



# Basic Japanese E-learning Application with Prototype Methodology

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## ABSTRACT

Basic Japanese E-learning application is computer software intended as a tool that provides convenience and practicality in learning basic Japanese such as recognizing hiragana, katakana and is equipped with grammar and general conversation. The creation of an E-learning system in the field of learning is one thing that is expected to improve the quality and understanding of the general public in learning Japanese. The software development uses system development modeling with the Prototype Methodology, the analysis and design stages use the Object Oriented Methodology from Coad and Yourdon with modeling using UML, while the implementation uses the PHP programming language with the MySQL Database Management System (DBMS). The result achieved is a learning application that provides convenience and practicality in understanding Japanese. This learning application is supported by multimedia elements so as to provide a more attractive and interactive appearance so that students can carry out learning activities more fun.

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## 1. Introduction

Language is one of the tools to communicate which is very important in the era of globalization (Murti, 2015) (Nasution, 2007). In this era, a person is required to be able to master more than one foreign language in order to improve human resources in the face of increasingly stringent competitiveness. Besides English which is an international language (Munadzdzofah, 2018) (Purhantara, 2010), Japanese has also become one of the foreign languages that need to be learned. This is due to the very rapid growth of the State of Japan in all fields, especially in the fields of technology and industry, for example, the number of products imported from Japan in the form of electronic equipment, vehicles, and even daily necessities (Ahmad, 2015) (Minah, n.d.).

There are many books that support learning Japanese that do not and provide convenience in learning Japanese directly because in reality the interest in reading books is still minimal. Besides that, there is no learning aid that suits the needs of what students want (Puspitasari, 2019) (Dini Hamidin, Andarsyah, & Indonesia, n.d.).

With these problems, this topic was taken to write a thesis with the title "Basic Japanese E-learning Application with Prototype Methodology".

## 2. Method

The methodology that will be used in this research consists of the following steps:

- a. Data collection technique

In writing the final project required supporting data obtained by a relevant data collection method (Fitriyani, Sasono Wibowo, & Kom, 2013). Data collection methods used to obtain data are as follows.

- 1). Observation  
Observation is a direct observation of an object to be studied in a short time and aims to get an overview of the object of research. Observations were made to observe directly the effect of information technology on students' understanding of learning about the subjects given.
- 2). Interview  
Interviews are a way to collect data by conducting interviews or direct Q&A with teaching staff at SMP Negeri 1 Gunungtanjung, Tasikmalaya Regency. A detailed list of questions that the author asked can be seen in the attachment.
- 3). Literature review  
In this method, the authors quote from several reading sources related to the problems studied, which can be in the form of theories or opinions from several reading books. It is intended to provide a solid theoretical foundation through books or literature available in libraries and the internet.
- 4). Documentation Methodology  
That is a technique of collecting data by using archives or written manuscripts.

### 3. Results and Discussion

Self-directed learning is a course or program that gives individuals the opportunity to choose outcomes, design their own activities and carry out their activities according to their choice. This independent learning is student-centred (student-centred approach) where the learning process and experience is regulated and controlled by the students themselves. Students decide for themselves how, where, and when to learn about something that they consider important.

- a. The proposed solutions to overcome the problems faced in the Japanese language learning process are:
  - 1). The design of an e-learning application using a network-based computerized system and supported by multimedia.
  - 2). The application made is only used as a tool in learning Japanese.
  - 3). The material is given in full in a more attractive form to make it easier to understand the material
  - 4). Designing an application that prioritizes ease of use of the application and adds visual and sound facilities, and is equipped with attractive facilities so that users get a clearer picture of the material being studied.

In accordance with the results of the interviews that have been conducted, it is hoped that the e-learning application created can meet all the needs needed by ordinary people to be able to better understand Japanese lessons.
- b. SWOT analysis
  - 1). System Strength (Stength)  
Individually, Self-Learning has specific appeals, such as greater freedom to choose, flexibility, and benefiting from learning skills while actively undergoing Independent Learning while at the same time experiencing beneficial changes in learning attitudes and behavior.
  - 2). System Weaknesses (Weaknesses)  
This Independent Learning System has a weakness, namely the absence of interaction between other students and with teachers or instructors in the learning process. So it is feared that there will be misunderstandings in interpreting something they do not understand correctly.
  - 3). System Opportunity (Opportunity)

The presentation of the content of the material needed in the independent learning process can be packaged to be more attractive into a learning tool / media to provide convenience in the learning process so that students are expected to be able to understand the lesson quickly.

4). System Challenge (Threat)

With the opportunity mentioned above, there are several challenges that must be solved, namely how to make the content of the material to be studied more interesting, how long it takes to design and the amount of money needed from design to implementation.

c. Interface Design

The interface design for this elearning application is as follows:

1). Homepage Display Design

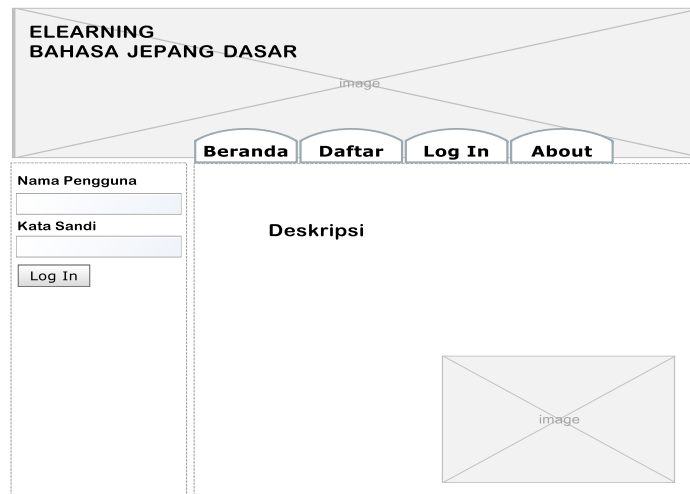


Figure 1. Home Page Display Design

2). List Page Display Design

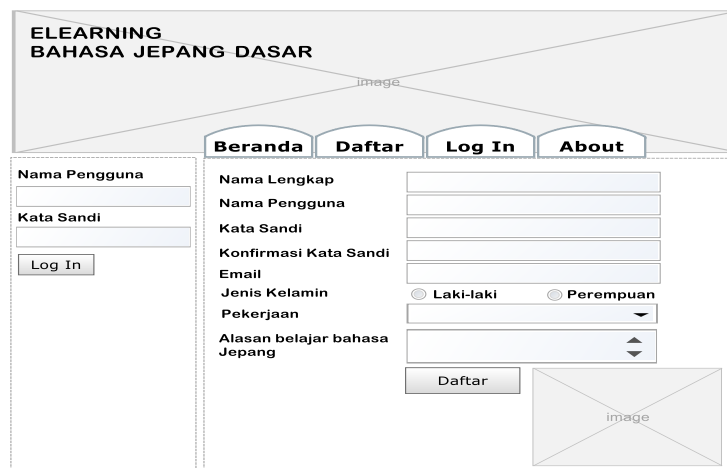


Figure 2. List Page Display Design

3). Material Page Display Design

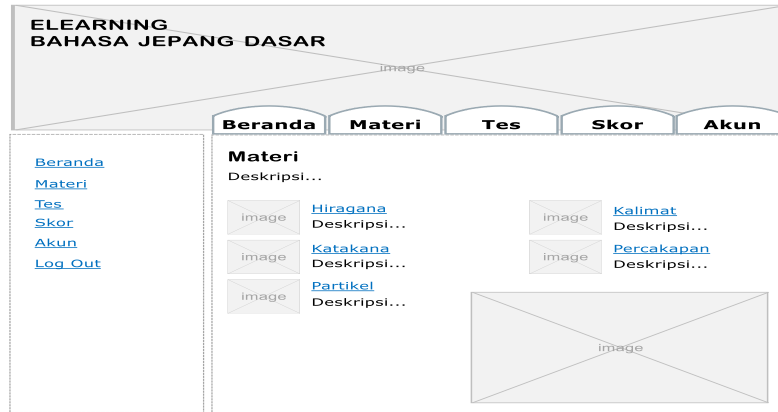


Figure 3. Material Page Display Design

4). Value/Score Page Display Design

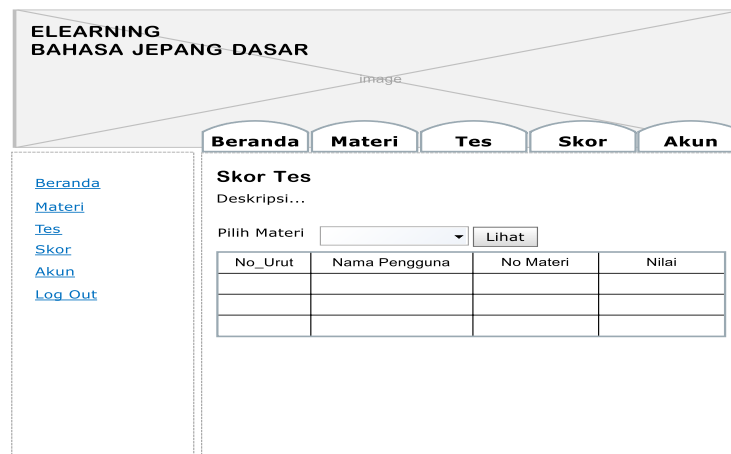


Figure 4. Value/Score Page Display Design

d. Elearning Application Implementation

This e-learning application uses several entities that are adapted to the use case and class diagrams written in the previous chapter. The implementation is as follows:

**Table 1.**  
Implementation of Functions per Usecase of Elearning Applications

No	Use Case	Boundary	Control	Entity	Address	Pages (*.php)
1	list	Register Page	Add data	tbuser	Menu, Register	Signup.php
2	Login	Login Page	Filter	tbuser	Menu, Login	Login.php
3	Choosing Material	User home page	Show material menu	tbmaterial	Menu, Material	Material.php
4	Edit User Account Data	User account edit page	Update, clear data	tbuser	Menu, Account, edit	Editaccount.php
5	Doing the test	test page	Add data	Tbuser, tbmaterial, tbquestion, tbvalue	Menu, test	test.php
6	View test	Test scores list	view data,	Tbuser,	Menu, value	score.php

No	Use Case	Boundary	Control	Entity	Address	Pages (*.php)
	scores	page	filter	tbmaterial, tbquestion, tbvalue	list	
7	Material manipulation	Add material data page Material data edit page Add test	Add data Update, clear data Add data	tbmaterial tbquestion	Menu, Material Menu, materials Menu, Test Questions	input_material.php edit_material.php input_test.php
8	Manipulation of test questions	question data page Test question data edit page	Update, clear data	tbquestion	Menu, Test Questions	edit_test.php

e. Black Box Test

Black Box Testing is an application test with an approach that assumes a software or program as a black box. This approach only evaluates the program from the output or the final output issued by the application. Black Box testing on this e-learning application is done by taking samples from the new user registration process. The following are the results of the Black Box testing of the process new user run. The following are the results of the Black Box testing of the process

**Table 2.**

Implementation of Functions per Usecase of Elearning Applications

Requirements	Test Scenario	Expected results	Test results
User Data Input	Input user data (if the data is not complete)	The message "Incomplete data" appears.	In accordance
	Input item data (if the user name or email is already registered)	The message "User name or email has been registered" appears.	In accordance
	Click the Register button	The data will be stored in the database in the user table.	In accordance

#### 4. Conclusion

The conclusion that can be drawn from the results of the implementation and testing of e-learning applications is that this teaching device conveys learning material using a more attractive appearance when compared to learning methods based on books only. This Elearning application is only as a learning tool for people who do independent learning in learning Japanese. Based on the results of white box and black box testing, the developed application is in accordance with what has been designed.

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