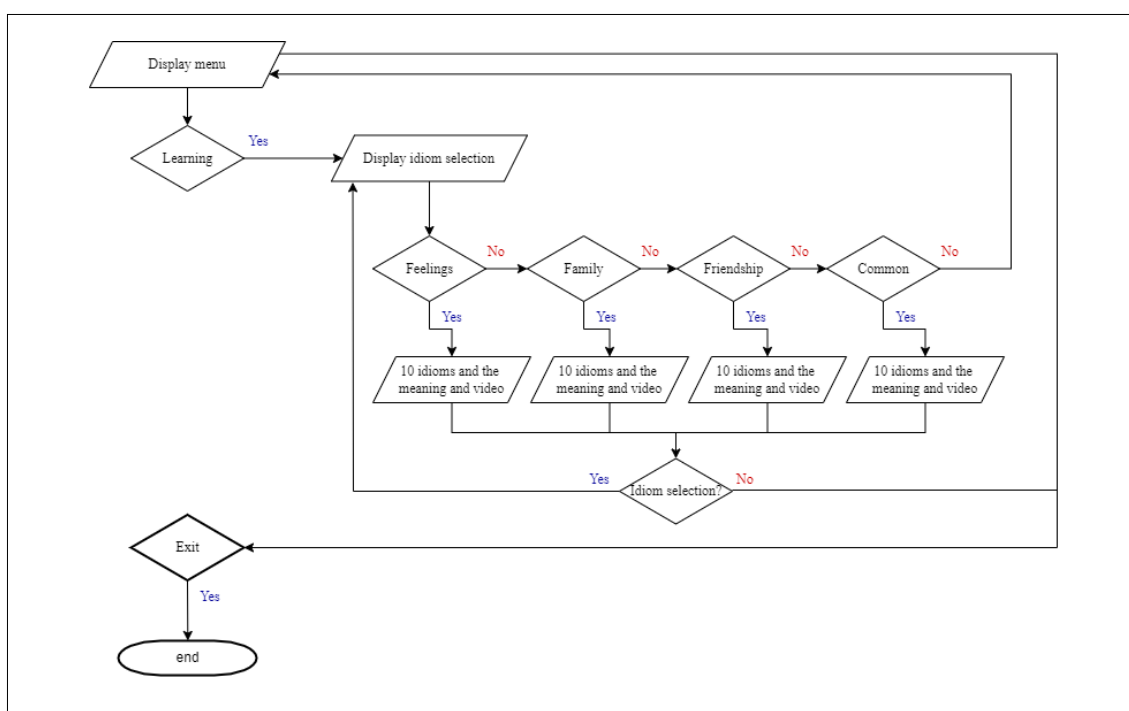


Figure 3: Flow chart of the Learn module

The building of a flowchart for the application allows the development process easier to be carried out more. The phraseology Learning application consists of two modules: Learn, and Quiz. The Learn module consists of four types of idioms: “Feelings”, “Family”, “Friendship”, and “Common” as shown in Figure 3. For the Quiz module, the users will need to answer a total of 10 questions.

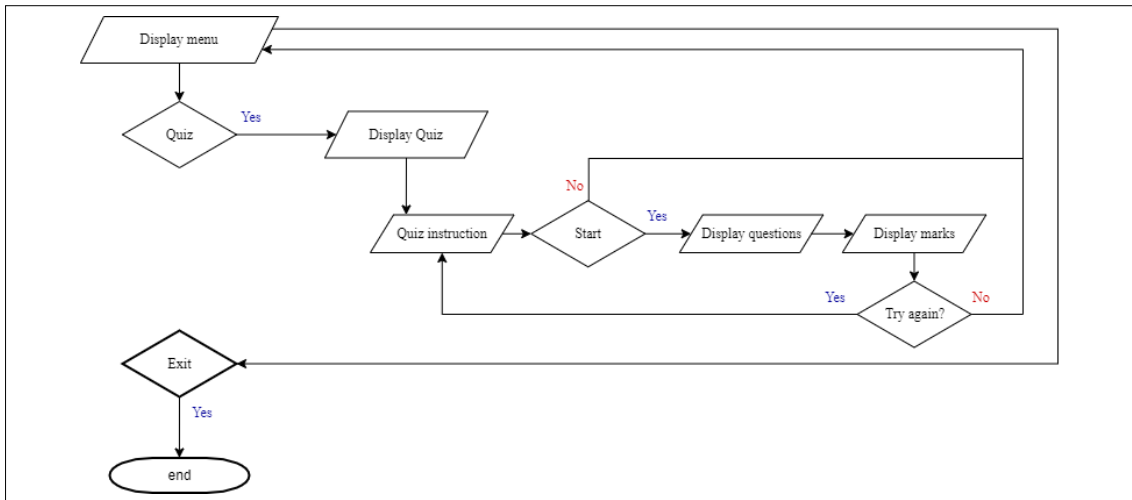


Figure 4: Flow chart of Quiz module

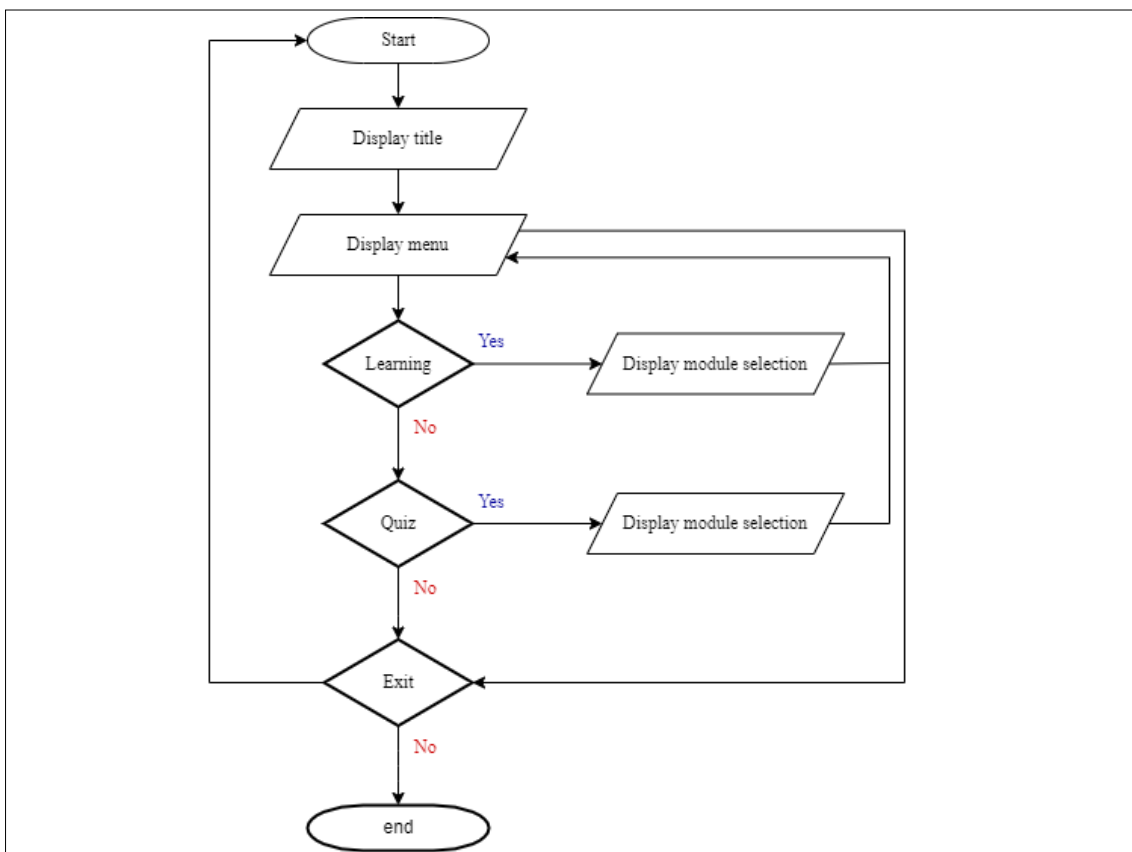


Figure 5: Flow chart of Phraseology Learning application

After that, the application will show the user's marks. Then, the users can choose to “try again”, and if the user chooses not, it will go back to the Main Menu. The flowchart of the Quiz module is shown in Figure 4. The overall structure of the flowchart is shown in Figure 5.

Figure 6 shows the content structure of the Phraseology application. During the content structure of the phraseology application, the goal and the learning outcomes for each module, lesson, and topic are determined. Content structure assists in organizing the content and the essential information should be included in the application. There are two main modules in the application which are learning and quizzes. The Learning module consists of 40 English idioms, their meaning, and how the English idioms can be used in a sentence or conversation. There is only one lesson provided with the Quiz module.

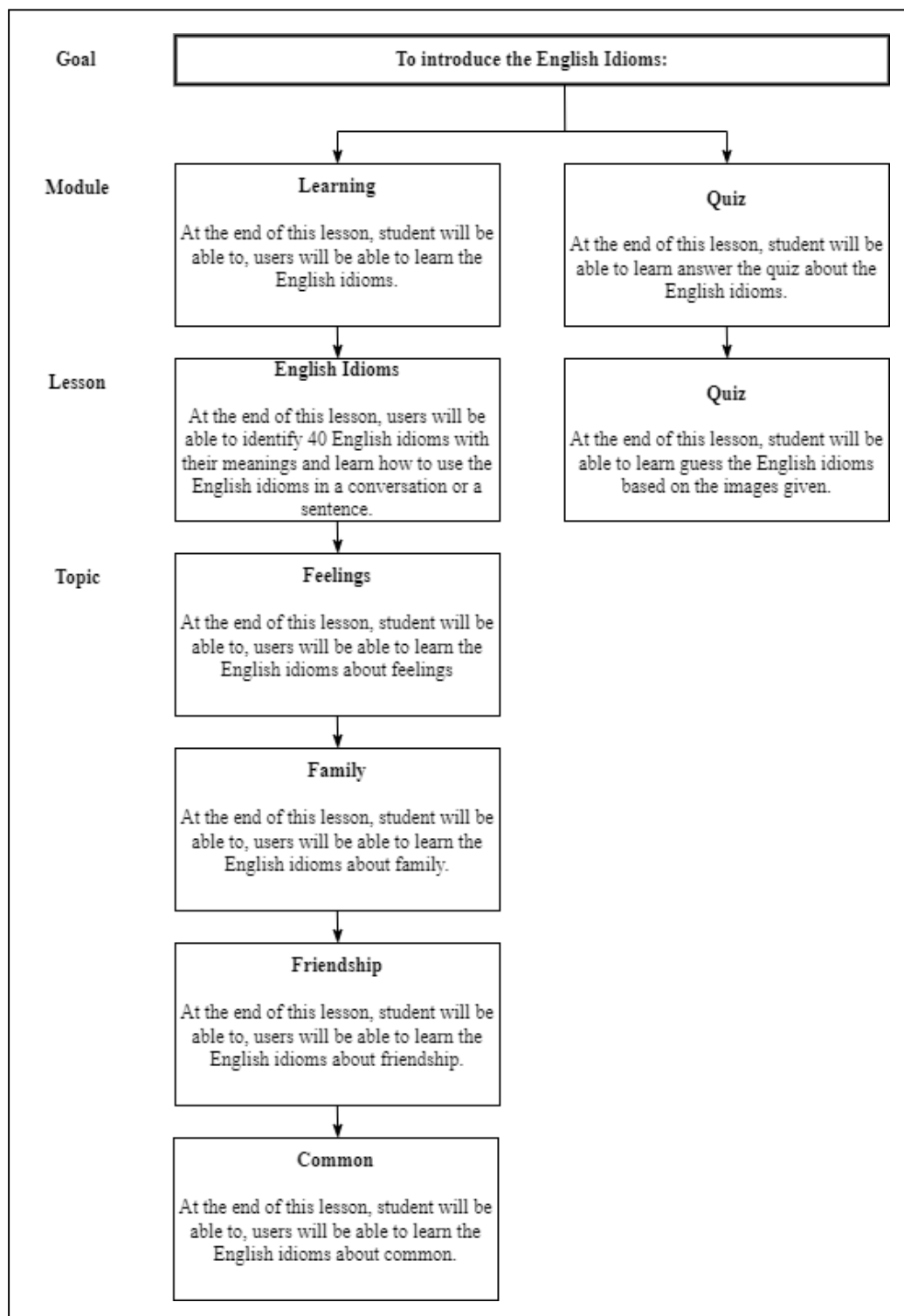


Figure 6: Content structure of Phraseology application

Depth structure refers to the complete navigation which describes all the links between the components of the project. The user will notice that there are lessons and topics provided after they choose the desired module. Each topic in the Learning module comes with a video that will explain how the idioms can be used in a sentence or a conversation. There is only one exercise provided in the Phraseology learning application. When the user selects the Quiz module, they will be an instruction that tells users how to answer the question and when they select start to answer the questions, there is a total of 10 multiple choice questions that need to be answered by the user. After answering all the questions, the user can select return to the main menu or try to do the quiz again. The content structure of the Phraseology application is presented in Figure 7.

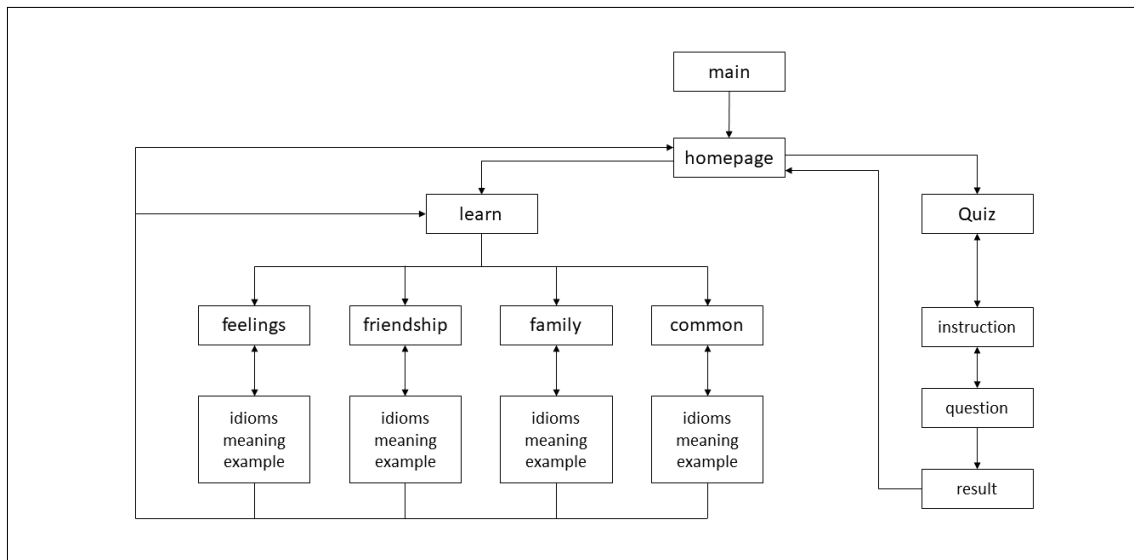


Figure 7: Depth structure of Phraseology application

Furthermore, the storyboard is used to describe the application in detail to show the sequence of the graphics interface representation. Appendix A shows the storyboard of the application.

Therefore, the outcome is produced according to the task at this current phase. Table 5 shows the task and outcome of the design phase.

Table 5: Task and Outcome of the Design Phase

Task	Outcome
<ul style="list-style-type: none"> Proposed the structure of the application 	<ul style="list-style-type: none"> Flowchart, content structure, and depth structure
<ul style="list-style-type: none"> Design the storyboard 	

3.3 Develop Phase

The interface is developed in the Unity project using the C# programming language based on the storyboard in the design phase. Some of the features will be explained in detail such as the 2D animation video, the play and pause button script for the video, the quiz question, the scoring method, and the audio components. Figure 8, Figure 9, and Figure 10 show the 2D animation video process.

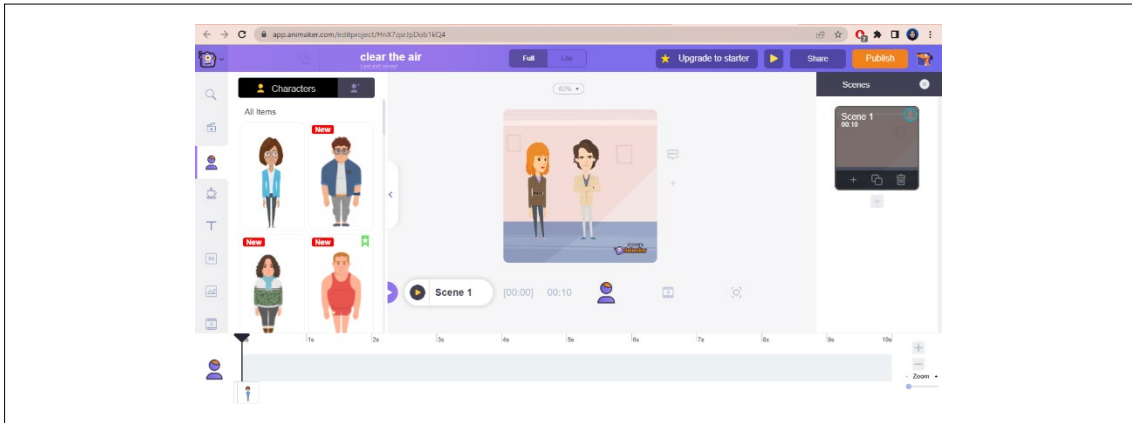


Figure 8: Creating the 2D animation using the AniMaker website

Figure 9 shows the 2D animation video created using a website called AniMaker. This website comes with a ready-made character. The character is animated inside the website and voices are added to the characters. The 2D animation video is then published in .mp4 format.

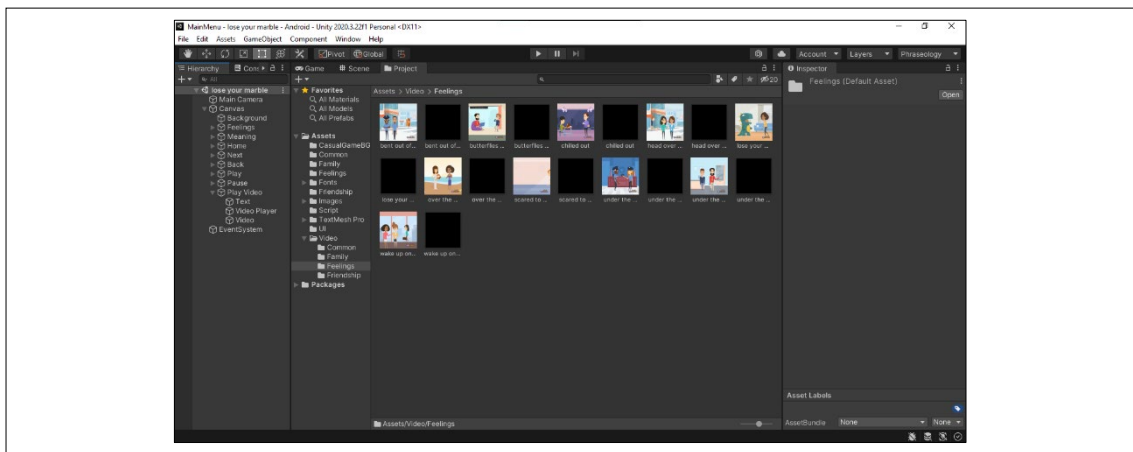


Figure 9: Importing the 2D animation video into the Unity library

The .mp4 format video is then imported into the Unity library as shown in Figure 10. Each video is named based on the idioms that they represent.

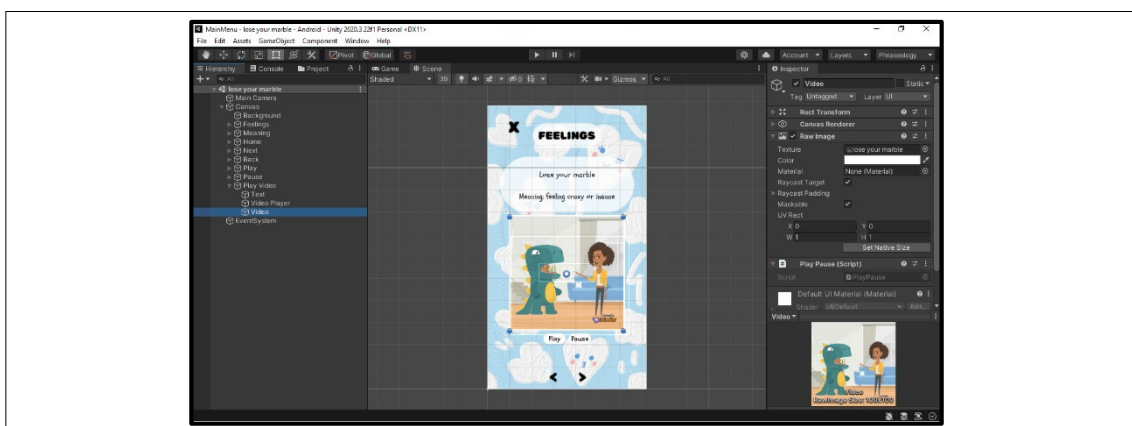


Figure 10: 2D animation video inserted into the right scene

The process then will continue with inserting the video into the appropriate idiom types and meanings as shown in Figure 10. There is a total of 10 idioms in each type. Users can use the '<' and '>' and the bottom screen to go through all ten idioms in that idiom type. Users can use the 'x' button if they want to learn different idiom types.

A play and the pause button is implemented on the video in the Learning module. Users can use the buttons to play or pause the button when they need. Figure 11 shows how the buttons work in Unity. Figure 11 and Figure 12 show the play and pause button script for the video.

```
private void Awake()
{
    video = GetComponent<VideoPlayer>();
}

public void PlayVideo() {
    video.Play();
}

public void PauseVideo() {
    video.Pause();
}
```

Figure 11: Play and Pause Script Snippet

Figure 12 shows a script called PlayPause.cs are added to the button. The script is added to the button so that the button can function as expected.

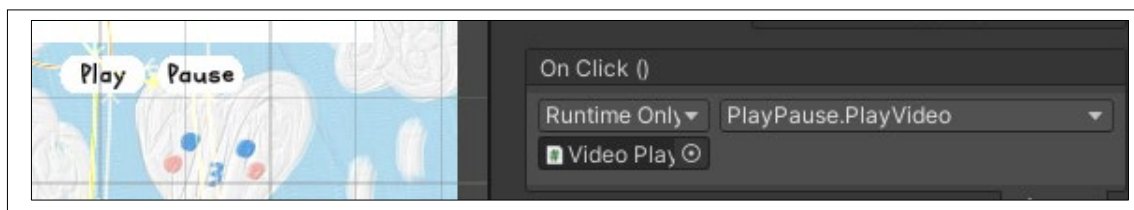


Figure 12: Play and Pause Script inside the Play and Pause button

When the user completed the learning module, they can choose to exit the application or answer the quiz provided. The quiz module helps test the user's understanding of the idioms. Figure 13, Figure 14, and Figure 15 show the process of implementing the Quiz module.

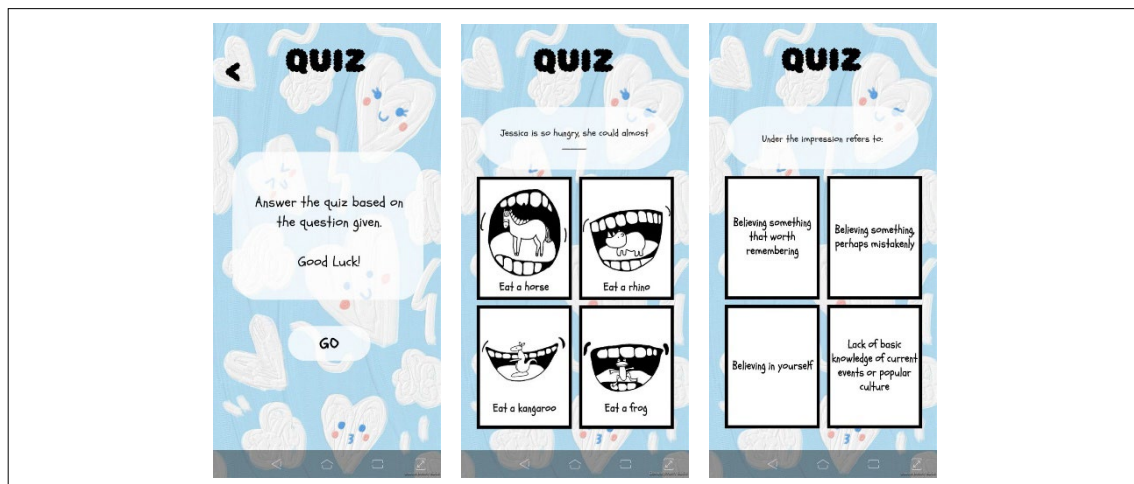


Figure 13: Quiz module interface

Figure 13 shows the Quiz module interface. There is a total of 10 questions and the position of the question will change each time users open the Quiz module.

```

public List<QuestionAndAnswer> QnA;
public GameObject[] options;
public int currentQuestion;

private void Start()
{
    totalQuestions = QnA.Count;
    GoPanel.SetActive(false);
    generateQuestion();
}

void generateQuestion()
{
    if(QnA.Count > 0)
    {
        currentQuestion = Random.Range(0, QnA.Count);
        QuestionTxt.text = QnA[currentQuestion].Question;
        SetAnswers();
    }
    else
    {
        Debug.Log("Out of Questions");
        GameOver();
    }
}
    
```

Figure 14: Quiz module Script Snippet

A multiple-choice question is implemented in the Quiz module. In the multiple-choice question, there is a set of list questions to be prepared as well. Figure 14 shows the script snippet of the Quiz module. In the first snip picture, a public class has been created to store the Question and Answers for the Quiz. All the question is filled inside the Quiz Manager in the inspector as shown in Figure 15. Each question box comes with an answer box that can be filled with an answer. From the answer, the correct answer is filled in for the question based on the position of the answer in the box. The question will then be generated in a random position until all ten questions are out and the screen will then show the total mark.

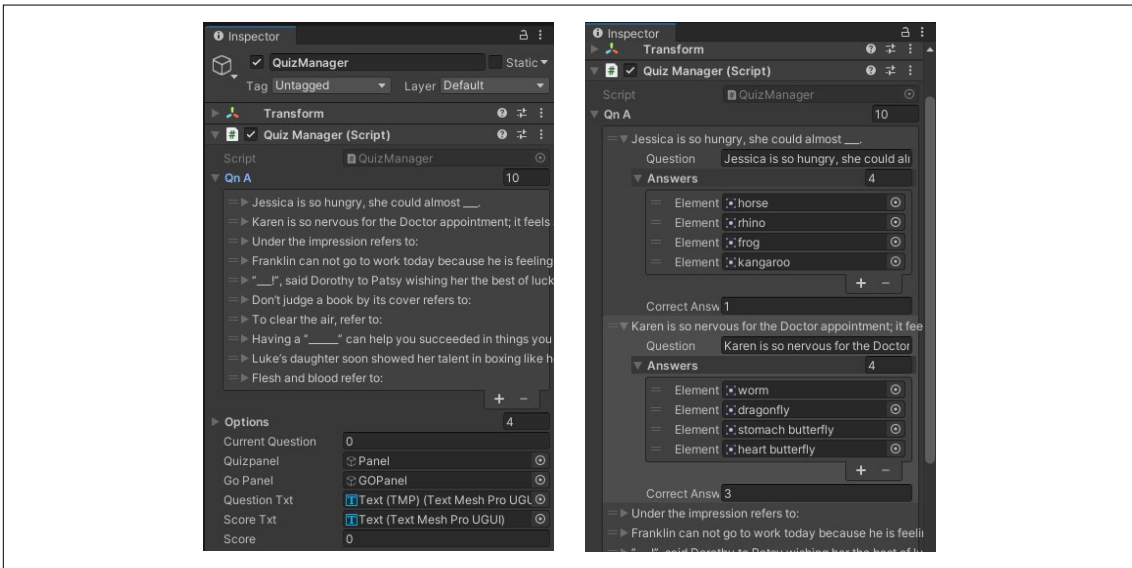


Figure 15: Quiz module Question and Answers

The score of the quiz module will appear after users finished answering all questions. Figure 16, and Figure 17 show the scoring method.

```

if(isCorrect)
{
    GetComponent<Image>().color = Color.green;
    Debug.Log("Correct Answer");
    quizManager.correct();
}
else
{
    GetComponent<Image>().color = Color.red;
    Debug.Log("Wrong Answer");
    quizManager.wrong();
}
    
```

Figure 16: Answers Color Change

Figure 16 shows the script snippet of the answer color change in the Quiz module. By using the if-else statement, when the user selected the correct answer, the answer button color will turn into the correct color, green. QuizManager.wrong is the function where it turns the wrong answer into the wrong color, red.

```

public void correct()
{
    //right answer
    score += 1;
    QnA.RemoveAt(currentQuestion);
    StartCoroutine(WaitForNext());
}

public void wrong()
{
    //wrong answer
    QnA.RemoveAt(currentQuestion);
    StartCoroutine(WaitForNext());
}

void GameOver()
{
    GoPanel.SetActive(false);
    GoPanel.SetActive(true);
    ScoreTxt.text = score + "/" + totalQuestions;
}

```

Figure 17: Scoring Method Script Snippet

For each question that the users answer correctly, the score will add '1' but if the users did not answer correctly, the script will not be adding anything and the mark will be the same as the previous one. The question will keep spawning until all ten questions are out and answered. The script snippet is shown in Figure 17.

The audio component in the Phraseology application includes the music background and the sound effects. Figure 18 and Figure 19 show the audio components applied to the Phraseology application in Unity.

```

public class ButtonAudio : MonoBehaviour
{
    public AudioSource mySounds;
    public AudioClip clickSound;

    public void ClickSound() {
        mySounds.PlayOneShot(clickSound);
    }
}

```

Figure 18: Audio Component

The background music is added to the first interface and the Quiz module. A .mp3 music format is added to the AudioClip box and the music will loop until the user goes to the next interface. The second script snippet shows the script for when the button is clicked, a 'clicked' sound will be heard.

Figure 19 shows the audio setting menu for the background music and the 'clicked' sound effect. Users can set the volume from low to high in the setting menu based on user preference.

```

void Start()
{
    v.value = PlayerPrefs.GetFloat("music", 1f);
    s.value = PlayerPrefs.GetFloat("sound", 1f);
}

public void setVolume (float volume)
{
    audioMixer.SetFloat("music", volume);
    PlayerPrefs.SetFloat("music", volume);
}

public void setSound (float sound)
{
    audioMixer.SetFloat("sound", sound);
    PlayerPrefs.SetFloat("sound", sound);
}
    
```

Figure 19: Audio Setting Menu

Hence, at the end of this phase, the outcome is produced according to the task. Table 6 shows the task and outcome of the development phase.

Table 6: Task and Outcome of the Development Phase

Task	Outcome
<ul style="list-style-type: none"> Develop the application by using the Unity game engine. 	<ul style="list-style-type: none"> Complete building of the application.

3.4 Testing Phase

The conversion of files is needed in this phase before delivering the project. The purpose of conversing the file is to allow the demonstration of a Phraseology application to run in mobile technology. The alpha testing was carried out by the developer during the development process until the end of the project and it is performed based on the button functionality. Some errors have happened such as the audio setting menu sliders cannot be used and the next and back button in the Learning module being hidden behind the play and pause buttons. Table 7 shows the result of the alpha testing.

Table 7: Task and Outcome of the Alpha Testing

Button	Expected Result	Actual Result	Action
Start the application button	Navigates to the main menu	Function well as expected	No action needed
Learning module button	Navigates to the Learning module	Function well as expected	No action needed
Quiz module button	Navigates to the Quiz module	Function well as expected	No action needed
Exit button	Exit the application	Function well as expected	No action needed
Audio setting menu	Turn the audio in the application low and high	The audio slider did not work	Add new script onto the slider

Table 7: (Continued)

Button	Expected Result	Actual Result	Action
Home button	Navigates to the main menu	Function well as expected	No action needed
Feeling button	Navigates to the Feeling type idiom	Function well as expected	No action needed
Family button	Navigates to the Family type idiom	Function well as expected	No action needed
Friendship button	Navigates to the Friendship type idiom	Function well as expected	No action needed
Common button	Navigates to the Common type idiom	Function well as expected	No action needed
Play button	Play the video in the Learning module	Function well as expected	No action needed
Pause button	Pause the video in the Learning module	Function well as expected	No action needed
Next button	Navigates to the next idiom	The button was hidden behind the pause button	Lock the button at the middle bottom of the screen
Back button	Navigates to the previous idiom	The button was hidden behind the play button	Lock the button at the middle bottom of the screen
Quiz answer button	Turn green when users answer correctly and turn red when users answer wrong	Function well as expected	No action needed
Replay button	Replay the Quiz module	Function well as expected	No action needed

The beta testing was done by the target user after the end of the application development, and the result of the user acceptance testing is explained in detail in the section of Result and Discussion. Table 8 shows the task and outcome of the testing phase.

Table 8: Task and Outcome of the Testing Phase

Task	Outcome
<ul style="list-style-type: none"> • Import the application to APK format 	<ul style="list-style-type: none"> • Phraseology application in APK format
<ul style="list-style-type: none"> • Conduct alpha testing 	<ul style="list-style-type: none"> • Result of the alpha testing

3.5 Deployment Phase

After the proposed application has been tested and all the necessary processes are made, it will then proceed to the deployment phase [12]. The Phraseology Learning application is uploaded into Google Drive to allow others to download it. Table 9 shows the task and outcome of the deployment phase.

Table 9: Task and Outcome of the Deployment Phase

Task	Outcome
<ul style="list-style-type: none"> • Upload the APK file to Google Drive 	<ul style="list-style-type: none"> • Allow others to download in Google Drive

3.6 Review Phase

The final phase is the review phase where the developer is required to make changes according to the feedback and comments from the user. If the users find any problem regarding the application, depending on the problem, the problem will be fixed in this phase. Table 10 shows the task and outcome of the review phase.

Table 10: Task and Outcome of the Review Phase

Task	Outcome
<ul style="list-style-type: none"> • Collect feedback and comments from the users using the Questionnaire. 	<ul style="list-style-type: none"> • Made changes in the form of bug fixes and enhancements based on the limitations.

4. Results and Discussion

4.1 Beta Testing

In this topic, the testing result of beta testing was analyzed. All of the respondents had completed the entire application when they carried out the beta testing. The questionnaire was arranged into four sections which consist of four to five questions each. Elements that are being evaluated are the concept of the application, the content of the application, the Audio and Animation of the application, and the Button and design of the application. Figure 19, Figure 20, Figure 21, and Figure 22 display the analysis of the Beta testing.

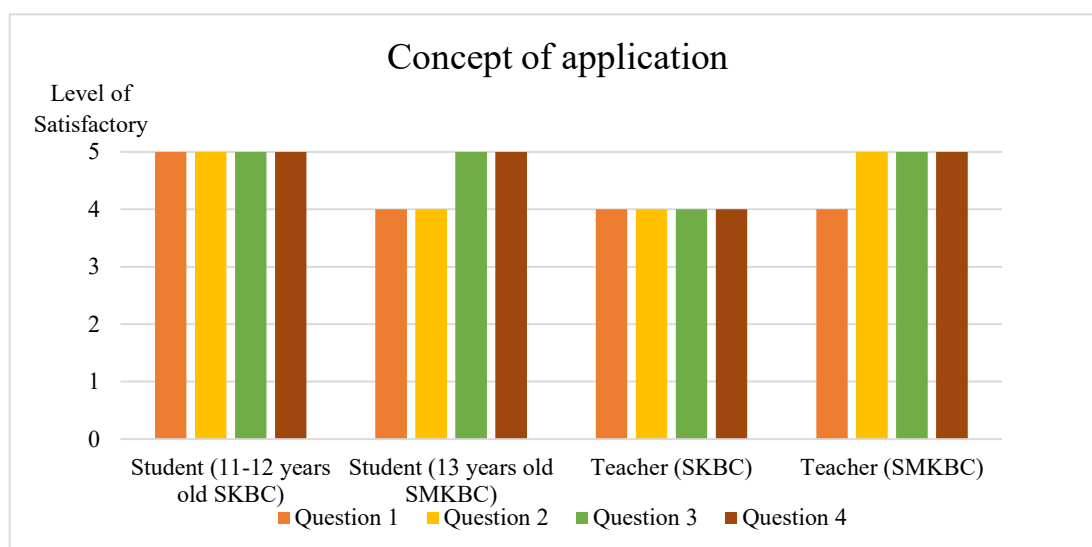


Figure 19: Concept of Application Evaluation

Figure 19 illustrates the result of the first section of the evaluation, the concept of the application. 90% of the respondent feel satisfied with the concept of the application. Some of the students even mention that the Phraseology learning application is a great platform to learn English idioms.

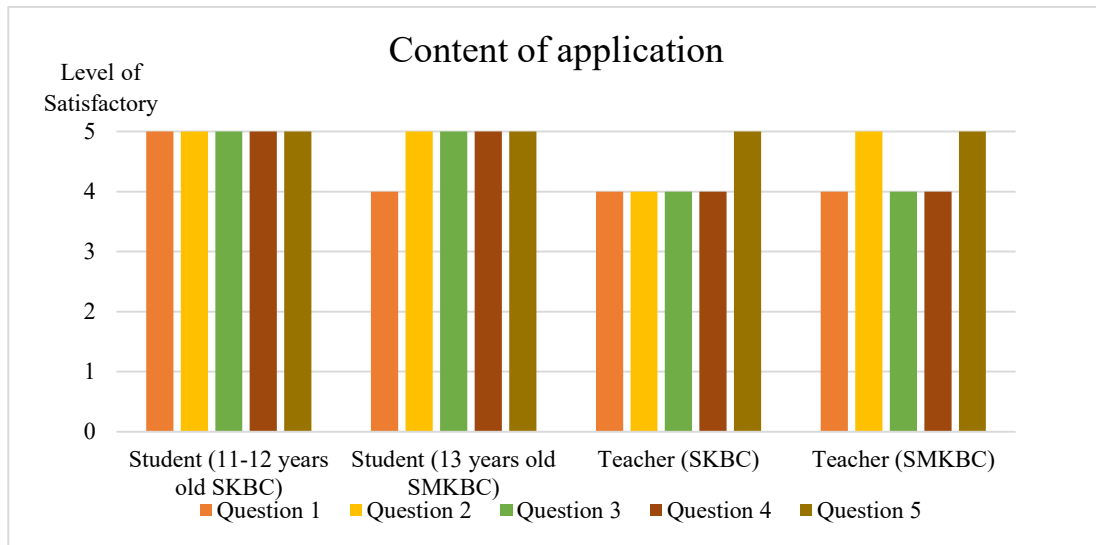


Figure 20: Content of Application Evaluation

Figure 20 demonstrates the bar chart for the content of the application evaluation. The overall result is 85% and it illustrated most of the respondents agreed with the content used to developed the application. Although so, a teacher from Sekolah Menengah Kebangsaan Bukit Changgang (SMKBC), did suggest that maybe adding more idioms and different types of idioms can help students understand the English idioms better.

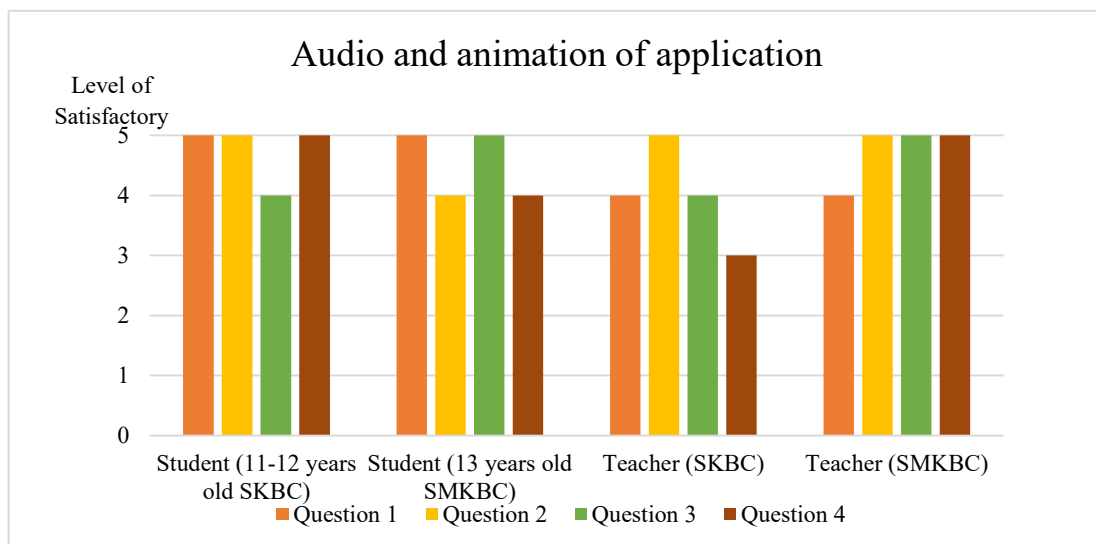


Figure 21: Content of Application Evaluation

Figure 21 indicates the bar chart of the Audio and animation evaluation of the application. There is a minor setback coming from the audio part, where the audio coming from the video is a little hard to listen to, and that user need to wear an earphone to be able to listen to it more clearly. But the teacher and students did state that the explanations from the video are easy to understand and are actually a good way in teaching students how an idiom can be used in everyday life. Overall, 70% of the respondent feel satisfied with the audio and animation of the application.

The last bar chart shows the Button and design of the application evaluation in Figure 22. The overall result for the evaluation is 85%. All the respondents agreed that the design of the interfaces is suitable and nice for 12 years old. The text also can be read easily along with the button-sized and the color chosen for the application

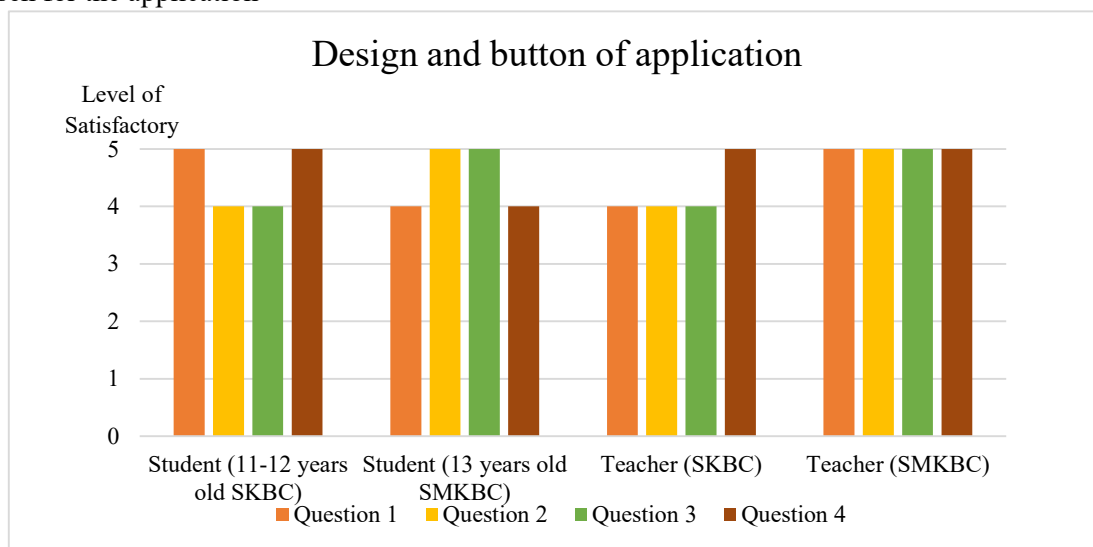


Figure 22: Content of Application Evaluation

Therefore, after analyzing the result of the Beta testing, it is indicated an overall positive feedback rate of 85.02%. To sum up, the beta testing is showing a positive result as most of the respondents believed that the Phraseology Learning application is developed successfully since it has a good user interface, well functions and provides the learning outcome to the user.

4.2 Discussions

Based on the outcome of the beta testing, the Phraseology Learning application has received positive feedback but also a few limitations regarding the module. The strength and limitation of the Phraseology Learning application are outlined in Table 9.

Table 9: Strengths and Limitation of Phraseology Learning Application

Strengths	Limitations
<ul style="list-style-type: none"> The user acceptance level of the Phraseology application is high, and end users enjoy the application while using it. Phraseology application contain multimedia elements such as graphical content, animations, and audio component. Phraseology application is developed well in terms of its functionality, it has background music and sound effects. The idioms are explained in a form of 2D animation video with characters and situations. Phraseology application is developed for android devices and the user can use it at any time and anywhere. 	<ul style="list-style-type: none"> There is only one type of quiz in the Quiz module The total number of idioms in the application is only forty while there are more than 40 idioms in total. There is only four types of idiom in the application. The question provided in the Phraseology application remained the same each time user used the Quiz module There is no indication of which one is the right answer when the user answer the question wrong.

5. Conclusion

To be concluded, the Phraseology Learning application is developed successfully, and the application has successfully delivered the learning outcome of the English idioms. Also, by using a well-planned Agile methodology, the Phraseology Learning application has been developed within a predetermined given deadline. Also, the testing phase yielded valuable feedback and the result of the user acceptance level achieved an overall positive rate of 88.01%. Moreover, the objectives of this project are accomplished, and the strengths and limitations of the application have been outlined in the discussions. By improving these limitations, there are some suggestions to enhance the Phraseology application. The future works recommended are depicted as follows:

- Update the application to include additional components and expand the number of questions in the Quiz module, the number of idioms, and the idiom type.
- Rotate a different question in the Quiz module so that users get to answer a different question each time they use the Quiz module.
- Add a script that corrects the user's answer when they answer wrong (for instance change the correct answer to green when the users answer's is red).

Ultimately, several suggestions for future work to improve the Phraseology application were offered, and it is believed that this application will continue to improve in the future.

Acknowledgment

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Appendix A

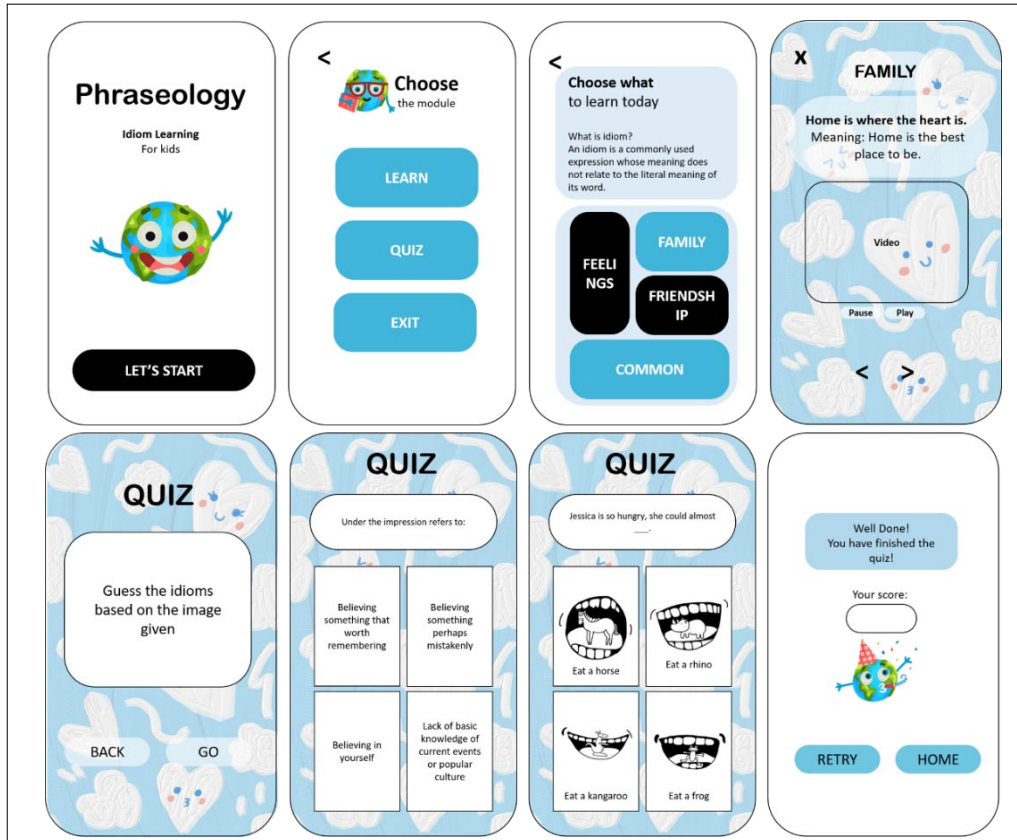


Figure 23: Phraseology Learning Application Storyboard

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