

DEVELOPMENT OF LEARN OF GAME ANIMAL REPTILE (LOTAR) GAME BASED ON ANDROID THEME INTRODUCTION OF ANIMAL REPTILE TYPE

Ari Aditiya Kurniawan¹, Richi Dwi Agustia²

^{1,2} Information Engineering - University Computer Indonesia
Jl. Dipatiukur 112-114 Bandung, Coblong, Lebakgede, Bandung, Bandung,
West Java 40132

E-mail: tntwarofgod@gmail.com¹, richi@email.unikom.ac.id²

ABSTRACT

Socialization and counseling fishing regulations animal is still done only to organizations or communities and the general public only when being beropasi conducting a capture of animals in the Report the by existing community even today these activities do not occur, Based on the description above, the need for a media that can help people - people in terms of education about the introduction of animal species of reptile that can reach out to the general public from the age of 15-30 years. Media publications and educational aides to be made of the results of this research are based games android. Therefore constructing an educational game that is interesting, entertaining, and interactive and can be played by the public and is expected to help the Center for Conservation of Natural Resources in implementing the program / activity works, it can also help as a media provider education and add knowledge about animal species reptile for the general public, On the overall application test results, it can be concluded that the applications that are built in compliance with their development objectives. Then the results of questionnaires to 23 respondents society agree to Educational game development Lotar, as well as games that are built are interactive games and fun, and can help people in getting and knowing information regarding the introduction of animal species of reptiles.

,Keywords: Educational Games LOTAR, the introduction of animal species of reptiles.

1. PRELIMINARY

1.1 Background

Smber Center for Conservation of Natural Resources is one of the Technical Implementation Unit of the Directorate General of Conservation of Natural Resources and Ecosystems (UPT DG KSDAE) Type A echelon II-B, in accordance with the Regulation of Minister of Environment and forestry Number: P8 / Menlhk? / General Secretariat /OTL.0/2016 on the Organization and

Administration of Technical Implementation Unit of Conservation of Natural Resources. In order to carry out basic tasks, the Technical Implementation Unit Conservation of Natural Resources has the task of implementation of Conservation of Natural Resources and Ecosystems in the Nature, Wildlife, Nature Parks and Hunting Parks and technical coordination of park management Forest and Ecosystem Essential under the provisions of the legislation. Socialization and counseling fishing regulations animal is still done only to organizations or communities and the general public only while conducting a beropasi Report the capture of animals in the community there even today such activities are not effective, because of the education and socialization in the community to still include publications such as websites dam *community* The area in the city of Bandung and Bandung District.

Vertebrates, or animals that have a spine that has three body parts were quite clear head, body and tail. Vertebrates are divided into five classes, namely Pisces (various types of bony fishes and cartilaginous), amphibian (various types of frogs and salamanders), reptiles (various types of snakes, lizards, crocodiles, and Turtles), Aves (birds and various species of birds) and mammals (various types of mammals), the reptile class derived from the word meaning reptum crawlies. Reptiles are a group of first land animals throughout his life breathing with the lungs. The common feature in the reptile class is different from the common characteristics in other classes, namely his whole body covered with dry skin or scales. In Indonesia, vegetation and wildlife, or commonly abbreviated as TSL included in Appendix I of CITES (Convention on International Trade in *Endangered Species of Wild Fauna and Flora*) Or international trade convention plant wildlife and endangered species 9 species of reptiles, Species of turtles (*Chelonia mydas* / green turtle, *Dermochelys coreacea* / Turtle starfruit, *Lepidochelys olivacea* / olive

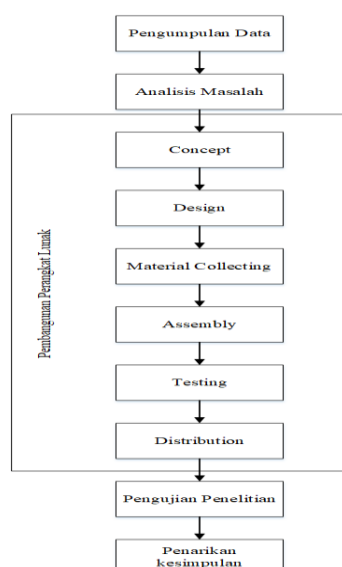
ridley turtle, *Eretmochelys imbricata* / Hawksbill, *Carreta carreta* / loggerhead turtle, *Natator depressa* / Turtle flat), dragon (*Varanus*), estuarine crocodile (*Crocodylus porosus*).

Based on the description above, the need for a media that can assist people in terms of education about the introduction of animal species Reptile that can reach the general public from the age of 15-30 years. Media publications and educational aides to be made of the results of research tasks This end is android based games.

Therefore constructing an educational game that is interesting, entertaining, and interactive and can be played by the general public, it can also help as a media provider education and dissemination on the introduction of animal species. So that was appointed this thesis.

1.2 Methods Research

The methodology used is based on a quantitative study, which was descriptive search, describe a situation or phenomenon in accordance with the facts. Stages of this research can be seen in Figure 1.1



Picture 1.1 Shows the stages of research

1.3 Collection Methods Data

The method used in the study of data collection are:

1. Observation

The observations were made by observing and doing review directly on the existing problems.

1.4 Analysis of the Problem

This stage is the stage of data analysis that is obtained when make observations. That his later results of this analysis will be made a reference to analyze the needs danperancangannya system.

1. Concept

Stage *concept* a stage to define the concept of application to be built, the purpose and characteristics of the future, analyze existing similar applications

2. Design

Stage *design* is the stage to make the specification details on the architecture of the application, and needs material to build the application. Starting from planning the display interface on the application, design tools, design button.

3. Material Collecting

This stage is the stage to collect materials such as images, objects of Animal Reptile species and others obtained from internal or external sources. This stage can be done along with the next stage, namely the assembly.

4. assembly

This stage is the stage where the application is made, based on the design that has been done before. All objects ranging from voice, image, *design* buttons are combined into an application.

5. testing

This stage is the testing phase applications whole. Applications will be testing using methods blackbox.

6. distribution

stages This is the stage where applications have been made, stored in a medium storage or can publish through PlayStore or directly to the public.

7. testing Research

This stage is the testing phase of research, whether the research walk accordingly, whether can solve the problems that exist or have not by trying to apply dibangun applications.

8. Withdrawal Conclusion

this stage is the final stage of the study, Where constitute conclusions from baseline to end of study, whether to solve the problem on and if this helps.

2. ISI RESEARCH

2.1 Analysis Problem

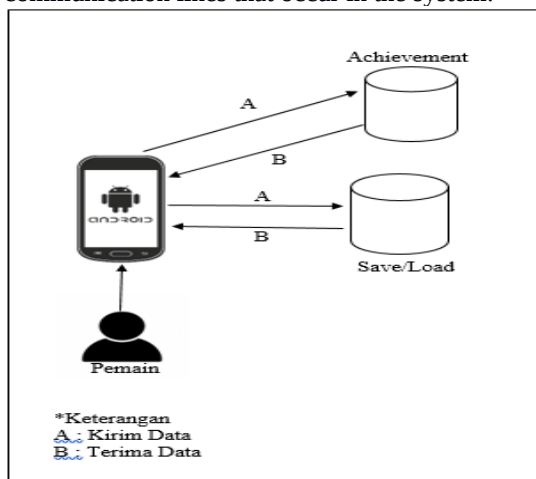
Center for Conservation of Natural Resources recently only been conducting kamunitas dissemination to the public and around the city of Bandung alone, while for the spread of animal reptile educational introduction to the public area of Bandung city using the website that functioned as media publications. However, subsequent to the distribution of questionnaires to people in Bandung obtained low public interest in reading containing information regarding the introduction of animals so difficult BBKSDA in doing education. Although BBKSDA own publications to educate the form of a website but obtained at least people who have visited the website to find information.

2.2 analysis Application learning that constructed

the system will be built is *game* education that the theme of the introduction of animal species of reptiles. Is a medium that is capable of providing education to provide information and knowledge about animals reptiles.

2.3 Architecture System

Analysis groove defining system the flow of the system will be built with the intention to eventually have a structure that is designed to illustrate the process workflow of the system built. This analysis stage illustrates how data communication lines that occur in the system.



1.4 Theoretical basis

- a. Games are interactive activities voluntarily, in which one or more players follow the rules that restrict their behavior, which imposes artificial ended with measurable results. Beginning of a formal game theory analysis is the study of Antoine Cournot duopoly in 1838. mathematician Emile Borel

suggest a formal theory of games in 1921, which was followed by the mathematician John von Neumann in 1928 in his "Theory of Parlor Games". There are still many theories provide a lot of the terminology and basic configuration issues that are still used today.

- b. Educational games are digital games that can give you the opportunity to play through a simulation environment and can be an integral part of learning and intellectual development. Until the late 19th century associated with the entertainment game, but after getting the influence of John Dewey in 1944, the game began to play a role in teaching technology. Educational game to help the people in the development, intellectual, motivation, experise, skill. [1]

2.5 Analysis Matter

Learning material taken from a book entitled "Know Much First Indonesian Reptile animal ". analysis of the material completely can be seen in the table.

Table 1.2 Analysis of Material

Chapter	Matter	basic competition	Indicator achievement
1	Intro to Animal Type Reptile	1. Characteristics of the snake	1. Understanding of difference venomous and non-venomous snakes
		2. Introduction Varanus / lizard	2. explain habitat and conservation lizard
		3. The introduction of a turtle	3. The introduction of a turtle and habitat and conservation status
		4.pengenalan species of turtles	4.pengenalan turtles including the conservation of endangered
		5.pengenalan animals crocodile species	5.Status conservation and habitat as well as differences in

2.4 Analysis Specification Needs Software

Software requirements analysis is needed to determine the software used to build gaming

applications Introduction Animal Reptile type. Table 1.2 describes the software used for the development of gaming applications Introduction to Animal Reptile type.

Table 1.1 Frontend Software Requirements Specification

No.	Software	Information
1	Operating system	Windows 7
2	RPG Marker Mv	As a means of making Game

2.5 Analysis Needs Non functional

analysis needs non functional mengg-ambarkan kebuthan outside the system needed to run application that built. The non-functional requirements on the basis of learning applications of digital techniques, including hardware requirements, software requirements and needs System users who will use the application.

2.5.1 Hardware Requirements Analysis

Analysis of hardware requirements intended to determine the specifications of the hardware used to build gaming applications Introduction Animal Reptile type. Table 1.3 describes the hardware specifications used for the construction of gaming applications The introduction Animal Reptile type.

Table 1.2 Hardware Requirements Analysis

No.	Hardware	Information
1	processor	AMD E-450 APU with Radeon (tm) HD Graphics (2 CPUs), ~ 1.6GHz
2	RAM	4096 MB
3	Graphic Card	AMD Radeon HD 7340
4	monitor	1366 x 768
5	Mouse	Standard
6	keyboard	Standard

2.5.2 Analysis of Needs Software

Analysis software is essential in supporting the performance of a system. The software is used in a system development so that hardware can interact with each other. Software needed for build learning applications basic digital techniques.

Table 1.3 Software Requirements Analysis

No.	Software	Specification
1	Operating system	Microsoft Windows 10
2	Design tools	Adobe Photoshop

2.5.3 Analysis of User Needs

In addition to the need for software and hardware, the user is also needed in the use of these gaming applications. The specifications of the user required:

1. Can operate basics android smartphone.
2. Understood in operating applications / games android.
3. Can be read.
4. Not bear disability (except for tunawicara).

1.6 analysis Functional Requirements

Analytical modeling approach used to build this educational game app for visualizing, designing and documenting software systems is the Unified Modeling Language (UML). As well as describing the functional and non-functional requirements are required by the system is running well according to his needs. Functional requirements specification device software described in Table 1.5

Table 1.4 Needs Analysis Fngsional

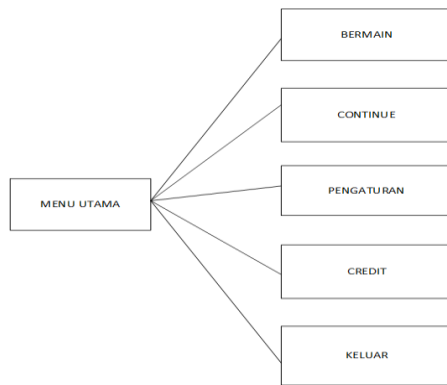
SKPL-F	Functional Requirements Specification Software
SKPL-F-01	The system provides a function Playing Game
SKPL-F-02	The system provides the function Continue
SKPL-F-03	System provides the function Save
SKPL-F-04	The system provides the function settings
SKPL-F-05	The system provides the function Exit

1.7 System planning

The design of the system is the system design can be defined as the depiction, planning and making sketches or arrangement of several elements Separate into one unified whole and functioning. on stage This will in explain the design of the game system to be built.

1.7.1 Menu Structure Design

To facilitate the manufacture of the system is necessary to design the program menu structure to be built. In Figure 1.3 it can be seen the architectural design of the menu system is built.



Picture 1.1 Menu Structure Design

1.7.2 Design interface

Interface design aims to provide an overview of the application to be built so that will make it easier to implement and will facilitate the making application.

a. Main Menu interface (Before Playing Game)

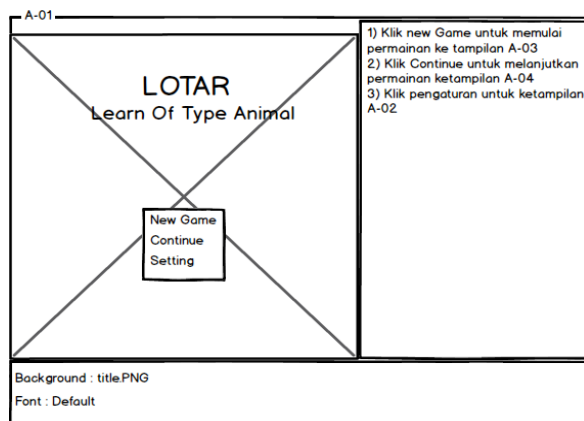


Figure 1.3 Main Menu Structure Design

b. Interface Settings Menu.

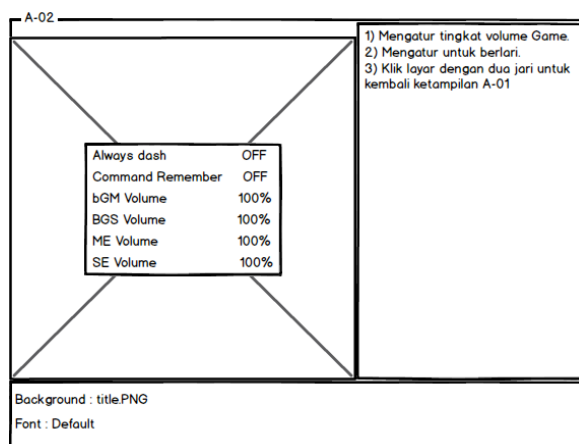


Figure 1.4 Settings Menu Structure Design

c. Continue Menu Interface Design

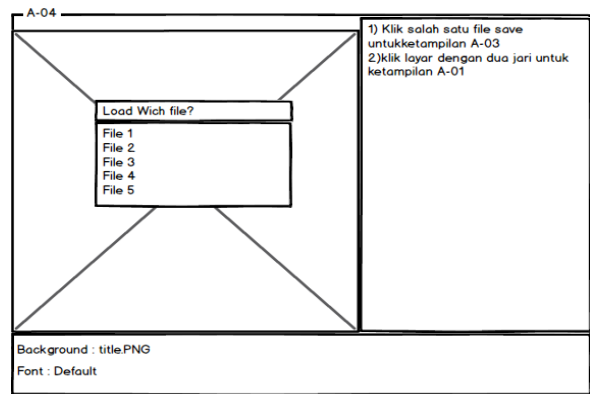


Figure 1.5 Menu Structure Design Continue

1.8 Implementation System

Implementation phase of the system is the continuation phase from analysis and design phase of the system. System implementation goal is to implement the results of the analysis and design of the system that has been done. As for the discussion of educational game system implementation LOTAR (Learn Of Type Animal Reptile) include the implementation of hardware requirements, implementation of software requirements, and interface implementation.

1.8.1 implementation interface

Implementation of an interface is the stage of the actual system. This stage is also adjusted to the interface design. Here is a game application interface implementation LOTAR (Learn Of Type Animal Reptile).

a. The main menu interface implementation



Figure 2.1 Main Menu

b. Continue menu interface implementation



Figure 2.2 Menu Continue

c.implementasi settings menu

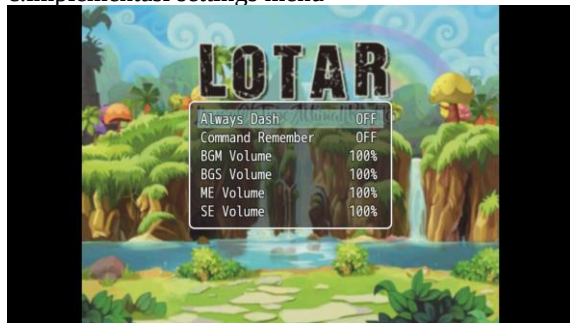


Figure 2.3 Menu Settings

1.9 examination System

Tests conducted system aims to find errors or deficiencies in the software being tested. The test aims to determine the software that made it meets the criteria in accordance with the purpose of designing the software.

In this study the tests performed on the system that is functional testing (blackbox) and beta. The method used in this test is a blackbox testing. Blackbox testing is testing done only observe the execution results through the test data and the functional check of the device soft. And beta testing is used to determine the user's response to the game Education LOTAR (Learn Of Type Animal Reptile).

1.10 Black Box Testing

Blackbox testing done on the development of the record all the errors and problems usage. Blackbox testing done on a controlled environment.

Table 4.5 Testing New Game

No .	Test item	Test scenario	Expected results	Test result
1	New Game	Pressing the button New Game	Menu access game to the	[√] In accordance [] It is not in accordance with

Table 4.6 Testing Menu continue

N o.	Test item	Test scenario	Expected results	Test result
1	Continue	Pressing the menu Continue	Continuing the previous games played and save	[√] In accordance [] It is not in accordance with

Table 4.7 Test Setup

N o.	Test item	Test scenario	Expected results	Test result
1	Settings	Pressing the icon arrangement	Showing the game settings	[√] In accordance [] It is not in accordance with
		will set up volume	The volume of the game according to the results settings entered by the user	[√] In accordance [] It is not in accordance with

1.11 Conclusion testing Blackboc

Based blackbox testing has been done on the game application LOTAR Education (Learn Of Type Animal Reptile) are all functional game already in accordance with the expected results. So it can be concluded that the testing has been meeting the needs of the system according to the needs designed software.

1.12 examination response has been Against Users Applications

examination This is the result observation of responses from respondents who use applications Educational Games Lotar. Responses a questionnaire that will be provided to Educational Games Lotar users or the general public.

1.13 examination questionnaires

examination that do with gave questionnaires to the public to try the game and find out if the game has fulfilled its purpose properly. Adapaun the target user who made respondents are

people in Bandung. In this test the questionnaire given to 23 respondents. The percentage of each question are given the respondent has 5 scale use Likert scale. by criteria scores are described in the following table:

Table 1.7 Criteria Score

scale Answers	Statement options	Score	Percentage
SS	Strongly agree	5	100% - 80%
S	Agree	4	79% - 60%
C	Doubtful	3	59% - 40%
TS	Disagree	2	39% - 20%
STS	Strongly Disagree	1	19% - 0%

Table 1.8 Statement questionnaires

N o.	STATEMENT	S S	S	R G	T S	ST S
1	Does playing a boring Lotar Educational Games to be played?	4	6	4	11	2
2	Is the delivery of content Educational Games Lotar clearly conveyed?	6	14	2	0	1
3	By playing games Educational Lotar introduction of animals reptiles fun?	8	13	1	0	1
4	Is it difficult to play the game Education Lotar?	4	3	4	9	3
5	Is Educational Games Lotar add insight about the introduction of animal species of Reptiles?	10	11	1	0	1
6	Is Educational Games Lotar looks interesting?	7	11	4	0	1

Here are the results the percentage of responses obtained of the questionnaire were then calculated using the formula above.

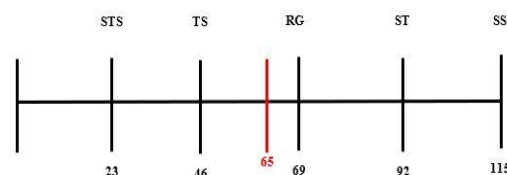
1. is Game play Education Lotar boring to be played?

Table 1.8 percentage Results answer

No Question	Informa tion	Sco re	respond ents	Total score
1	SS	5	4	20
	S	4	2	8
	C	3	4	12
	TS	2	11	22
	STS	1	2	2
	total			64

Based on the results the percentage of the value of the above, it can be concluded that the assessment of the questions about setuju kan respondents that the game is not boring to played is 57% of its 100% expected, it can be categorized as very agree.

The rating scale image of the calculation results can be seen in the following figure.



So based on these data, the results the percentage calculation is

$$y_4 = \frac{65}{115} \times 100\% = 57\%$$

3. CLOSING

3.1 Conclusion

Based on the results obtained in the thesis This, it can be concluded as follows:

1. *game* Education LOTAR (Learn Of Type Animal Reptile) can do education and dissemination of the using the media more attractive compared to media education and dissemination previous.

2. *game* Education LOTAR (Learn Of Type Animal Reptile) is a game interactive and fun, and it can help people to get and find out information the introduction of animal species of reptiles.

3.2 advice

Based on these results, the following are suggestions for game development LOTAR Education (Learn Of Type Animal Reptile) to be better in the future:

1. Plus another player character so players could free to choose another character to use to play.
2. Extra material education and the challenges that exist in the game Education LOTAR (Learn Of Type Animal Reptile).
3. Adding to the challenges and games to the material in education.

LIST Pusta

- [1] S. Han, H. Shim, B. Kim, S. Park, S. Ryu and GG lee, "Keyword Question Answering System with Report Generation for Linked Data," 2015 International Conference on Big Data and Smart Computing (BIGCOMP), pp , 23-26, 2015.
- [2] V. Gurusamy and S. Kannan, "Preprocessing Techniques for Text Mining," October 2014 RTRICS Conference Paper, 2014.
- [3] A. Ligeza, Logical Foundations for Rule-Based Systems, Cracow, Poland: Springer, 2006.
- [5] TD Gedeon and LCC Fung, AI 2003: Advances in Artificial Intelligence: 16th Australian Conference on AI, Perth, Australia, December 3-5, 2003, Proceedings, Springer, 2003.
- [6] Claudia LJ, "The development of computer-based learning media assembly 3D multimedia on the subjects of computer assembly for class X TKJ Programs IN SMK Negeri 1 PACITAN," Computer and Information, no. 8, pp. 14-22, 2016.
- [7] JP Rahardjo, "Learning Media Motorcycle Engineering For Class XII SMK Using Simulation-Based Desktop," Computer Science and Informatics, no. 8, pp. 45-53, 2014.
- [8] w. Sanjaya, Media Communication Education, Jakarta: Kencana Prenada Media Group, 2012.
- [9] IPAE Pratama, Handbook of Theory and Practice of Computer Network Based Open Source bonus DVD, Bandung: Informatics, 2015.
- [10] E. Prastyo and N., "Interactive Learning Media Development Using Adobe Flash CS3 In Training Eye PLC in Industrial Electrical Engineering Department," pengembangan Media Interactive Learning, p. 5, 2015.
- [11] Y. Tadjiri, "Development of Interactive Learning Media Basics For SMK Electronics Engineer's Department of Electronics Industry Case Study SMK Bandung International craft," Journal of Scientific Computing and Informatics, p. 8, 2015.
- [12] P. Moh. Nazir, Methods, Bogor: Ghalia Indonesia, in 2014.
- [13] Azhar M. Arsyad, Media Education, Jakarta: RajaGrafindo Persada 2008.
- [14] RAMShalahudin, Software Engineering and Object-Oriented Structured, Bandung: Informatics, 2016.
- [15] "GAME OF MALARIA AND DISEASE PREVENTION EDUCATION," aditiya girder mahafi, vol. 2, october 2013.