



Educational Games Let's Learn Japanese Using The Unity 3d Based Android

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ABSTRACT

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Japanese is the language most popular and studied by students. Although it is popular with many people who find it difficult to learn Japanese because of its complicated writing and grammar it is much different from Indonesian. One of the media that helps beginners learn about it is learning Japanese in educational games. This research aims to make it easier for beginner learners to learn Japanese, so that users do not get bored with learning methods in class and help learning become more enjoyable. The research method used is research and development, with the ADDIE model (Analysis, Design, Development, Implementation and Evaluations). And using Unity 3D was chosen because of its ability to create more interesting animations and easier to use.

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1. Introduction

Language is important to communicate there is a diverse language that can be used in the world, Japanese is one language that is preferred by learners of a foreign current. Enthusiasts of Japanese own a lot. Japan is a developed Country and its role in the world is important, both in terms of economic, political, social, cultural and most of all in terms of technology. Japan became the most popular Countries in the world and is visited by many tourists, while the Japanese themselves are sometimes a little difficult or a little bit of Japanese to understand a foreign language or the international language. Many people feel it is important to learn the Japanese language is enough.

In Indonesia, the Culture of Japan has already entered into Indonesia, such as: anime, music, manga and many more, so that quite a lot of people who are interested to learn Japanese language. The current Japanese Language in Indonesia become one of the subjects or programs of study in many schools and universities in Indonesia. Although much in demand, the Japanese Language is often said as the language is quite difficult due to some differences with the language of Indonesia, namely on the letters, sentence structure, pronunciation, and others. As submitted by Gisca Nadya in his research entitled "the Effectiveness of the Technique of the Game Pinoy Henyo in Vocabulary Learning (Meishi) Japanese Language Basic Level". See the fact that there is a need of development of media of learning Japanese language. Research on the development of media learning the Japanese language never studied before, i.e. by Yuliana & Yusa which are the focus of his research for "the Development of Model Learning Hiragana Letters In the Form of an Interactive CD For Students of Class IV SD" [1]. Then by Widyanti Anggita Lestari in a study entitled "the Application of Japanese Language Learning Basic Level-based Multimedia using Macromedia Flash 8" [2]. The second study was designed to be used on the desktop and variation of practice is still lacking and needs to be improved. See technology is growing, and the authors chose to develop a media learning the Japanese language in the form of game-based mobile smartphone. The Game not only gets pleasure, satisfaction or a change of mood, but the game is also useful as a learning or educational.

Based on existing problems, the author motivated for a media language learning Japanese video Game Development Education entitled "Nihongo Benkyou wa Hajime yo (let's learn the Japanese language)" Based on Android. This Game-based quiz so easy to understand would also be very beneficial for the general public who want to learn the Japanese language. By using this game, expected later in the study of Japanese language especially for beginners.

2. Research Methods



The methods used for research and development with the model ADDIE. Model ADDIE stands for Analysis, Design, Development, Implementation, and Evaluation. ADDIE appeared in the 1990s developed by Reiser and Mollenda. One of the functions of ADDIE, namely the guidelines to build the device and the infrastructure of the training programs that are effective, dynamic and support the performance of the training itself. The stages in the model ADDIE can be seen in figure 1.

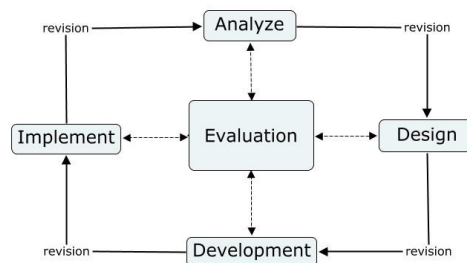


Fig 1. Research methods ADDIE

- a. Analyze
At this stage, researchers perform analysis of functional requirements , non-functional requirements Use Case Diagram, Activity Diagram and make the results of the phase analysis.
- b. Design
At this stage, researchers do design games, concept design games and make the results of the design stage.
- c. Development
At this stage the researchers conducted the development of the game source code, design the interface and make the results of the stage of development.
- d. Evaluation
At this stage, researchers melakukan evaluation of the entire bahadap analysis of all the stages, design, development and implementation.

3. Results and Discussion

3.1 Results

The results of the evaluation of the research model is the process of running and evaluating a software based on the research model used to test the requirements or not to determine the difference between the results expected with actual results.

The following will be described concerning some of the stages associated with the results of the evaluation of the development of the Educational Game Nihongo Benkyou wa Hajime yo (let's learn japanese) Android-Based among which analuze (analysis), stage design (design), development phase (development), implementation phase (implementation), and phase of evaluation (evaluation) :

3.1.1 Analyze

The analysis phase is information gathering and needs that must be analyzed and defined the needs that must be met by devices or applications to be built. At this stage in the search for references about the theory the necessary theory and how to apply them in educational games, such as the theory of bound materipembelajaran the Japanese language and supporting components used for the development of Educational Game Nihongo Benkyou wa Hajime yo (let's learn japanese).

Based on the analysis to the application development of the Educational Game Nihongo Benkyou wa Hajime yo (let's learn japanese) Based on Android, there are the needs of the needs of both functional requirements and non-functional requirements.

a. Functional Requirements

Development of Educational Game Nihongo Benkyou-Based Android is expected to meet the process-the process as follows:

1. The application may display a main page that provides the main menu on the app.
2. The application can display the menu to learn about the vocabulary and conversation in Japanese.
3. The app can remove audio from any selected vocabulary on the menu to learn.
4. The application can run the game which can test your listening skills, how to read Japanese letters and recall the vocabulary of the Japanese language.

b. Non Functional Requirements

Non-functional requirements of this game are as follows:

1. Minimal specification of the hardware (Android-based mobile devices) which is used to run the Educational Game Nihongo Benkyou wa Hajime yo (let's learn japanese) Android-Based is CP ARMv7 and 1 GB RAM
 2. The specifications required to support the Educational Game Nihongo Benkyou wa Hajime yo (let's learn japanese) is the Operating System of Android version 4.1 (Jellybean)
 3. Educational Game Nihongo Benkyou wa Hajime yo is made with a simple display and user friendly in order to better facilitate the user to navigate and play this game.
- c. **Use Case Diagram**

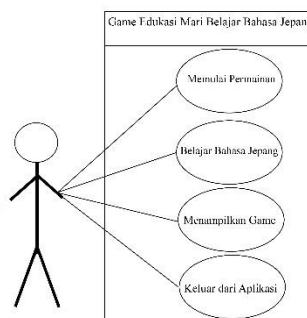


Fig 2. Website Research methods ADDIE.

Diagram use case is a diagram that is used to model and declared unit the function provided by the system to the user. Use case describe functionality that is expected from a user.

d. **Activity Diagram**

1) **Activity diagrams**

Depict the flow of activity in the system is being designed, how each groove begins, the decision may occur, and describes the parallel process that may occur multiple executions. The following is the Activity Diagram that exists on Educational Game Nihongo Benkyou wa Hajime yo (let's learn japanese) Based on Android which include the Start of the Game and Start Learning.

2) **Design**

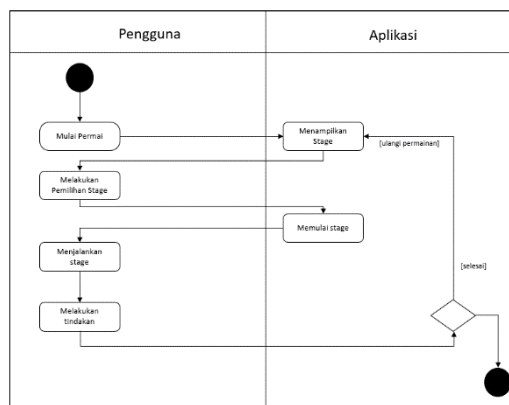


Fig 3. Diagram start the game

After passing through the stages of planning, then the next stage is the design stage. Based on the model of ADDIE, in the design stage, the researcher makes the design of the application and proceed with making a prototype game. The Prototype game will be further revised and perfected

The researcher will make a game of learning Japanese type quiz game in the form of a 2D (two-dimensional). This Game introduces the letters of the hiragana, katakana and vocabulary in stage hiragana users have to choose the word that is mentioned so that the player can recognize the letters of the hiragana and in the stage of katakana so the user must match the words in the mention, in the vocabulary of the players have to answer an image that will appear and choose the correct answer.

3) **Development**

At this stage carried out the design of the source code of the program used and the design of the interface in Educational Games Nihongo Benkyou wa Hajime yo (let's learn japanese) Android-Based.

a) **Source Code**

The Source Code is a series of statements or declarations written in a programming language that make up a the whole application and can be run by the user. In the development of Educational

Game Nihongo Benkyou wa Hajime yo (let's learn japanese) Android-Based. This using the C# programming language in which the researcher uses Unity 3D as a game engine to make the Game Educational Nihongo Benkyou wa Hajime yo (let's learn japanese) this. Unity 3D as a game engine useful to help the researchers in making the game and is easy to use, connect the scene in the game, and a gameplay that can make it easier by players

b) The Results Of The Screen Interface

The results screen of the interface is done based on the design of the interface that performed the suitability of the design and implementation of the interface

- The Screen Of The Main Menu Interface.



Fig 4. Main Menu

Scene this is the main menu of the Educational Game Nihongo Benkyou wa Hajime yo (let's learn the japanese language)

- Screen Antarctica scene to choose the stage



Fig 5. Select stage

On the Scene this will display the stage – stage a thorough.

- The scene interface screen selects Stage hiragana



Fig 6. Select Stage Hiragana

In this scene will show stages - stages in detail, players are required to choose the stage you want to learn and at this stage is the material to learn hiragana letters.

- The scene interface screen selects Stage katakana



Fig 7. Select stage katakana

In this scene, it will display the stages in detail, the player must choose the stage that he wants to study

- The scene interface screen selects Stage vocabulary



Fig 8. Select stage kosakata

To display the stages in detail, players are required to choose the stage that they want to study.

- Scene Stage Hiragana Interface Screen



Fig 9. stage katakana

At this stage the player must choose the correct romanji letters in the choices provided

- Scene Stage Interface screen katakana



Fig 10. stage katakana

At this stage the player must select the correct Katakana letters in the choices provided.

- Scene Sage Interface screen vocabulary



Fig 11. Select stage katakana

At this stage the player must guess the picture and choose the options provided.

- Scene Stage Clear Interface Screen



Fig 12. stage katakana

In this Scene showing the stage has been completed later a Pop Up window will appear containing the "Play Again", and "Exit".

4) Implementation

The next stage is the Implementation stage. This stage is the stage of product feasibility testing with the aim to ensure the game that has been made based on the design made, is correct and every function contained in the game can run properly. Here are the results of tests that have been carried out, namely:

Black Box Test

The implementation of the black box test case is done to find out whether the game that has been made runs properly and correctly, can be used by others.

5) Evaluation

1. Result Testing Black Box

To test the system in this Learning game, researchers will test with the blackbox testing method. Here is the testing with the blackbox testing method on the Nihongo Benkyou wa Hajime Game yo (let's learn Japanese)

Following the Black Box Test Results table:

Table 1.
Black Box Test Results

Test Case	System Reaction	Expected results	Results
UK.1	If the Play Button is Removed it will appear to the next scene	Scene Switches and displays for the scene on the next menu	Success
UK.2	If the hiragana button is pressed, it will enter the next menu	Scene Switches and displays for the scene on the next menu	Success
UK.3	If the hiragana1 or hiragana2 button is pressed then the game will start	The game starts if the start button is clicked	Success
UK.4	If the answer button is pressed, the indicator will appear wrong or correct	If the correct answer will display a "check mark" if it is wrong then a "cross" will appear	Success
UK.5	If the Exit Button is pressed, it will exit the game	Exits the game if the exit button is pressed	Success
UK.6	If the Play Again button is pressed, it will enter the main menu	Will display the main menu scene	Success

4. Conclusion

Based on the research application of the Nihongo Benkyou wa Hajime yo game (let's learn Japanese) that has been done, several conclusions have been obtained that the design of this game has been successfully designed using the ADDIE method. This game has also successfully implemented C # programming with the Unity 3D editor. This game has also successfully introduced vocabulary and hiragama letters and katakana

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