

# Design of Interactive Multimedia Based IPS Learning Module Using CTL Approach Based on Student Tendency Response in the Use of Learning Module in Grade IV

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**Keywords:** Module, IPS, CTL, Interactive Multimedia.

**Abstract:** IPS learning modules based on interactive multimedia using the CTL approach can be interpreted as teaching materials as a tool that can be used by teachers and students in learning. The use of interactive multimedia for IPS teaching material aims to develop the ability to think and improve student's attitude toward learnings. This research is development research (research & development). The research is limited to the design of IPS modules based on interactive multimedia. The first phase is to analyse the need to design an interactive multimedia-based IPS module for fourth grade students in 5 elementary schools in Padang Timur sub-district in academic year 2016/2017. Need Analysis is conducted through questionnaire response tendency in using module for learning. Then the questionnaire is used as a reference in designing the IPS learning module, after that new interactive module design are designed. The result of the research is the design of IPS module based on interactive multimedia using CTL approach on program android.

## 1 INTRODUCTION

The social studies subject (IPS) is a science that examines the various disciplines of social sciences and humanities and basic human activities that are compiled scientifically in order to provide insight and deep understanding to learners, especially at the elementary and secondary level (Susanto, 2013: 137). IPS covers a variety of diverse social life, both social, economic, psychological, cultural, and historical relationships, all of which are embraced in the social sciences (Imam, 2007).

Learning IPS should be presented as interesting as possible so that learners can understand all the studies contained in IPS learning easily. However, when viewed in reality in the school, the learning process of IPS subjects conducted by the teacher still has many limitations among them are (1) the teacher still often focused on the use of textbooks, (2) modules used are existing modules such as pictures, besides (3) the lecture method still dominates in the learning process so that the learning process tends to teacher-centred.

From the problems encountered in leaning IPS in 5 elementary schools in Padang Timus sub district, there is still less availability of interactive module

using computer and LCD in schools and even students are not involved in the use of projector during the learning process. Therefore, the ideal condition to be achieved in order to develop a module supported by an interactive Multimedia-based module that can provide clear information for learners (Ramansyah, 2014). The teaching materials used are expected to interact with students with or without the assistance of teachers (Sri, 2014).

Technological developments that have been incorporated into the family environment, especially early childhood like android technology, tablets and laptops provide space for children to get involved in the use of a technology device (rakimahwati and hendra, 2016). It is affirmed that "multimedia technology if prepared in the best possible way influences the effectiveness of learning and aids in teaching and learning" (Pasnik et al., 2007; Neuman, Newman, and Dwyer 2010; Corporation for Public Broadcasting 2011). To generate the development of interactive multimedia-based module the researcher uses Akker's development research model (1999). At this stage, the needs analysis and character of the researcher's subjects, then the formulation and design of the product, then small-scale trials to large-scale and expert and user validation and trials. The product

will be generated in the form of modules supported by modules made from flash macro module applications that can run on android and PC Operating System or laptop. This product allows its use to be mobile anywhere and anytime, this is in line with Bhaskar K (2013) One alternative is developing android based interactive media can help learning system while playing in the classroom, in the family and society which must be under the control and supervision of an adult.

The purpose of this research is to Produce Interactive Multimedia Based IPS Learning Module for Grade IV Elementary School Students in regard to Implementation of Curriculum 2013 in order to improve learning outcomes and create learning IPS more fun for students. This is also supported to improve the learning outcomes, both teachers, and students using Information Communication Technologies (ICT) (Nilay M. Vaidya et al., 2016), the meaningful use of technology and innovation in learning technologies. A good learning environment to help students with more learning and pleasure. This idea is especially relevant to early childhood learning (rakimahwati and hendra, 2016).

## 2 RESEARCH METHODS

### 2.1 Types of Research

Based on the background and purpose of this study, then the type of research that will be done is research development. This research includes research that develops and produces new products in a learning system that will be applied to learners as users. The research includes research that develops and manufactures interactive multimedia-based media using android technology for elementary students. The first stage needs assessment toward interactive android-based media design for elementary students. This stage begins with an analysis to describe the initial condition of elementary school students. Initial needs analysis is done through the direct deployment of the coordinator to the students. Furthermore, interactive android-based media designs are conducted for elementary school students.

### 2.2 Research Subject

The subjects of the study were students of Grade IV from 5 elementary schools in kec. Padang Timur Padang academic year 2017/2018. The students involved are high-grade students. The purpose of the chosen the subject is based on the number of materials

that will be taught in class IV and at least teaching materials in the form of learning modules used in schools.

## 2.3 Research Procedure

### 2.3.1 Needs Analysis

This analysis includes analysis of learning facilities and infrastructure, student's needs, characteristics of students, analysing the ability of educators in constraints encountered during learning.

### 2.3.2 Design

At this stage the first thing to do is to establish the main concepts of the characteristics of elementary school students that will be integrated into interactive multimedia-based IPS learning modules.

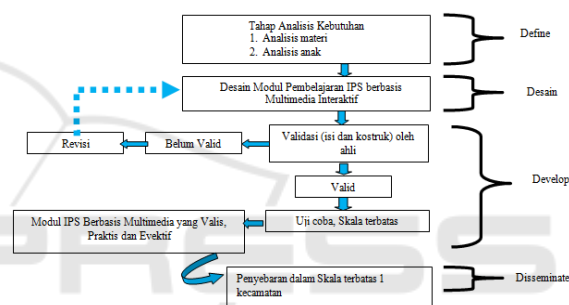


Figure 1: Design of learning module development.

## 2.4 Research Instruments

The research instrument developed to collect data in this study is a requirement analysis sheet that is used to collect information about the tendency of the use of IPS learning module in class IV for the consideration of the design of learning module.

## 2.5 Data Analysis Technique

### 2.5.1 Needs Analysis

In the need analysis phase, data collection is gathered to obtain information about the characteristics of students in using the module in school. Data collected through questionnaires question the students' tendency in using IPS learning module at school. Data to get the average score of each indicator of the acquisition of trends in the use of IPS module. Using Formula (Arikunto, 2002).

Average Score =

$$\frac{\left(\frac{5.Fi}{SL}\right) + \left(\frac{4.Fi}{SR}\right) + \left(\frac{3.Fi}{KD}\right) + \left(\frac{2.Fi}{JR}\right) + \left(\frac{1.Fi}{TP}\right)}{SL + SR + KD + JR + TP} \quad (1)$$

Description:

Fi = Frequency or number of respondents

SL = Always

SR = Often

KD = Sometimes

JR = Rarely

TP = Never

To find the level of achievement of respondent's answer hence required formula which is based on (Arikunto, 2002).

Table 1: Criteria of Students Response.

Range of TRA	Description
81% – 100%	Very Good
66% – 80,99%	Good
56% – 65,99%	Fair
46% – 55,99%	Bad
0-45%	Worse

### 2.5.2 Design Stage

From the questionnaire data that has been obtained from need analysis regarding to tendency of the use of module by the students in school, the design is composed by using several stages of computer-based interactive design according to Susilanan (132: 2007) (1) collecting material needs to design and make application. (2) making flowchart, (3) storyboard making, and (4) programming

## 3 RESULTS AND DISCUSSION

Interactive multimedia-based IPS module serves as a tool in the implementation of learning. Interactive multimedia-based IPS module which is used as a guideline is expected to improve the quality of learning outcomes of learners. For that reason, it is necessary to observe about the tendency of student module usage in IPS learning.

### 3.1 Tendency Analysis of Learning Module in Elementary School

The current learning is focusing on writing, reading, and listening or better known as conventional learning. Writing, reading, and listening are done during teaching and learning process where communication between teachers and students is

common in the classroom. Teachers' learning resources come from textbooks and images that are delivered to learners with teacher's narrative on text or images.

In the use of learning modules there is a tendency of the use of modules used by teachers, from the tendency of such use can be obtained information overview module commonly used by teachers in learning, the extent to which the use of technology in the form of android used by teachers in learning as well as from information obtained designed interactive multimedia-based learning module that can access with android and can be used by teachers and students in and out of learning.

#### 3.1.1 The Tendency of the Use of Learning Modules Based on Student Response

Student responses to learning are collected through questionnaires that contain statements about the learning that is applied in the classroom. Here is the data of student response to IPS Learning module with model

Table 2: The response to the tendency of the use of learning modules.

No.	Statement	Average score
1.	My parents allow me to use phone with Android program.	90
2.	My parents allow me to bring phone / laptop with Android program to school.	39
3.	My parents allow me to use a computer / laptop that has an Android program.	65
4.	I use phone during school hours.	10
5.	I use phone for other purposes during school hours.	20
6.	I use my phone / computer / laptop to study at home.	81
7.	Parents admonish me if they see me learning while playing phone / laptop / computer	97
8.	Master admonished me for using my phone / laptop while studying.	59
9.	I am more diligent study after I use phone / laptop / computer in learning	62
10.	I better understand the material after I use phone / laptop / computer in learning	68
11.	Teachers use print modules such as posters, newspaper clippings or magazines, a collection of folklore in learning.	100
12.	Teachers use transparency modules like OHP and PowerPoint in learning.	82

13.	Teachers use audio modules such as radio and tape-recorders in learning.	50
14.	Teachers use video modules such as film and television in learning.	77
15.	Teachers use interactive multimedia (which students can hold / move) in learning.	71
16.	Teachers use e-learning (internet) in learning.	80
17.	Learning by using learning modules is more fun than just with lecture methods.	88
18.	I feel bored when I follow the lesson that just record and listen without any learning module	85
19.	The use of learning modules by teachers can increase my attention to learning.	95
20.	The use of the module as a learning module makes me more eager to learn.	100
21.	I would rather be involved in learning when the teacher uses the learning module.	90
22.	I am unable to clearly capture the material presented only by using lecture methods without any examples of images or video	88
23.	I want to know more if the teacher uses the module in learning.	98
24.	The use of the learning module made me study independently.	100
25.	The use of the learning module helped me in resolving the issues that arose in learning.	100

Based on the results of the analysis of IPS learning tendency of teachers and students, Student response shows that the use of learning modules is prospective because students can relatively access the use of modules that are operated with an android program. As Guernsey (2012) states that technological developments that have been entered into the family environment, especially early childhood like android technology, tablets and notebooks provide space for children to get involved in the use of a technology device. It is about 52% of children of ages 0-8 years had been able to access a Smartphone, tablet or similar electronic equipment.

### 3.2 Design Interactive Multimedia Based IPS Learning Module

Design stage aims to find the optimal design of the application by considering problems and needs that exist in the system as defined in the need analysis phase. The process includes the combination technology, hardware, and software to get optimal results obtained which easy to implement.

#### 3.2.1 The Steps of IPS Learning Module Design

The design step is a series of stages of designing and making interactive multimedia learning applications as a learning module. The steps are as follows:

Development of computer-based interactive media design according to Susilanan (132: 2007) can be done by: (1) making flowchart, (2) storyboard making, and (3) programming

- a) Make specific details of the structure of multimedia applications to be created, in this case, the structure described in the form of System Flowchart.

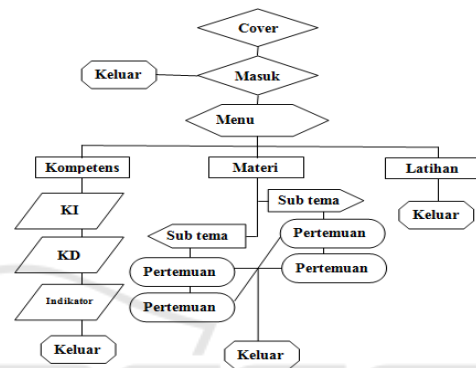


Figure 2: System Flowchart.

- b) Designing storyboards

This stage provides the visualization of text that describes the scene, including all the multimedia objects and connected to another scene, or describe the form of applications. Storyboard is a series of manual drawings to describe a story or sequence of actions. Storyboard describes the look of each scene. First, the storyboard deals with the first scene which is the initial use of the application by the user. Then the storyboard continues for the next scene. The storyboard developed for each topic, including:

- (1) Scane 1: cover, Main menu view, theme menu, biodata, cover.
- (2) Scane 2: topic 1
- (3) Scane 3: topic 2
- (4) Scane 4: topic 3
- (5) Scane 7: Exercise

On each scane, there are some buttons, a button back to return to the main menu and the exit button.

- c) Combining text, images, sound, video, and animation using the necessary tools then the process of merging all multimedia objects that

have been built into a single unit in the multimedia animation learning.

### 3.2.2 Implementation Results

The results of the implementation of the design of multimedia-based stenographic learning applications to produce interactive interface of multimedia applications. Details can be seen in the following description:

- a) Opening Pages View (module cover)  
This opening page view there is 1 button that is the entry button. The entry button is useful for entering into the application and leading to the main menu. Here is an opening page view:



Figure 3: The cover view of interactive multimedia-based learning module.

- b) Display Main Menu  
The main menu consists of a cover button, instructions, Materials, exercises, personal information and exit buttons. Here is the main menu view when the entry button on the opening page is clicked:



Figure 4: The main menu view of the interactive multimedia-based learning module.

- c) Display sub-topic  
The menu display of sub-topic options consists of 3 sub-themes and each sub-topic consists of 6 meetings and the following is how it looks:

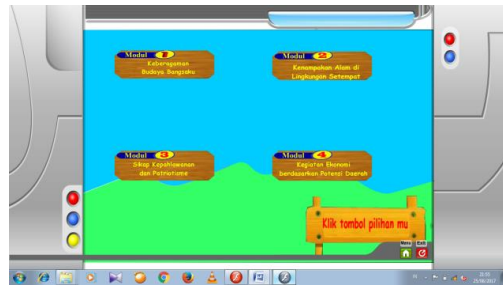


Figure 5: Display interactive learning-based learning module menu.

- d) Display material form  
In the material view contains button buttons and images that support the material to be displayed. Here is the visual appearance:



Figure 6: Initial display of interactive multimedia-based learning module.



Figure 7: Initial display of interactive multimedia-based learning module.

The design of interactive multimedia-based learning module is assumed to be able to improve the process and student learning outcomes. By looking, listening and touch activities, students will be actively involved in learning activities. This active learning is enhanced by beautiful media display and the use of sophisticated tools which widely used. According to Neo and Neo (2004), if multimedia is integrated into the teaching and learning process, the situation will be changed. By using multimedia, the instructional materials can be delivered in a multi-sensory environment using multimedia elements such as text, graphics, animation, sound, and video. This process

also cultivates some interaction between the student and the information itself, making the learning process more effective for the student. Multimedia provides a means to garner attention, increase retention, improve comprehension, and to bring an audience into an agreement "(Lindstrom in Neo and Neo, 2004). In accordance with the design of research development (R and D), the instructional media that has been designed this will be tested in a limited manner and asked the opinion of practitioners and experts about the reliability of this media.

#### 4 CONCLUSION

The need of IPS Learning module is urged by students. The accessibility in using hardware with the android program is also quite high, either through phone, laptop, and desktop based on android, both owned and owned by their nuclear family. However, in reality, the availability of interactive multimedia modules is relatively low. The response of students' tendency in using modules indicates that the use of learning modules is possible because students can relatively access the use of modules operated with android programs. As Guernsey (2012) he states that technological developments that have been entered into the family environment, especially early childhood like android technology, tablets and notebooks provide space for students to get involved in the use of a technology device. It is about 52% of student's ages 0-8 years have access to a Smartphone, tablet or similar electronic equipment.

Therefore, this research provides developing interactive multimedia-based learning module IPS. The steps are: (1) gathering material requirements for designing and creating applications, (2) specifying the structure of multimedia applications to be created in the flowchart system, (3) storyboarding, (4) combining text, images, sounds, and animation.

In addition to mastering the learning materials, students also have new experiences and can be active in creating a good learning environment in the process of module operation as well as through pictures and text in the module. It is claimed that it is capable of influencing the effectiveness of learning and learning in the process of teaching and learning (Pasnik et al., 2007; Neuman, Newman, and Dwyer, 2010; the Corporation for Public Broadcasting, 2011).

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