DEVELOPMENT OF EDUCATION GAME INDONESIAN PROVERB ON ANDROID BASED

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ABSTRACT

A proverb is a culture of the society's figurative expression that could be use to anyone.In the short sentences of a proverb, it has shown a norm, culture, thinking pattern, morality, humanity and the nature values.Agnes Adhani mentioned in the work titled "Proverb, the meaning and its character building" that Indonesian proverb as one of a local wisdom which could be a life guide and character building of a positive human being individually, socially, ethical and religiuosly. In the 2013 Curiculum, there no special material of Indonesian Proverb, but written in description text as an element of the sentence figures. Learning tools as it used is a book and surroundings environment as a plus or a brace. Lack of proverb knowledge could be effected on missunderstanding its mean or its term. Therefore, an education game will be developed to help the society to learn the Indonesian Proverb and giving the knowledge of it.The game will be Android based and using GDLC to develope. The result of this reseach is an Indonesian Proverb education game to be used as learning tool and increase the knowledge of Indonesian Proverb.Questionnaire spreaded to 32 correspondences agree to the purpose of this research.

Keywords: Education game, Indonesian Proverb, Learning Tools, Adventure, Android.

1. INTRODUCTION

Proverbs are part of the spoken language and folk literature that can be found in various languages around the world. The Egyptians have a collection of ancient proverbs dating from 2500 BC. Similarly, in Indonesia proverb has been used as an oral language for a long time [1]. The Proverb is one of the community products in the language that can be used by anyone. In the short proverb, there is a broad meaning that shows the moral, cultural, mindset, human values, and nature of the country [2].

Agnes Adhani in a journal entitled "proverbs, their meanings, and contributions to character education" suggests that the Indonesian proverb as one of local wisdom can serve as the foundation of one's life and material development into a positive individual, social, ethical and religious creature [3].

The result of an interview with Mrs Omi Komalasari Indonesian Language teacher at Junior High School 1 Tempuran said that in the curriculum of 2013 there is no special material about Indonesian proverb, but it is implied in the text of description only the linguistic elements like majas. Learning media used in the form of books and the environment as an additional media or amplifier. Based on the results of interviews with school students and the results of questionnaires from 50 respondents who distributed to the community as much as 53 percent of respondents mentioned only know proverb no more than five. Lack of knowledge about proverbs can have a wrong result in placing the meaning of words or terms. Meanwhile, according to Nani Sumarni in the journal entitled "effectiveness of the proverbial inheritance through public education as the media forming the character of the Indonesian nation in the global era" does not study proverbs can affect the survival of the existence of the proverb itself and can lead to moral degradation of the Indonesian nation [4].

Based on the above problems it will be built an educational game that helps people to learn the proverbs of Indonesia and provide knowledge about the proverb of Indonesia. The results of the educational game will be poured in the form of the final task entitled "Development of Education of Indonesian Proverb on Based Android ".

1.1 Game

A game is a set of games that involve one or more players who have goals, restraints, and consequences. Basically, the game is an entertainment media for various circles. Games are different from other software. In the game, the goal to be gained is to have fun and enjoy the game. Games are growing very rapidly from games that are played alone to games that can be played by many people around the world simultaneously by using an internet connection

as a liaison. Thanks to the rapid technological advances now gaming can be played on smartphones with 3D graphics. Lately, mobile games are in great demand, thus encouraging game developers to create great games [5].

1.2 Game Development Life Cycle

The method of software development in the development of educational games of this proverb using GDLC (Game Development Life Cycle). According to Blitz Game Studio, the game development method there are six stages, namely pitch, pre-production, main production, alpha, beta, and master. The description of GDLC method can be seen in Figure 1.1 [6].



Figure 1.Method GDLC Blitz Game

The explanation of the stages of the GDLC method is as follows:

1. Pitch

Pitch is an early concept or rough in game design that will be made. The output of the initiation is a simple game concept and description of the game.

2. Pre-production

Pre-production is one of the first stages of the production cycle. Pre-production involves the creation and revision of game design and the creation of game prototypes. The game design focuses on the types of games, gameplay, mechanics, storylines, characters, challenges, fun factors, technical aspects, and elemental documentation in the design of game documentation. Once the documentation elements are created, the next form of a prototype is created to assess the design of the game and all the ideas.

3. Main Production

The main production is the core process where there is asset creation process, coding process and integration of both. The prototypes involved in this phase are the formal details and improvements. Formal details are activities related to the game creation and refinement to balance permissions, add new features, improve performance and fix bugs.

4. Alpha

Alpha is testing games to assess and ensure functionality and features are running well and checking whether assets are still unfinished or there are still bugs.

5. Beta

Beta is a phase for testing to external users or tester. The results of beta testing are bug reports and user feedback. The beta phase is closed if beta testing ends or all beta testers have given their test report.

6. Master

Master is the final stage in game development and ready to be released to the public. The releases include product launches, project documentation, evaluation, and maintenance planning

2. RESEARCH CONTENTS

At this stage will discuss the problem to be analyzed, the system overview, the stages of each process and the results of research.

2.1 Problem Analysis

In the 2013 curriculum, there is no specific material about the Indonesian proverb and is only implied in the description text such as majas. Learning media used only in the form of books and the environment as an additional media or amplifier. Based on the results of interviews with school students and the results of questionnaires from 50 respondents who distributed to the community as much as 53 percent of respondents mentioned only know proverb no more than five. Lack of knowledge about proverbs can have a wrong result in placing the meaning of words or terms and affecting the survival of the existence of the Indonesian proverb itself.

Based on the above problems, it can be concluded into a problem formulation, which is how to build a proverbial learning media in the form of interactive educational games that can help people to learn the proverbs of Indonesia and provide knowledge about Indonesian proverb to the public.

2.2 Analysis of Built Applications

The game will be titled "Kawaya & Peribahasa Indonesia". This edible educational game has a genre or type of adventure game using the third person character model. This game is built by presenting content proverb which aims to introduce and deepen the meaning of proverb Indonesia.

This Indonesian proverb educational game is a single player and is played offline. To complete the educational game of Indonesian proverb this player must complete all missions given by NPC (Non-Player Character) to become the next pramasastra in Basagita village. Here's the concept as well as the picture of the proverb educational game:

1. Players must complete missions or quests from villagers to complete the game.
2. Players can run missions or quests by asking each villager.

3. Before the player receives a mission or quest, the villagers will tell the problems they experienced first.
4. Each villager has a different mission or quest and there are three proverbs in each of his missions.
5. Each mission or quest has a different gameplay according to the proverb and the type of ceremony is different.
   6. If a player fails in a mission or quest then the player can start.
7. The player can not run the next mission or quest, if the first mission or quest is not finished and so on until the fifth mission.
8. Each completed the mission, then the Indonesian proverb contained in the mission is stored in the library.
9. After all, missions are completed, the player can take the last stage test to become a pramasastra in the village library and be entitled to be a new pramasastra in Bagasgita village.

2.2 Material Analysis

Based on the Indonesian language textbooks for junior high schools and the results of interviews with Indonesian teachers and Indonesian proverbs dictionary by JS Badudu, the proverbs used in the construction of educational games Indonesia adjust to Indonesian textbooks and interviews. The choice of the proverb itself is tailored to the problem and purpose of this study. Here is an explanation of the material analysis in each stage or mission, can be seen in table 1.

Table 1. Material Analysis

Stage 1 Maxim Proverb	
Indonesian Proverb	**Meaning**
Sehari selembar benanng, lama-lama sehelai kain	Those who are diligent will surely succeed.
Sekali merengkuh dayung, dua-tiga pulau terlampau	Once working, some work can be done.
Sedikit demi sedikit lama-lama menjadi bukit	Continuous small businesses will eventually produce results.
Stage 2 Parable Proverb	
Indonesian Proverb	**Meaning**
Bagai kucing dengan anjing	Two people who are never peaceful when close together, always quarreling.
Seperti kambing dihalau ke air	Very reluctant to do a job that is very unpopular.
Seperti pohon bambu ditiup angin	People who remain firm and steadfast face life's challenges. When distress has passed, he will hold his head back.
Stage 3 Proverbs Pemeo	
Indonesian Proverb	**Meaning**
Esa hilang, dua terbilang	One is gone, gone, falling, the other will appear in his place.If the old one stops, the young will replace it.
Patah tumbuh, hilang berganti	Promising is easy, but keeping it is not easy.
Murah dimulut, mahal di timbangan	Assessing an easy job, but rendering it difficult
Stage 4 Proverbs Bidal	
Indonesian Proverb	**Meaning**
Besar pasak daripada tiang	Big spending rather than income.
Ada ubi ada talas, ada budi ada balas	Good luck will get a good reply too.
Diam dibandar tak meniru, diam dilaut asin tidak	Already living in a country that is advanced and crowded, but still stupid for not want to study
Stage 5 Proverbs Tamsil	
Indonesian Proverb	**Meaning**
Kalah jadi abu, menang jadi arang	Losing and winning just the same, both bear the loss.
Berakit-rakit ke hulu, berenang-renang ketepian	Bothered to work on something, will be happy to accept the results.
Air tenang menghanyutkan	The quiet person usually has a lot of knowledge

2.3 Storyline

Description of the storyline of educational games adage Indonesia can be seen in table 3.4.

Table 2. Storyboard Description

Map	**Description**
Basagita Village	Kawaya searches the NPC to complete the mission.
	Kawaya received a mission from the NPC.

Map	Description
	Kawaya completes the mission given and can do the next mission.
Mission 1	Kawaya looking for clues to get through the mission obstacle 1.
	Kawaya answered the proverb.
	Kawaya passes missions 1.
	Kawaya completed mission 1.
Mission 2	Kawaya looks for clues to get through mission obstacles 2.
	Kawaya answered the parable proverb.
	Kawaya passes missions 2.
	Kawaya completed mission 2.
Mission 3	Kawaya looking for clues to get past the mission 3 obstacles.
	Kawaya answered about the proverbs of the memo.
	Kawaya passes through various mission obstacles 3.
	Kawaya completed mission 3.
Mission 4	Kawaya looks for clues to get through the mission barrier 4.
	Kawaya response to a thimble proverb.
	Kawaya through various missions of mission 4.
	Kawaya completed mission 4.
Mission 5	Kawaya looks for clues to get through the mission 5th hurdle.
	Kawaya answered about the maxim proverb.
	Kawaya passes missions 5.
	Kawaya completed mission 5.

2.4 Non Functional Needs Analysis

Non Functional Needs Analysis.Non-functional requirement analysis is an analysis to determine system requirement specification. This specification also includes elements or components of what is required for the system to be built until the system can be implemented. In this non-functional requirement analysis of educational games, this proverb includes analysis of software requirements, hardware requirements analysis, and user analysis.1.

1. Hardware Requirement Analysis

Hardware requirement analysis is intended to find out the hardware specifications used to run educational games proverb. Minimum hardware specifications on Android smartphones that users need to run educational games adage Indonesia are:

Table 3. Smartphone Hardware Minimum Specifications

Hardware Type	Spesification
Processor	Dual Core 2GHz
RAM	1 GB
Storage required	200 MB

The hardware specifications on Android smartphones used for testing in performing educational games of the proverbs of Indonesia are:

Table 4. Hardware Specification Smartphone Testing

Hardware Type	Spesification
Processor	Quad Core 1,2GHz
RAM	1 GB
Storage	8GB

Hardware specifications used in the development of educational games proverb is:

Table 5. Analysis of Hardware Requirements for System Development

Hardware Type	Spesification
Processor	Intel Core i5-5200U
RAM	8 GB
Harddisk	1 TB
VGA	2 GB
Monitor	14 inch, minimum resolution 1366 x 768 pixel
Etc.	Mouse, Keyboard, Speaker

2. Requirements Analysis Software

Here is a software requirement analysis of the system to be built. Software specifications for the developers used in developing proven educational games are:

Table 6. Requirements Analysis Software

Software	Spesification
Operation System	Windows 10
Unity	Unity 5.6.0f3 64 bit is used to build educational games proverb
Mixamo	Digunakam for rigging and animated 3D character models

The software specification used to run educational games proverb is a smartphone with Android operating system minimum version 4.1 (Jelly Bean).

3. User Analysis

User analysis is an analysis of users who will enter or run a proverbial educational gaming app

so as to know the level of user understanding. Analysis of user needs in this study is divided into two categories.

a. User Knowledge and Experience

Knowledge and user experience expected in using and running this educational game can be seen in table 3.11.

Table 7. User Knowledge and Experience

User Knowledge and Experience	
Android Knowledge	Can operate the basics of Android smartphones
System experience	Understand how to install an app
Application experience	Understand how to use Android Apps read well and correctly
Ability to read	Can operate the basics of Android smartphones
Language skill	Indonesian

b. User Characteristics

The expected user characteristics in using and running this educational game can be seen in table 3.12.

Tabel 8. User Characteristics

User Characteristics	
Users	General public
Age	10 to 20 years
Gender	Boy and girl
Use of hand	In good condition both
Disability	No

2.5 Analisis Kebutuhan Fungsional

Functional needs analysis describes the process of activities to be applied to the system to be built.

1. Use Case Diagram

The use case diagram is used to describe what the system should do. Each use case diagram shows a set of use cases, actors, and their respective connections. Use cases are important for visualizing, specifying, and documenting the needs of system behaviors. The use case diagram involves a system to be built, actors as system users, use cases as functionality perceived by actors, and relationships between actors and uses cases [7].

Use Case Diagram in educational game proverb in Indonesia can be seen in picture 3.8 below.

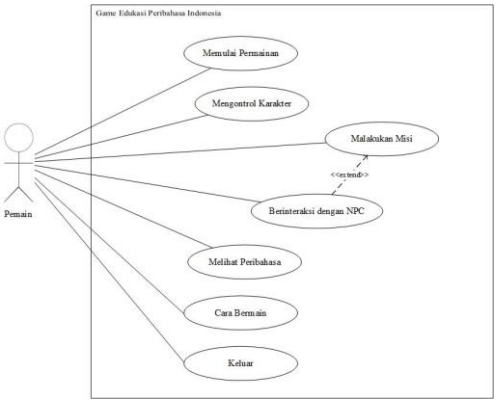


Figure 2. Use Case Diagram

2. Class Diagram

Class diagrams or class diagrams are the most important modeling in an object-oriented approach. Class modeling shows the classes that exist in the system and the relationships among those classes, the attributes, and operations in the class. Class diagrams are used to indicate the role of entities on systems that provide system functionality.

Class Diagram is a description of the structure and description of the system in terms of defining classes that will be built in educational games proverb Indonesia. A class diagram can be seen in figure 3 [7].

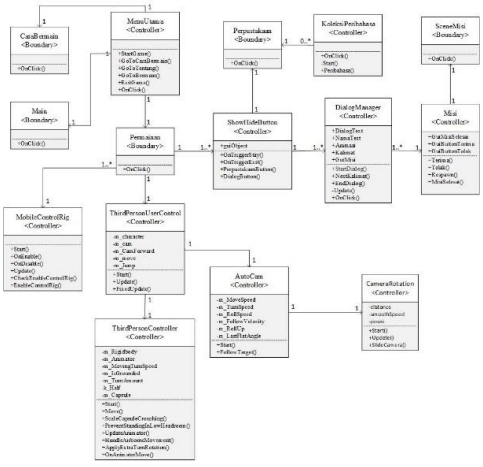


Figure 3. Class Diagram

2.6 Menu Structure Design

Menu structure is required to facilitate the user in understanding the menu on the game to be built. Here's an overview of the menu structure in this game can be seen in Figure 4.

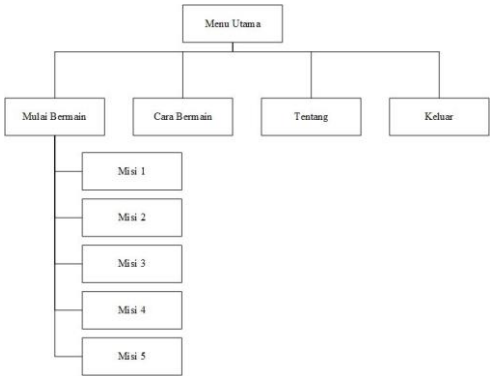


Figure 4. Menu Structure

2.7 Interface Implementation

The interface is an application display built as a means of interaction between the user and the application itself. Here is some interface display of educational games adage Indonesia.

1. The main menu interface in the educational game Indonesian proverbs can be seen in figure 5.



Figure 5. Mian Menu Interface

2. Antarmuka The game interface in educational games proverb in Indonesia can be seen in Figure 6.



Figure 6. Game Interface

3. Interface Dialog With Non-Player Character in educational game proverb Indonesia can be seen in figure 7.



Figure 7. Dialog Interface

4. Interface Mission in educational games proverb Indonesia can be seen in Figure 8.



Figure 8. Mission Interface

2.8 System Testing

System testing aims to find errors and deficiencies in the system built, so whether the system has met the criteria in accordance with the purpose or not. The test methods used in educational games proverb Indonesia is a performance test, alpha testing (black box) and beta testing (Likert Scale).

1. Blackbox Testing

Blackbox testing is done to test the functionality of the system, whether on the system there is still an error or not. The following black box testing scenario in educational games proverb in Indonesia can be seen in table 9.

Table 9. Blackbox Testing

Test Type	Details Testing	Testing Type
Main Menu	Getting Started Game	Blackbox
	How to play	Blackbox
	About Developer	Blackbox
	Exit	Blackbox
Moving Character	Walk upstairs	Blackbox
	Walk down	Blackbox
	Walk to the right	Blackbox
	Walk left	Blackbox
Interaction with non-player characters	Dialog button	Blackbox
	Conversations with non-player	Blackbox

Test Type	Details Testing	Testing Type
	characters	
	Next button	Blackbox
	Mission details provided	Blackbox
	Receiving missions	Blackbox
	Rejecting the mission	Blackbox
Mission	Mission instructions	Blackbox
	Trigger question	Blackbox
	Correct answer	Blackbox
	Wrong answer	Blackbox
	The mission message succeeded	Blackbox
A set of proverbs	View a set of proverbs	Blackbox
Pause	Pause button	Blackbox
	Button proceed	Blackbox
	Main menu button	Blackbox
	Buttons how to play	Blackbox

2. Beta Testing

Beta testing is an objective test, which is tested directly to users or players of educational games proverb Indonesia by using questionnaire techniques. Here are the results of beta testing.

a. Question: Educational game proverb Indonesia can help in studying Indonesian proverbs.

Category Answer	Score	Respondents	Total Score
Strongly agree	5	7	35
Agree	4	17	68
Doubtful	3	9	27
Disagree	2	0	0
Strongly Disagree	1	0	0
Total		**33**	**130**

Then the percentage of approval level of respondents can be calculated as follows:

$$I = \frac{130}{165} x\ 100\%$$
$$I = 78{,}78\%$$

From the calculation, the number of scores obtained is 130 and the percentage of the calculation obtained 78.78% of the expected value of 100%.

b. Question: By playing the game Indonesian proverb education can get to know more Indonesian proverbs.

Category Answer	Score	Respondents	Total Score
Strongly agree	5	8	40
Agree	4	16	64
Doubtful	3	9	27
Disagree	2	0	0
Strongly Disagree	1	0	0
Total		**33**	**131**

then the percentage of approval level of respondents can be calculated as follows:

$$I = \frac{131}{165} x\ 100\%$$
$$I = 79{,}39\%$$

From the calculation, the number of scores obtained is 131 and the percentage of the calculation obtained 79.39% of the expected value of 100%.

3. CLOSING

3.1 Conclusion

Based on the results of testing and system implementation of research conducted and refers to the purpose of research, it can be concluded that the application of educational games proverbs Indonesia can be a medium of learning and provide knowledge about proverb Indonesia to the community.

3.1 Recommendation

Here are some suggestions for the development of educational games adage Indonesia for further development, among others as follows:

1. Indonesian proverbs can be reproduced further to add to the diversity of questions from each mission and increase knowledge of the Indonesian proverb for the user.
2. Indonesian proverb questions on each mission can be made more varied and different so that users are more understanding and interested in the proverb Indonesia..
3. Performance applications can be increased again to be more stable and no lag occurs.

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