

## Design and Implementation Multimedia Learning Success for Vocational Schools

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### ABSTRACT

This research aims to design a web-based multimedia applications, interactive learning, in order to improve the learning outcomes of students, especially students of Vocational High School. Multimedia Learning has been designed with some additional content in the form of applications: decision support system for multimedia usage based on Model of Multimedia Learning Success. The population obtained from respondents vocational school in Central Java, which is already implementing multimedia learning. The method used is qualitative analysis in the form of: the development of multimedia learning integrated with decision support systems. Design and implementation of multimedia learning success system that is abbreviated "Sikemuning". Sikemuning can be used to measure or provide guidance for teachers in the use of multimedia. Interviews with several respondents teachers from vocational schools in Central Java showed that: the system success multimedia learning developed in this study can be used as feedback to assess the success and effectiveness of the implementation of learning activities, multimedia learning can improve the performance and intelligence of vocational school students.

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## 1. INTRODUCTION

Development of multimedia learning model of success begins with a year earlier research that aims: to measure or provide guidance for teaching staff in the use of multimedia. The planning phase of success model of multimedia learning consists of: learning strategies, principles of the use of instructional media, learning resources, cognitive understanding teacher, teacher preparedness, readiness of students, instructional media readiness. Implementation Phase of success model of multimedia learning consists of: the use of computers in the learning activities, the use of audio-visual material, the selection of instructional media, software selection and interactivity, technology selection. Evaluation phase of success model of multimedia learning consists of: assessment of learning outcomes and assessment of success model of multimedia learning itself. [1].

Recommended first-year findings of the study are: consider it necessary to do the design and implementation of multimedia learning, as the use of computer parts in the learning activities, there also required the use of expert systems in audio-visual material; software selection; interactivity and technology selection information[1].

Multimedia learning is known by teachers as e-learning. E-Learning is a learning process using electronic media / internet, where e-learning is used as a medium of learning for students, in addition to face-to-face in the classroom. E-Learning allows students to learn and acquire knowledge whenever and wherever

the students are. E-Learning can also be an alternative for students who experience boredom-face learning in the classroom. Currently most of the e-Learning that is, only provides the material uploaded by the instructor and the facility to download the material for learners (Arianti and Yogisa, 2012).

The development of E-Learning to support learning Programs represents forces that strongly affect man, life, and civilization. It means that those can be good and can also be evil. The goodness or evil is determined by the purpose and utilization [3].

The fundamental problem is an obstacle in the classroom is the brain's ability learners to absorb, manage and deliver information, then the individual learning styles can be divided into three categories, namely: how to learn visual, auditory and kinaesthetic, which is characterized by certain behavioural traits[4].

According to the Dunn, R and Dunn, K 1978, only 20-30% of school age children auditory learning style, visual learning style 40%, and 30-40% kinaesthetic learning style. From these studies it appears that: the percentage of stylish children learn visually more dominant, so in this study focuses on a child's visual learning style. Children who have the characteristics of a visual learning style has the following characteristics: considering matters relating to the visual, it is difficult to follow the advice orally, has a strong sense of colour, a sufficient understanding of the problems of artistic, difficulties in dialogue directly, often misinterpret words or greeting, need to have a paper and pen to scribble while listening, tend to see the attitude, movement, and the lips of teachers who are teaching, less able to recall the information given orally, and prefers to show rather than verbal explanation[5].

The results of the previous year research provide a solution of the problem absorption of knowledge through face to face in the classroom that happens to learners, namely in the form on the use of multimedia interactive web-based learning. Multimedia learning is useful to improve the learning outcomes of students, especially students of Vocational High School. multimedia learning with some additional content in the form of decision support systems of use of audio-visual material, decision support system of software selection and interactivity, and decision support system of technology selection information, the system is based on the research findings of the previous year.

This research was supported by the findings of Muksim Wijaya in [6] which states that: model web-based e-learning with some principles of learning, providing increased interest in student interest in learning, the learning process was felt interesting and not boring, because students actively engaged in learning. Therefore, one way that can be used to enhance the success and effectiveness of the learning process is: to build a house of learning and media-based interactive multimedia learning.

## **2. ASSESSING THEORY**

### **2.1. Multimedia Learning**

Multimedia learning system, namely: the system applies the learning method that gives the user the freedom to connect, using a variety of media and digital assets, using the internet, as well as take advantage of audio visual (video, graphics and text) in teaching and learning [7].

Through multimedia learning, learners can be developed for, can continue to learn even though physically absent or unable to attend following the learning activities in the classroom. Such situation can occur if, the institution has developed and implemented a multimedia learning in the learning activities, so that learners can better optimize their learning activities. The interaction of learners and teachers are no longer confined to the classroom, but can be continued in cyberspace / virtual room [8].

Multimedia in teaching and learning can be used in three functions. First, it can serve as a multimedia instructional tools. Second, can serve as a multimedia interactive tutorial, for example in the simulation. Third, multimedia can serve as a source of learning instructions, for example, multimedia is used to store a series of microscope slides or radiographs.

Technology Acceptance Model / TAM is a model of behaviour in the literature utilization of information technology management information system [9]. This model provides a theoretical basis to explore the factors that explain the use of software and link it with the performance of users. TAM focuses on attitudes toward the use of information technology by the user, by adding to it based on the perception of the benefits and ease of use of information technology. TAM is among many influential research models in the study of the determinants of acceptance of information technology. TAM is widely used to predict the level of user acceptance and usage is based on the perception of the, ease of use benefits of information technology.

### **2.2. Learning System**

Characteristic of traditional learning system are: a meeting between students and teachers to make the learning process [10]. This method has been going on since the first until now in order to fulfil the main

goal of teaching and learning, but the concept is constrained by the limitations of space, location and time of the event, because The increasing activity of students and teachers. Change of the paradigm learning system began to appear in the process of knowledge transfer.

The learning process that exist today tend to emphasize the teaching process, based on the contents, abstract and only for certain groups, so that teaching is quite passive. Along with the development of science and technology, the learning process begins to develop in the learning process, based on the problem, contextual and not limited only to certain groups. In such a learning process, students are required to be more active by optimizing the learning resources available [11].

There are two primary advantages of e-learning systems. One is that the proposed model, which contains a hierarchical contents structure that provide related useful information for searching and sequencing learning resources in elearning systems. The other is that it can help a developer or an instructor develops a learning sequence plan by helping the instructor understand how the learning process is run [12].

### **3. RESEARCH METHODS**

#### **3.1. Population and Samples**

The population of respondents that is Vocational High School in Central Java have been applying multimedia learning. Samples were done by using judgment sampling area, that is Vocational High School in Central Java that implements multimedia learning in teaching and learning activities in the classroom, that is: Vocational High School in the City and District of Semarang and Kendal.

#### **3.2. Data Collection Methods**

Data collection methods used are: 1. Observation, that is: conduct site visits at several vocational schools in Central Java, 2. The method of questionnaire, that is: spreading the questionnaire contains a list of questions which was distributed to respondents, the questionnaire used to analyse the success models of multimedia learning, 3. Method interview, that is: do an interview to a multimedia specialist in vocational high schools and universities.

#### **3.3. Method of Analysis**

The method of analysis was performed using a qualitative analysis: the design and development of multimedia learning is integrated with the addition of some decision support system application.

### **4. RESULTS AND DISCUSSION**

#### **4.1. Admin Activity Diagram**

Learning application is created that utilizes mobile learning technology. Through the use of mobile learning, user can access learning content without any borders so that it can be accessed at any time so that it can be accessed at any time with interesting illustration[13]. This multimedia learning success system implementation uses responsive web technology, so it can also be used on mobile devices.

An important component of this system is the procedure that must be taken by the user, as well as the applicable school learning process.

Multimedia Learning System initiated by an employee who has Role as Admin. Figure 1 shows that the Sikemuning system must start from the Administrator-level user, it also shows that the administrative tasks that must be done before the Sikemuning System can be used. Administrator must specify school semester into the system, then enter the data school administrations.

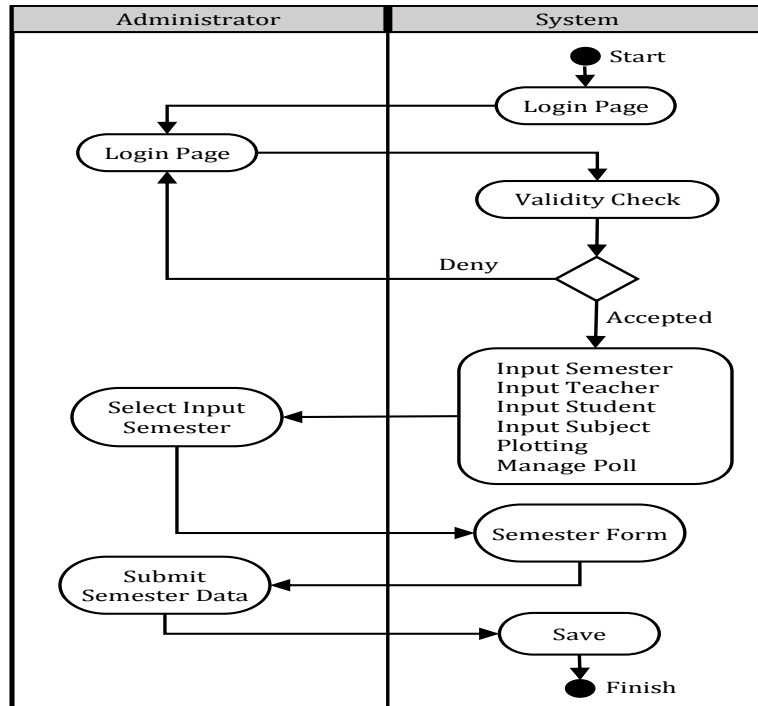


Figure 1. Administrator Activity Diagram Creating School Semester

**4.2. Teachers Activity Diagram**

After the semester program is plotted by Administrator, then the teacher can start the learning program. Figure 2 shows the initial task that Teachers must perform in starting learning using the Sikemuning system.

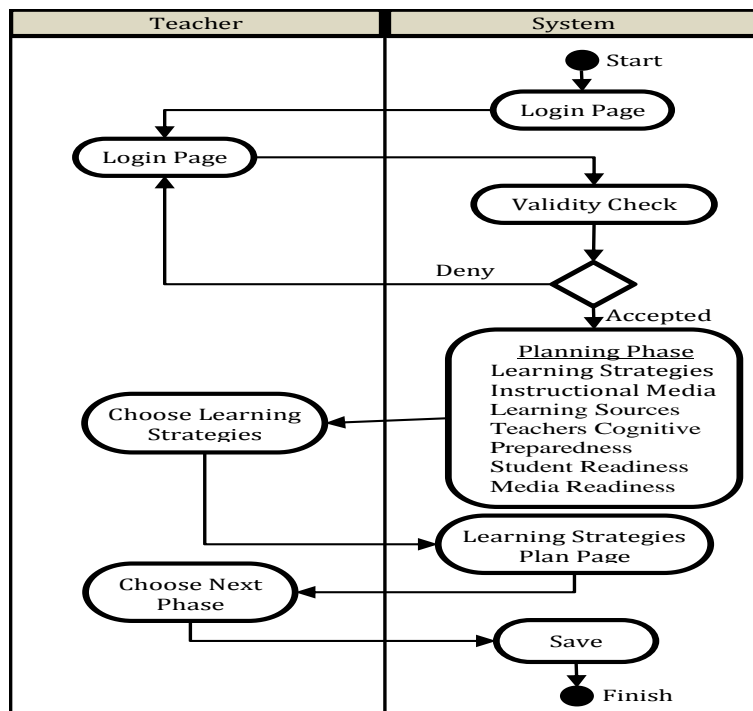


Figure2. Activity Diagram Teachers on Planning Phase, the main step to functionalize System Sikemuning

Teachers first step is to choose subjects that have been plotted by Admin. Each of these subjects will be asked for the determination of the 7 criteria lesson plan, according to the results of research findings Multimedia Learning Success Model in the first year. Here are some options Learning Strategy Criteria which would have the effect of the availability of the features in the Implementation of Multimedia Learning.

- Direct: a strategy centred on teacher learning, and most often used. In this strategy using methods lecture, didactic questions, explicit teaching, practice and exercise, as well as demonstrations.
- Indirect: show the form of high involvement of students in making observations. The role of the teacher as a facilitator, supporter, and personal resources. Teachers designing learning environments, giving students the opportunity to get involved. The impact to the system is can access the Sikemuning Multimedia Learning.
- Interactive: refers to a form of discussion and sharing among students. The impact to the system is can access to the Sikemuning Multimedia Learning.
- Experience: in the classroom using simulation methods, while outside the classroom developed observation methods, to obtain a general picture. The impact to the system is can access to the Sikemuning Multimedia Learning.
- Independent: self-study plan of students under the guidance of teachers. Accelerate the development of students' individual initiative, confidence, and self-improvement. The impact to the system is can access to the Sikemuning Multimedia Learning.

In conclusion if the option is selected teacher:

- Direct, then the system will stop, which means learning will only take place conventionally without the help of Sikemuning Multimedia Learning.
- Options No Direct, Interactive, experience or self-study, then the system goes into Learning Process stage and asked Teacher define next planning stage.

### 4.3. Students Activity Diagram

Interface student page is determined by an expert system, a feature that appears corresponding to Teacher's input on the Planning Stage.

Figure 3 is a page that appears specifically for each student. Display system on the screen of each student adjust the plot that has been done Administrator, thus students can directly select the subject and involved in the next learning system.

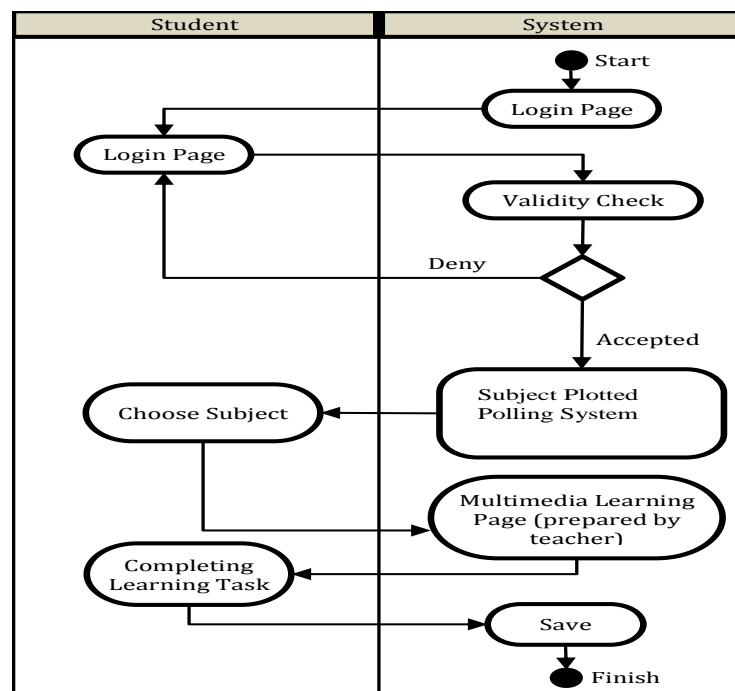


Figure 3. Student Activity Diagram shows the subject he enrolled to

## 5. INTERFACE DESIGN

### 5.1. Frontpage Sikemuning Interface

The main page of the Sikemuning system consists of pictures and information of 3 systematic learning stages. In Figure 4 there is a menu available for each user level. Information first seen is about Planning, Implementation and Evaluations.

Links	
Artistic Illustration about Sikemuning System	Planning
	Implementation
	Evaluation
Explanation about Planning Phase	
Explanation about Implementation Phase	
Explanation about Evaluation Phase	

Figure 4. Front page of Sikemuning System Shows the 3 Main Phase Success of Multimedia Learning

Information on this main page intends to always remind teachers and students to be organized in learning. That the learning program also requires the stages of Planning, Implementation and Evaluation.

### 5.2. Success of Multimedia Learning interface

In Figure 5 describes the 7 stages that must be taken as the first step towards the success of learning using multimedia.

Links	
Planning Phase Learning Strategies Instructional Media Learning Sources Teachers Cognitive Preparedness Student Readiness Media Readiness	Sub Phase Options
	Options #1
	Options #2
	Options #3

Figure 5. 7 Teachers Role on Learning Planning Phase

7 stages of planning in learning is applied from the research results of multimedia learning success. This planning stage must be fulfilled by the teacher so that the learning system based on Sikemuning is well organized.

Lesson Plan Phase which is supported by an expert system, should be completed by the teacher before entering into a Learning Implementation stage.

## 6. CONCLUSIONS AND RECOMMENDATIONS

### 6.1. Conclusions

Design and implementation of multimedia learning success system which is abbreviated as "Sikemuning", the system aims to measure or provide guidance for more teachers in the use of multimedia. Based on the research results it can be concluded as follows:

### 6.1.1. The design the success of Multimedia Learning System

The design success multimedia learning system hereinafter abbreviated as "Sikemuning" designed using PHP programming language, using *MySQL* database where the content of the planning system consists of: The planning phase of success model of multimedia learning consists of: learning strategies, principles of the use of instructional media, learning resources, cognitive understanding teacher, teacher preparedness, readiness of students, instructional media readiness. Implementation Phase of success model of multimedia learning consists of: the use of computers in the learning activities, the use of audio-visual material, the selection of instructional media, software selection and interactivity, technology selection. Evaluation phase of success model of multimedia learning consists of: assessment of learning outcomes and assessment of success model of multimedia learning.

### 6.1.2. Implementation the success of Multimedia Learning System

Implementation of The Success Multimedia Learning System produces a module system that can be accessed by teachers and students. Stages system consists of a login access as a teacher is composed as follows: The login page, the page of Planning; subjects, learning strategy, learning media, learning resources, cognitive understanding, readiness teacher, student readiness, readiness of the media, electoral subjects, learning materials and Planning Summary Page. Access login as a student consists of: the Login Page, Learning Activity Page, Subjects, Learning Materials, Online Test and Poll.

Interviews with several respondents teachers from vocational schools in Kendal, Ungaran and Semarang indicate that The Success System of Multimedia Learning developed in this study can be used as feedback to assess the success and effectiveness of learning activities, multimedia learning can improve the performance and comprehension of students.

## 6.2. Recommendations

Based on the conclusions and implications of the research that has been stated above, the following are some suggestions to consider: Integration of the system into the school's academic system and has additional features such Synchronizing and notifications to mobile devices.

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