

We GET Vegetables: Learning Application of Vegetables

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Abstract: Vegetables are important for children's health but most of them did not like to eat vegetables and it causes them lack of interest to learn vegetables' names. Moreover, most green vegetables which are similar in colour and shape are out of the school syllabus. Hence, We GET Vegetables learning application that uses a gamification approach is developed for Chinese primary school students ages seven to nine years old to learn about types of vegetables. This application contains three modules which are learning module, quiz module, and game module. The ADDIE Model is used as methodology, while Unity and C# programming languages are used to develop the application. The level of user acceptance is high with 90.3% positive feedback by using the System Usability Scale (SUS) and functionality is high with more than 22 respondents giving positive feedback. The objectives of this project have been achieved and some improvements that could be made in the future to enhance the application are suggested.

Keywords: Vegetables, Learning Application, Gamification, ADDIE Model

1. Introduction

Vegetables are plants that are consumed by humans and animals as food. They are part of a plant that is eaten as food by humans and animals [1]. The word 'vegetable' also refers to all edible plant matter that includes flowers, fruits, leaves, stems, roots, and seeds. Most types of vegetables are classified by plant matter. Vegetables have high vitamins, minerals, fibre, and are rich in nutrients which are able to build up a stronger and healthier body, especially for children to grow up [2]. Learning different types of vegetables not only helps them increase their vocabulary but also reinforces healthy eating habits [3]. Most children do not like to eat vegetables as most vegetables are green and they reject the vegetables' taste and also smell [4]. This may cause children to lose interest in learning anything about vegetables. Some of the vegetables' names are included in the primary school syllabus but they also have trouble learning the names of vegetables. Some names of vegetables that are almost similar are out of the school syllabus. Due to the Covid-19 pandemic, the children are not allowed to go to the wet market with their parents and this causes them to lose a chance to learn from their life experiences. Although there are a lot of learning names of vegetable applications in the market, most of them only

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implement the learning information without any quiz or test module to test the knowledge after learning. To address these problems, We GET Vegetables, a learning application is proposed to be developed for children to learn the types of vegetables' names and their pronunciation in English, Malay and Chinese languages. This project is developed to fulfil three objectives: (i) to design We GET Vegetables mobile learning application for Android; (ii) to develop We GET Vegetables learning application by implementing gamification approach; and (iii) to perform functional and user acceptance testing to the target user.

The target users of this application are children in the age of seven to nine years old especially for the Chinese primary school students from Year One to Year Three. The application includes three modules which are Learning module, Quiz module, and Game module. In the learning module, vegetables are categorized into nine groups. Each group includes five to ten flashcards. In the flashcard, the vegetable names in English, Malay and Chinese will be displayed with the real picture of the vegetable together with the pronunciation of the vegetable's name in English, Malay and Chinese. In the Quiz module, there are three modes which are easy, moderate, and hard. The quiz is designed using multiple choice questions. The questions will show in word form, pictures form, audio form or video form and the user needs to answer based on the question given. Each quiz mode will have ten questions and it must be completed in the given time or else the quiz will end and the user has to take it again. For the Game module, there are three games which are puzzle, match and collect vegetables games for users to train their memory and also their response toward the name and the picture of vegetables.

The related work of the project about the technology used and reviewed applications will be discussed in the next section. The methodology used and results of testing in this project followed by the conclusion will also be discussed after the related work section.

2. Related Work

This section will discuss the related technology used in the project which are gamification and mobile technology. Exploration of similar types of learning applications related to the project are also discussed.

2.1 Gamification

Gamification is the use of game elements and design techniques in a non-gaming context such as in education. Various concepts used in gamification are points, badges, rewards, leaderboards, ranks, and levels. It can improve students' performance, engagement, and satisfaction as it is able to motivate students to learn and enjoy education tasks. In other words, it can improve academic achievement and also plays an important role in cognitive development. In gamification, the game-based learning concept gives a positive impact which increases intrinsic and extrinsic motivation for students to complete their activity [5].

Gamification has become the technology tool that is widely used in the learning process of the education field. Based on the journal Gamification Strategy to Support Self-Directed learning in an online learning environment, the implementation of gamification in education is able to increase learners' performance and self-directedness towards the learning experience. Gamification gives a positive impact in learning as students are able to learn something new or useful knowledge when playing. The current trend also shows that learning applications in the market have implemented gamification technology to the applications [6].

2.2 Mobile Technology

Mobile technology is the most widely used Information and Communication Technology (ICT) tool in our daily life especially in education. Mobile technology has become one of the attractive technologies that is widely spread around the world and it is becoming an indispensable service for people in any

age [7]. Smartphones, laptops, tablets and iPads are the devices that have the potential to play a useful role in promoting academic learning [8]. Android is one of the operating systems and development platforms in mobile technology. It is an open source and it supports mobile phones to change their function to fulfill educational needs [9].

2.3 Current Applications Review

There are many types of current applications that provide learning vegetable names in the market. From the research, the three most similar applications are Learn Vegetables Name [10], Fruits and Vegetables [11] and Learn Fruits and Vegetables [12]. The comparisons between the three reviewed applications and proposed application are shown in Table 1.

Table 1: The comparison between Learn Vegetables Name, Fruits and Vegetables and Learn Fruits and Vegetables applications and the proposed application

Applications Feature	Learn Vegetables Name	Fruits and Vegetables	Learn Fruits and Vegetables	We GET Vegetables
Platform version required	Varies with device	Android version 4.1 and above	Android version 2.3 and above	Android version 7.0 and above
Learn about	Vegetables name	Vegetables and fruits name	Vegetables and fruits name	Vegetables name
Module	Learning module only	Learning module, Quiz module and Game modules	Learning module, Quiz module and Game modules	Learning module, Quiz module and Game modules
Language for pronunciation of name	English only	Polish, English, German, Russian, French, Portuguese, Italian, Turkish, Hindi, Indonesian and Korean	English only	English, Malay and Chinese
Application based Languages	English	English, German, Spanish, French and 36 other different languages.	English	English
Type of questions form for quiz module	No quiz module	Word form and picture form only.	Word form and picture form only.	Word form, picture form, audio form and video form
Additional feature	No additional features.	Provides screen lock protection to prevent shutting down the application.	Give clear instructions for the user in the game modules.	A clear instruction for the user in game modules.

Based on Table 1, three of the review applications do not contain Malay and Chinese languages for the pronunciation of vegetables' names, and the type of questions form for quiz modules is only in word and picture form except the Learn Vegetables Name application only contains learning module. For

improvement, We GET Vegetables application will contains pronunciation of name in English, Malay, and Chinese languages and the type of questions form include word, picture, audio, and video forms.

3. Methodology

The methodology used in this project is the ADDIE Model. The ADDIE model is a systematic teaching development method that is almost equivalent to instructional systems development (ISD). The model includes five phases which are Analysis, Design, Development, Implement and Evaluation [13]. All the phases can go to the evaluation phases at any time and decide whether to enter the next step based on the feedback in the evaluation phase. Figure 1 shows the ADDIE Model [14].

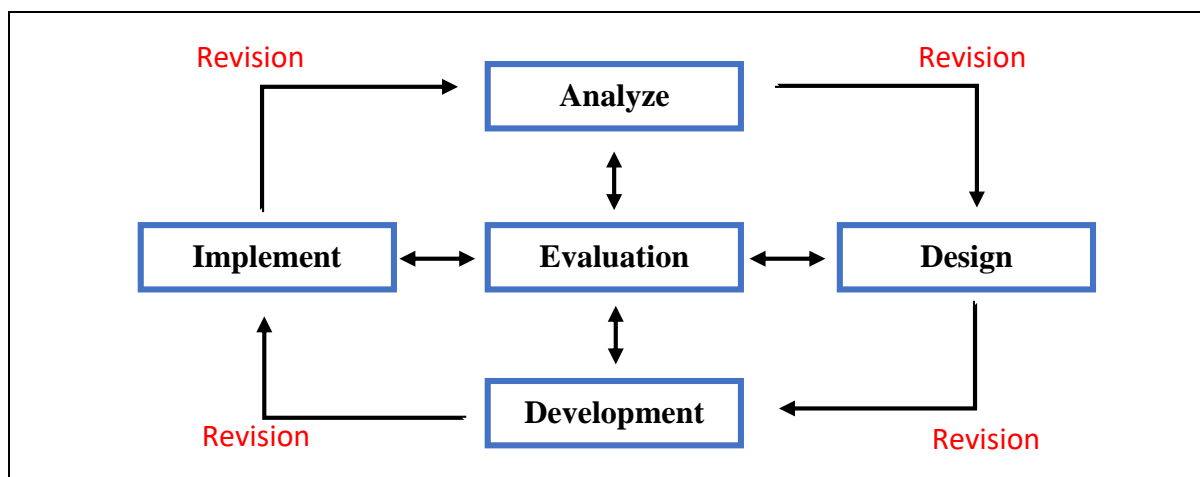


Figure 1: ADDIE Model [14]

3.1 Analysis phase

The first phase of the ADDIE model is the analysis phase. User requirements are collected by conducting an interview session with Madam Catherine Liew Shee Lin, a primary school teacher for Year 1 to Year 3 in SJK(C) Kai Chee, Butterworth, Pulau Pinang, who is also the Subject Matter Expert (SME). Based on the interview, she suggested using the Superminds Student’s Book as a reference book and some websites about names of vegetables in three different languages which are English, Malay and Chinese languages. She also prefers to include some of the vegetables’ names which are out of the syllabus and common general in the market in the proposed application to encourage target users to learn more to increase their knowledge. Besides that, she also suggested using real photos of the vegetable in the learning flashcards. The functional and non-functional requirements are defined from the interview. Table 2 shows the functional requirements while Table 3 shows the non-functional requirements.

Table 2: Functional requirement

Functional Requirement	Description
Activity/Operation	<ul style="list-style-type: none"> The system will display the user’s score after the user finishes taking the quiz. At the end of each level in the collect vegetables game, the system shall ensure users achieve the full score in order to move to the next level.
User Interaction	<ul style="list-style-type: none"> The application will provide users with the ability to learn the types of vegetables in the modules. In the learning module, the application will allow users to read the words that are shown on flashcards.

- In the learning module, the application will allow users the ability to listen to the audio for each of the words in each category.

Table 2: (cont).

Functional Requirement	Description
User Interaction	<ul style="list-style-type: none"> • In the quiz module, the application will allow users to click the answer which they choose based on the question given. • In the game module, the application will allow users to control the player by tapping the screen. • The application shall provide users with the ability to control the volume of background music and audio in the setting.

Table 3: Non-Functional requirement

Non-functional Requirement	Description
Usability	<ul style="list-style-type: none"> • The application is able to be used in mobile phones anytime and anywhere. • The application is easy to use and has clear instructions.
Implementation	<ul style="list-style-type: none"> • The application is able to be used on the Android mobile platform.
Performance	<ul style="list-style-type: none"> • The application is an offline application.
Legal	<ul style="list-style-type: none"> • Users can only view and are unable to modify any content of the application.
Culture	<ul style="list-style-type: none"> • The application is designed in simple English and the content is in English, Chinese and Malay languages that represent the three major languages used in Malaysia.

The hardware and software requirements are also determined in the analysis phase. Table 4 and Table 5 show the hardware and software requirements for the developer and users.

Table 4: Hardware and software requirements for the developer

Requirement	Item	Description
Hardware	Laptop ASUS VivoBook A542U	Allow the developers to use Unity and Adobe Photoshop to develop the application. Specifications as follow: <ul style="list-style-type: none"> • Operating System: Window 10 (64 bit) • Processor: Intel® Core™ i5-8250U • Installed Memory (RAM): 4.00GB • Storage: 1.00TB • Graphics: NVIDIA GeForce 940MX
	Realme 3 Pro RMX1851 Phone	Allow the developers to test the application. Specifications as follow: <ul style="list-style-type: none"> • Operating System: Android 10 • Resolution: 1080 x 2340 pixels, 19.5:9 ratio • RAM: 6GB • Internal Storage: 128GB

-
- Processor: Octa-core
-

Table 4: (cont).

Requirement	Item	Description
Hardware	Input-output devices	Allow the developers to communicate with the computer using: <ul style="list-style-type: none"> ● Mouse / Touchpad ● Keyboard
Software	Unity 2020.3.7f1	Used to integrate the assets and run the application
	Adobe Photoshop 2020	Used to design the assets such as UI buttons and canvas
	Microsoft Visual Studio 2019	Used to write C# scripts for the system

Table 5: Hardware and software requirements for the user

Requirement	Item	Description
Hardware and software	Android mobile phone	Allow the user to install and run the application successfully. Specifications as follow: <ul style="list-style-type: none"> ● Operations system: Android 9.0 and above. ● Resolution: 1080 x 2340 pixels, 19.5:9 ratio

3.2 Design phase

Design Phase is the second phase of the ADDIE model. The navigational structure is designed to show the flow of the content and the content structure is designed to show the learning outcome learned from the module in the application. Figure 2 shows navigational structure and Figure 3 shows the content structure.

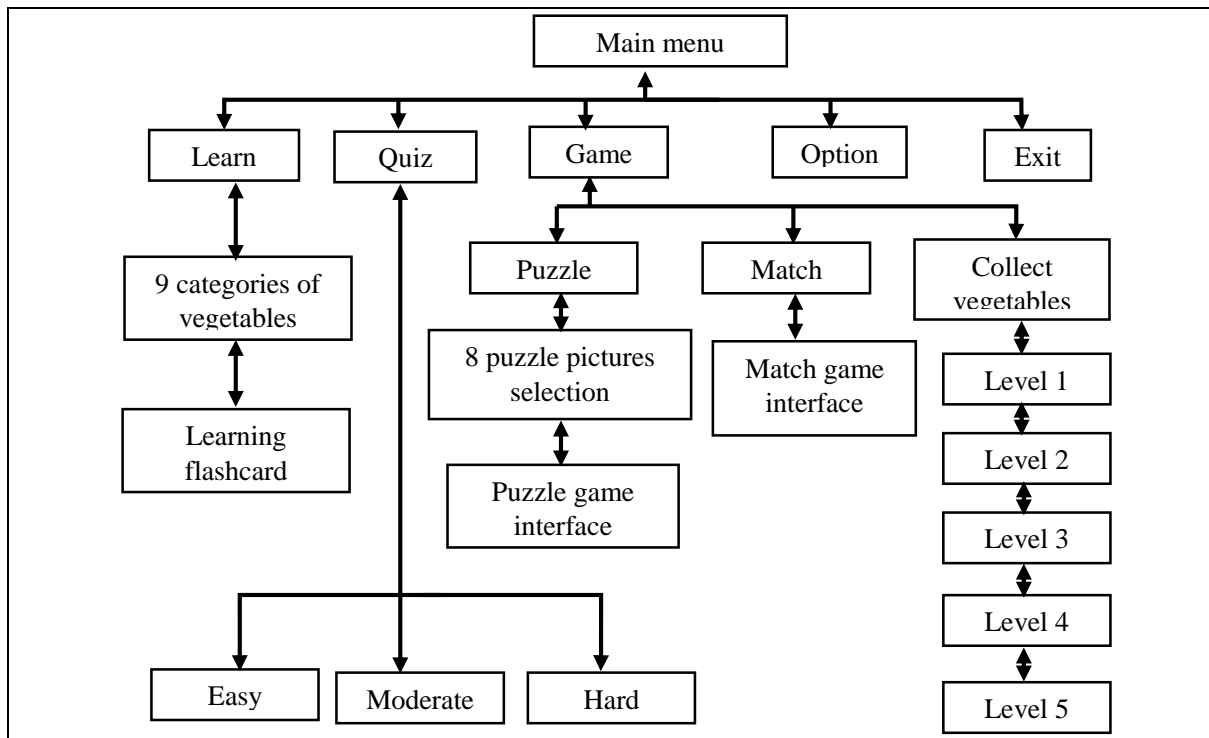


Figure 2: Navigational structure

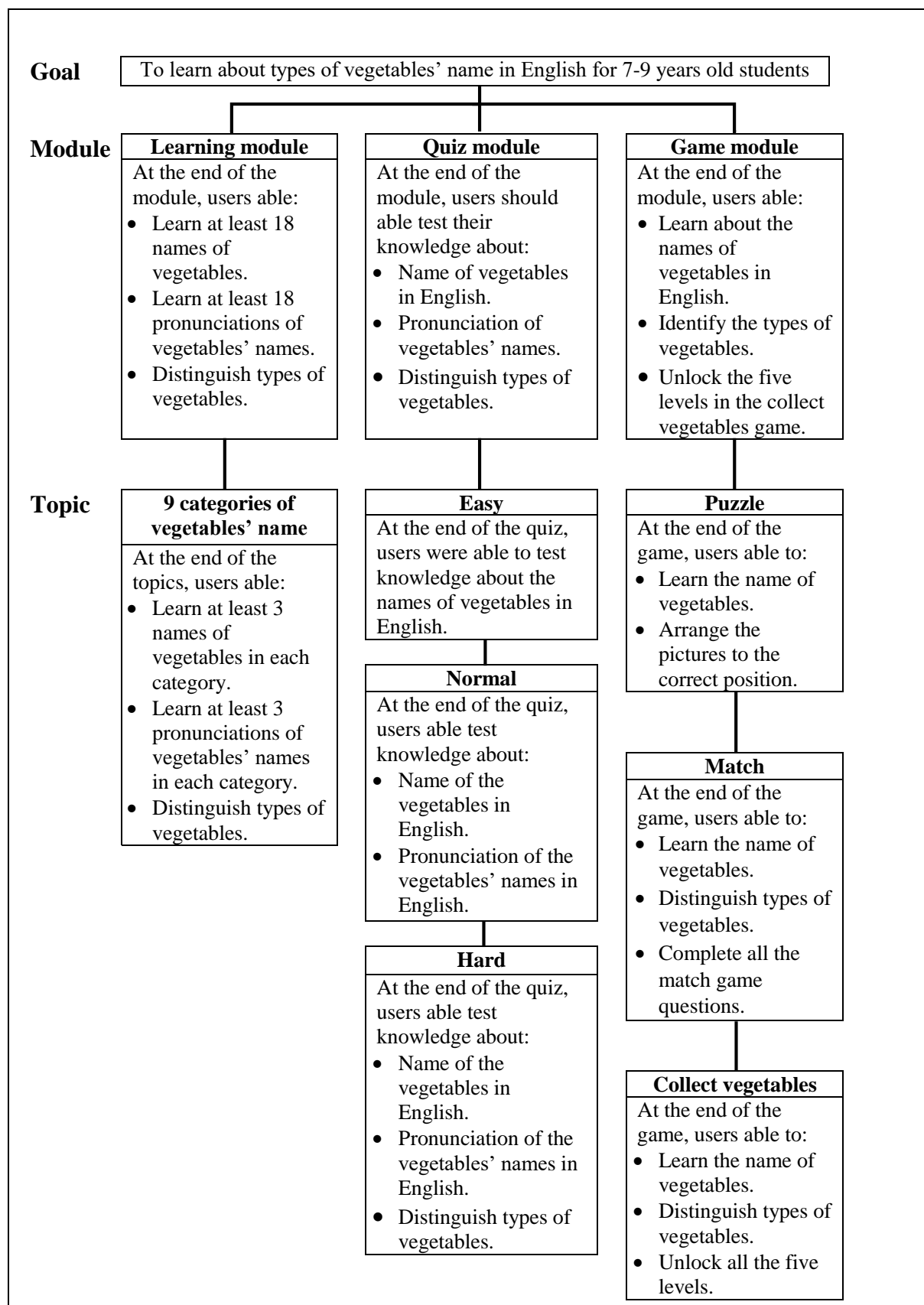


Figure 3: Content Structure

The user interfaces that include the main menu, learning, quiz and game modules, navigation buttons and graphics are designed. They are designed in Adobe Photoshop and Canva Online to edit and create. The storyboard is also produced in this phase. Table 6 shows some of the interface designs and descriptions of the application.

Table 6: Interface design



Interface	Description
 <p>The image shows the main menu of the application. It features a blue sky background with a green banner at the top that says "We GET Vegetables". Below the banner are five wooden buttons stacked vertically: "Learn", "Quiz", "Game", "Setting", and "Exit". The buttons are set against a background of a wooden fence and green grass.</p>	<p>Main Menu</p> <ul style="list-style-type: none"> • This is the main menu of the application and there are five options for users to select. • The Learn button will navigate users to the learning module which is the Learning Menu. • The Quiz button will navigate users to the quiz module which is Quiz Menu. • The Game button will navigate users to the Game module which is Game Menu. • The Setting button will navigate users to the Setting Panel. • The Exit button will navigate users exit from the application.
 <p>The image shows the Learn Menu interface. It has a wooden background. At the top left, there is a back arrow and the text "Learn Menu". Below this is a large green leaf icon inside a white frame with a green border. Underneath the leaf icon, the text "~ Leaves ~" is displayed. At the bottom of the screen, there are various colorful vegetables like tomatoes, carrots, and leafy greens.</p>	<p>Learning Menu</p> <ul style="list-style-type: none"> • This is the Learning Menu of the learning module in the application. • There are nine categories of vegetables shown in this menu. • Each category has five to seven flashcards for users to learn. • The users are able to swipe to the left or right to see more categories. • If users click one of the categories, they will be navigated to the Learning Interface.

Table 6: (cont).


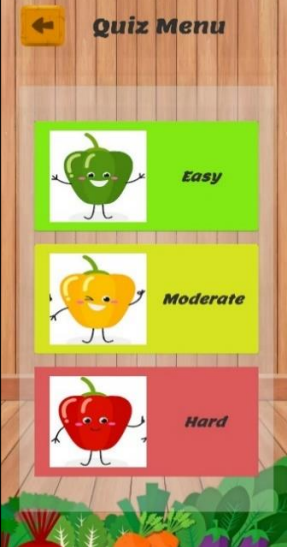

Interface	Description
	<p>Learning Interface</p> <ul style="list-style-type: none"> • This is the Learning Interface that contains flashcards about vegetables' names. • Each of the flashcards contains the real picture of the vegetable and its name in English, Malay and Chinese. • The sound button is provided for users to listen to the pronunciation of vegetable's name. • The next button and previous button which are placed at both sides of the flashcard are used to navigate to the next flashcard and previous flashcard respectively. • The users are also able to swipe to the left or right to see the next or previous flashcards.
	<p>Quiz Menu</p> <ul style="list-style-type: none"> • This is the Quiz Menu that contains three modes quiz levels to select which are Easy, Moderate and Hard. • Each level contains ten questions. • Users are able to select one of them to navigate to Quiz Interface.
	<p>Quiz Interface</p> <ul style="list-style-type: none"> • This is the Quiz Interface that shows the multi-choice questions. • There are four choices for users to choose the correct answer based on the question given. • There is the score mark displayed at the middle top of the screen and the score will be added when users answer correctly. • There are three lives shown at the right top side of the screen. The life will be reduced if users answer wrongly and the quiz will end directly if three of the lives are used. • There is a time countdown of the time shown at the right top side of the screen. The quiz will also end directly when time is out.

Table 6: (cont).

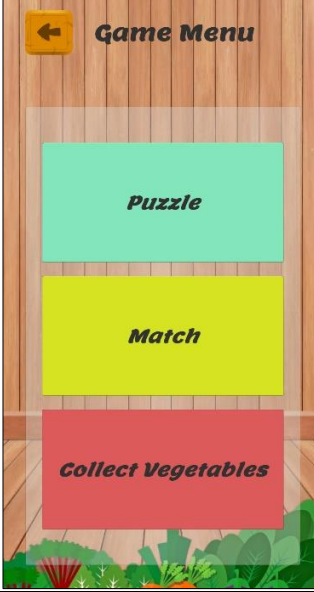





Interface	Description
	<p>Game Menu</p> <ul style="list-style-type: none"> • This is the Game Menu that contains three games which are Puzzle, Match and Collect Vegetables for users to select. • The Puzzle game button will navigate users to the Puzzle Game Menu. • The Match game button will navigate users to the Match Game Interface. • The Collect Vegetables game button will navigate users to the Collect Vegetables Game Menu.
	<p>Puzzle Game Menu</p> <ul style="list-style-type: none"> • This is the Puzzle Game Menu that contains about eight puzzle pictures for users to select. • The users can select the puzzle pictures randomly. • Each of the puzzle pictures will navigate to the specific Puzzle Game Interface.
	<p>Puzzle Game Interface</p> <ul style="list-style-type: none"> • This is the Puzzle Game Interface where the name of the vegetables which relate to the picture will be displayed at the top of the picture. • The users need to click the fragments to rotate them to the correct position.

Table 6: (cont).

Interface	Description
	<p>Match Game Interface</p> <ul style="list-style-type: none"> ● This is the Match Game Interface. ● There are eight questions in this game. ● The names of vegetables and black shadows will be shown in order on the board and the pictures of vegetables will be shown in the wooden box. ● The users can pick up the vegetable pictures by clicking them and drop them to the correct position. ● The next question will be displayed when the users drag all the pictures to the right position.
	<p>Collect Vegetables Game Menu</p> <ul style="list-style-type: none"> ● This is the Collect Vegetables Game Menu that contains five levels. ● Each of the levels will navigate to the specific level interface. ● Users have to complete Level 1 to unlock the next level. ● There is a Restart button provided at the bottom for users to relock the level if they have completed all the levels.
	<p>Collect Vegetables Game Interface</p> <ul style="list-style-type: none"> ● This is the Collect Vegetables Game Interface. ● The users can control the player to collect the specific vegetables by touching the screen. ● The pause button is provided for users to pause the game.

3.3 Development phase

Development phase is the third phase in the ADDIE model. All of the assets that are needed for the application are imported into the Unity software. The software, Microsoft Visual Studio which uses C# language as the based programming language is used to code the scripts. Scripts are used in controlling complex scenes such as in game and quiz, and even in simpler scenes such as the main menu and learning menu. Figure 4 shows one of the scenes along with the code segment for scene transition.

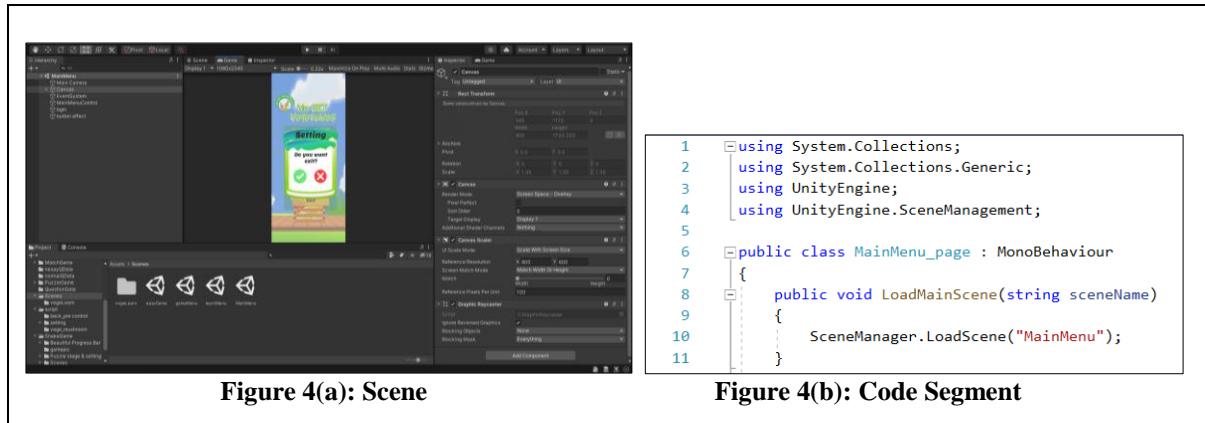


Figure 4: Scene (left) and Code Segment (right)

3.4 Implementation phase

Implementation phase is the fourth phase in the ADDIE model. The complete application is exported in apk file format and installed into the smartphone to undergo the beta testing with 30 target users who are Year 1 to Year 3 primary school students. Figure 5 shows the building process of We GET Vegetables.

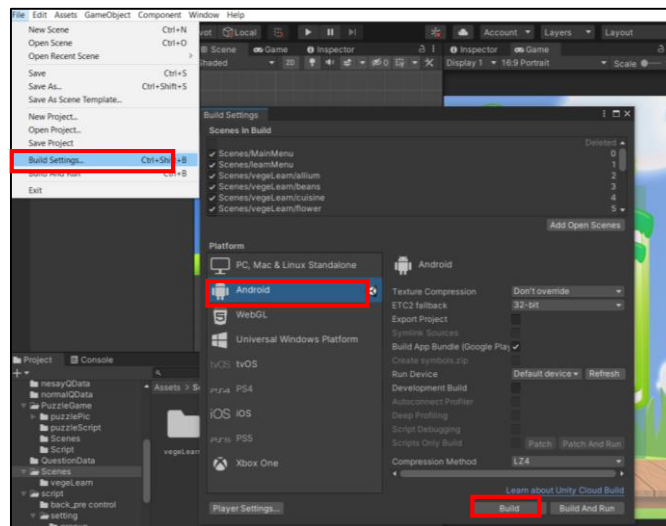


Figure 5: Building Process of We GET Vegetables

3.5 Evaluation phase

Evaluation is the final phase of the ADDIE model. Formative evaluation is ongoing during each of the phases in the ADDIE model. It can identify the strengths and weaknesses of the application and the developer can make improvements before the final version is implemented. While summative

evaluation conducted after the application is installed in the smartphones to test the functionality and usability of all components.

4. Result and discussion

The alpha testing is a part of formative evaluation in the development phase and it is conducted by the developer. Alpha testing is able to evaluate the functionality of the buttons in the application. Table 7 shows the result of alpha testing.

Table 7: Result of Alpha Testing

Test	Expected Result	Actual Result	Correct Action
Learn Module Button	Navigates to Learn Module.	Sometimes there is no function.	Use different statements in the script to differentiate between navigating to another scene and music control.
Quiz Module Button	Navigates to Learn Module.	Sometimes there is no function.	Use different statements in the script to differentiate between navigating to another scene and music control.
Game Module Button	Navigates to Learn Module.	Sometimes there is no function.	Use different statements in the script to differentiate between navigating to another scene and music control.
Setting Button	Shows the setting panel when clicked.	Works well as expected.	Not needed.
Exit Button	Shows the exit panel when clicked.	Works well as expected.	Not needed.
Back Button	Navigates to the previous scene.	Works well as expected.	Not needed.
Next Button	Shows the next flashcard when clicked.	Works well as expected.	Not needed.
Previous Button	Shows the previous flashcard when clicked.	Works well as expected.	Not needed.
Pause Button	Shows the pause panel when clicked.	Works well as expected.	Not needed.
Reset Button	Relock the game level.	Works well as expected.	Not needed.
Sound Button	Plays an associated audio clip when clicked.	Works well as expected.	Not needed.
Correct Answer Button	Invoke a function in the script for the increment of the score while clicked.	Works well as expected.	Not needed.

Based on Table 7, there are some errors such as in the Learn Module button, Quiz Module button, and Game Module button which are not functioning when they are clicked. Hence, corrective actions have been taken to fix those problems or errors.

The beta testing is carried out with 30 primary school students who are Year 1 to Year 3. A set of questionnaires that contains three sections which are learning outcome acquisition, user acceptance level, and functionality was distributed to the target users.

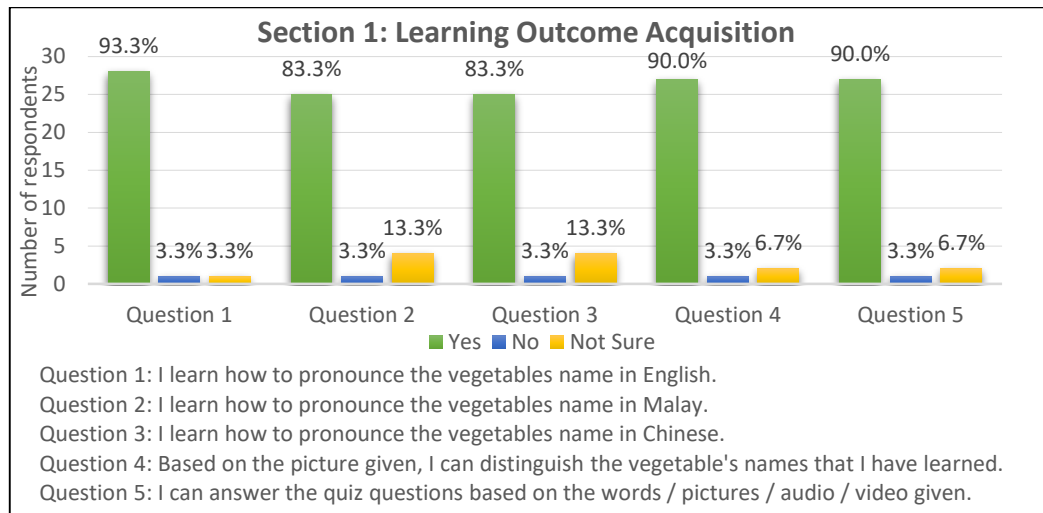


Figure 6: Result of Learning Outcome Acquisition

Figure 6 shows the result of section 1. There are five questions in the Learning Outcome Acquisition section. From the chart generated, it can be said that all the five questions were answered with a positive answer and the learning outcome was achieved. However, there are also some negative and ambiguous answers. For Question 1 whether or not the user learns how to pronounce in English, there are 93.3% respondents answered 'Yes', 3.3% respondents answered 'No' and 3.3% respondents answered 'Not Sure'. For Question 2 and Question 3 whether or not they learn to pronounce the vegetables' names in Malay and Chinese, there are 83.3% respondents answered 'Yes', 3.3% respondents answered 'No' and 13.3% respondents answered 'Not Sure'. For the Question 4, they able distinguish the vegetable's names that they learn based on the picture given and Question 5, they able to answer questions based on the words / pictures / audio / video given, there are 90.0% respondents answered 'Yes', 3.3 respondents answered 'No' and 6.7% respondents answered 'Not Sure'. From these results, it can be concluded that this learning application produces a positive learning outcome due to the fact that most of the respondents have provided positive answers.

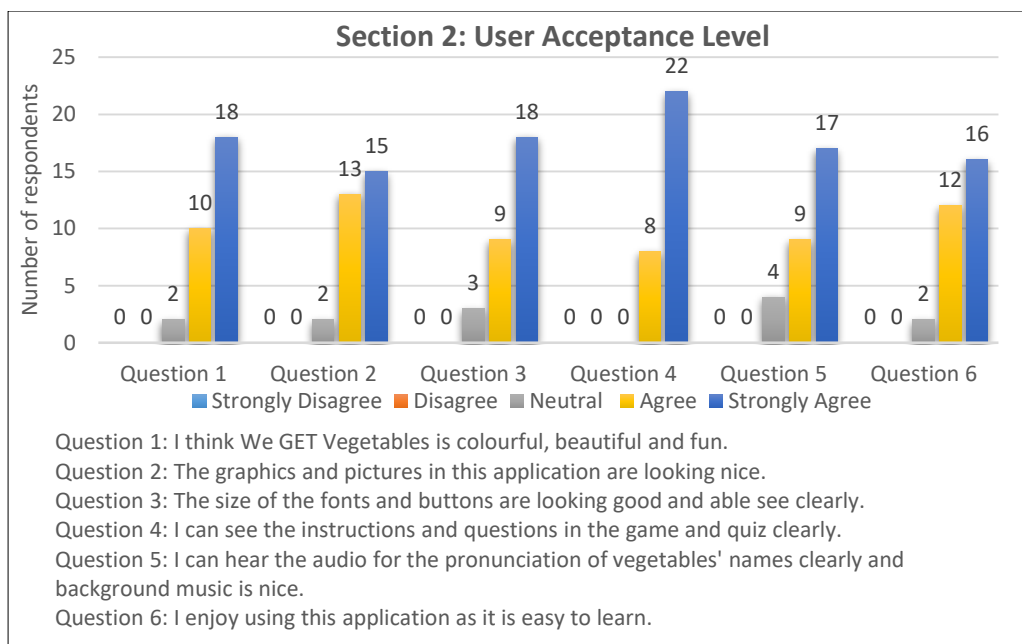


Figure 7: Result of User Acceptance Level

There are six questions in the User Acceptance Level section. Question 1 is about whether the user thought that the application is colourful, beautiful, and fun. There are 18 respondents that stated that they strongly agree and 10 respondents stated that they agree with the statement. Only two respondents stated neutral with the statement. Besides that, there are no respondents who stated that they strongly disagree and disagree with the statement. For Question 2 which is about the user’s thoughts on the graphics and pictures in the application. There are 15 respondents who stated that they strongly agree with the statement, while 13 respondents stated that they agree and only two respondents stated that they are neutral to the statement. There are no respondents who strongly disagree or disagree with the statement. Question 3 is about the size of the fonts and buttons in the application whether the user thoughts they are nicely done and seen clearly. There are 18 respondents that stated that they strongly agree with this statement and nine respondents stated that they agree with this statement. Moreover, only three respondents choose ‘neutral’ to this statement and no respondents strongly disagree or disagree. For Question 4, most of the respondents which are 22 respondents strongly agree that they are able to see the instructions and questions in the game and quiz clearly and only eight respondents agree with this statement. There are no respondents who strongly disagree or disagree with this statement. Question 5 is about the audio for the pronunciation of vegetables’ names whether or not they are clear and the background music is nice. There are 17 respondents who strongly agree with this statement and nine respondents agree with this statement. Besides that, four respondents choose Neutral for this statement and no respondents strongly disagree or disagree with this statement. For Question 6, there are 16 respondents who strongly agree that they enjoy using this application as it is easy to learn and 12 respondents agree with this statement. Only two respondents choose Neutral for this statement and no respondents strongly disagree or disagree with this statement. In conclusion, it can be said that the application is acceptable and received positive feedback from the users.

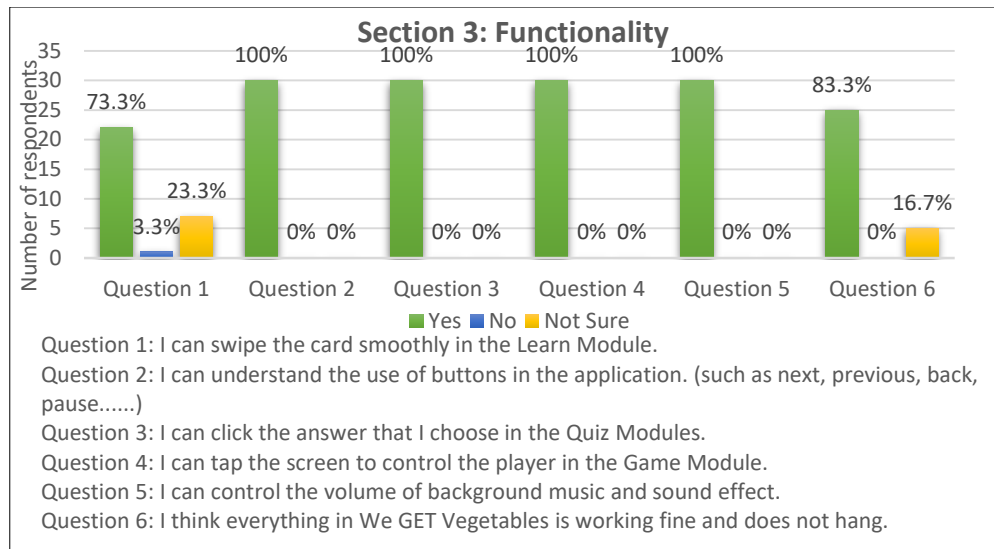


Figure 8: Result of Functionality

Figure 8 shows the result for the Functionality section which consists of six questions. According to the figure above, there are 73.3% respondents able to swipe the card smoothly in the Learn Module and 23.3% respondents are not sure about the answer while only 3.3% respondents answered 'No'. Besides that, the result analysis for Questions 2, 4, and 5 are the same which are all the respondents (100%) answered that they understand the use of the buttons, are able to click the answer in Quiz Modules, able to control the player in the Game Module, and able to control the volume of music and sound effect. There is no negative feedback and unsure answer. For the last question, 83.3% respondents think that everything in the application is working fine and does not hang while 16.7% of them are not sure about the answer. Therefore, it can be said that the functionality of We GET Vegetables is in the range from average to high.

The data gathered from the questionnaires is measured by using the System Usability Scale (SUS). Firstly, the total respondent scores are calculated as shown in Table 8.

Table 8: Respondent's Scores Based on Likert Points

No.	Question	Likert Points					Marks
		1	2	3	4	5	
1.	I think We GET Vegetables are colourful, beautiful and fun.	0	0	2	10	18	136
2.	The graphics and pictures in this application are looking nice.	0	0	2	13	15	133
3.	The size of the fonts and buttons are looking good and able see clearly.	0	0	3	9	18	135
4.	I can see the instructions and questions in the game and quiz clearly.	0	0	0	8	22	142
5.	I can hear the audio for the pronunciation of vegetables' names clearly and background music is nice.	0	0	4	9	17	133
6.	I enjoy using this application as it is easy to learn.	0	0	2	12	16	134
Total						813	

Based on Table 8, the survey obtained a total of 813 marks based on the Likert Scale points. The data gathered is measured by using SUS formula.

$$Y = \frac{P}{Q} \times 100 \quad Eq. 1$$

Where:

P = Total scores of respondents for each question

Q = Total maximum of respondents scores

R = Percentage score

Hence:

$$\begin{aligned}
 Y &= \frac{813}{900} \times 100 \\
 &= 90.3\%
 \end{aligned}$$

The acceptability range in System Usability Scale (SUS) are not acceptable, marginal and acceptable. Figure 9 shows the System Usability Scale (SUS) [15].

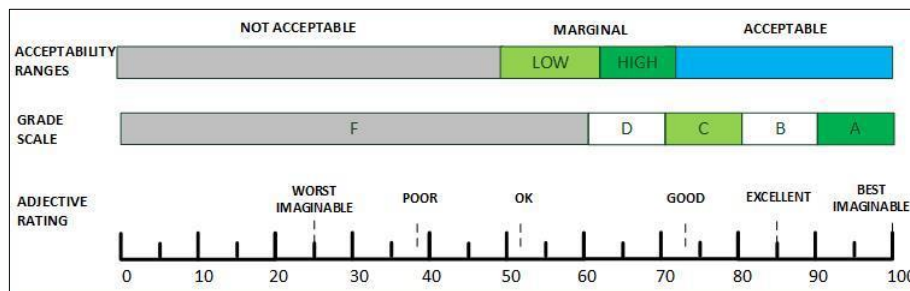


Figure 9: System Usability Scale (SUS) [15]

Based on the calculation and Figure 9 above, the results of the usability testing is 90.3% which is in the acceptable range. That means the application is more than excellent and is accepted by most users.

5. Conclusion

In conclusion, the We GET Vegetables application has been successfully developed and tested to the target users. The target users are able to learn vegetables' names by using this application.

We GET Vegetables has several advantages such as it provides positive results in learning outcome acquisition and children are able to learn vegetables' names and not only the pronunciation in English but also in Malay and Chinese languages. It produces high User Acceptance Level where the user interfaces are colourful and attractive, the application is easy to learn and they enjoy using it. Moreover, the application has multimedia interactivity such as textual instruction, graphical / picture, video, audio, and animation. The functionality of the application is well supported on the Android mobile platform.

Besides that, some limitations are also identified. The swipe function in the Learn menu is not smooth and this might make users difficult in swiping the menu. The questions in the quiz module are repeated from the same ten questions in each mode although the questions will be displayed randomly each time users play the quiz. Animations in the application are limited, thus it might make users less interested. The application is only suitable for some specific resolution of the smartphones which are based on Android mobile platform, such as 1080x2340 pixels, 720x1600 pixels, and 2960x1440 pixels. Therefore, some improvements that can be made in the future to improve the application and resolve the limitations. The future works are to provide a smooth swipe function for the application; add a

database for storing more questions, thus users will not get bored and different questions will be displayed each time users run the application; implement more animation into the application to make it more interesting and attractive; and enable it to be installed into different types of smartphones resolutions.

In summary, We GET Vegetables is successfully designed and developed for the target users to learn about vegetables' names in English, Malay, and Chinese by following a well-planned ADDIE Model methodology and gaining a lot of valuable feedback from the users testing. All the objectives of the project have been achieved and it is hoped that this application can be better in the future.

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