DEVELOPMENT SIMULATION SOUND SYSTEM ASSEMBLY MEDIA INTERACTIVE LEARNING FOR AUDIO-VIDEO MAJOR

Raden Idris[1], Irawan Afrianto, S.T., M.T.[2]

[1,2]Informatics Engineering – Indonesian Computer University
Jl. Dipatiukur 112-114 Bandung
[2] Electrical Engineering School and Informatics-Bandung Institute Technology
Jl. Ganesha 10 Bandung
Email : budak.kenali@gmail.com[1], irawan_afrianto@yahoo.com[2]

ABSTRACT

Audio-video engineering has a lot subjects, on smk negri 6 bandung , subject which be competency test is sound system assembly required for students capable understand the content, learning process is still using conventional methods (discourse) which only write and listened. While most of student, their more likes the learning process attractive and interactive (discussion, using media, etc) because more quickly understand the subject matter. Interactive learning methods used on teaching and learning process (PBM) using software or computer program contains subject matter. Development these applications not only computer-based learning (PBK) but a device that is able to provide learning interactive and fun with interactive concept for students about subjects of audio video. Interactive Learning Application assembly simulation sound system built to help students understand the content, encourage and increase student learning outcomes in audio video.engineering majors

Kata kunci : teknik audio video , Interaktif, simulasi, media pembelajaran,

1. PENDAHULUAN

SMK Negeri 6 Bandung is one of the Vocational High School in the city of Bandung, located in the complex of Riung Bandung Soekarno Hatta districts Gede Bage. SMK Negeri 6 Bandung has many departments, one of which is a technique Audio Video engaged in electronics. Electronics itself has many forms and functions respectively, of each component also has its own function. Since there are many types of electronics, and therefore to support the competency of graduates SMKN 6 Bandung majoring in Audio Video in order to have sufficient competence in the field of electronics, especially the sound system needs the support of the school and the practice of adequate equipment.

Learn assembly techniques sound system must be of essentially and learning whole. Based on observations made on the system sound system subjects and practicum in SMKN 6 Bandung and interviews to teachers and teacher curriculum materials sound system. The learning method is still done manually using a book with the classic method the teacher explains at the blackboard, so there are some students who still do not understand the material presented concerning the procedure of the assembly sequence and position of each component. if done practicum for the students assemble a sound system takes a long time and students are still a little confused to finish that make the learning process a little inhibited. If the teaching methods that were calculated using computer aided teaching and learning process might be much easier for teachers and students. Computer-assisted methods one of which uses interactive learning media.

Pursuant to the problems that have been described, required an interactive learning methods which can help teachers and students in particular courses audio engineering expertise on subjects assembly video sound system. With the expectations of the students are better able to learn the material presented by the teacher. Therefore to deal with the problem

The authors provide a solution in the form of interactive multimedia applications assembly simulation sound system.

1.1 Definition sound system

Sound System is an electronic device system to process voice signals and increase the level of noise that occurs multiple Gain sound is then translated or distributed to the loudspeaker so that sounds back by the ear with a sound power have increased .
The sound signal can be derived from one or more sources of sound that is mixed in a single device sound amplifier . This sound signal can be adjusted according to the sound levels of interior space and audience so that the sound information can be captured by the ear in the capacity and scalability.
This voice signal information can come from several sources such as our vocal and coupled with the other sounds that can be heard simultaneously. Vocal resources needed to catch a transducer in the form Microphone input and guitar spool .

.

1.2 *Computer Aidded Learning* (CAL)

Computer Aided Learning (CAL) is a learning method that uses computer media..This method of teaching may convey directly to the user through how to interact packaged in the form of software. CAL (Computer Aided Learning) which is using the computer as a tool to understand in teaching, training, guiding and assessing the achievements of the students so that the students become more interested and adds to the impression of teaching. CAL (Computer Aided Learning) has 4 concept, that are :

a. Tutorial: the material presented in the form of text and images and gradually.
b. Drill and Practice: Researchers provide or deliver the main material to the user through the existing software, so that the user of the software can perform the exercises of the questions that have been provided.
c. Simulation: a simulation program available by combining design and equipment training to obtain a quick response from complicated problems.
d. Game: Through the game, students can learn in a relaxed atmosphere. This way is an effective way of learning, because of the relaxed atmosphere students do not under pressure so it's easy to capture material provided quickly.

Game : the game , students can learn in a relaxed atmosphere in this way is an effective way of learning , because of the relaxed atmosphere of students are not under pressure so it's easy to catch the material provided quickly .

1.3 MULTIEMDIA

Multimedia can be regarded as a new form in the manufacture of computer programs by combining more than one media. According to Turban et al [17] "Multimedia is a combination of at least two media input or output of the data, this media can be audio (voice, music), animations, videos, texts, graphics and images", According to Robin and Linda [14] "Multimedia is a tool that can create dynamic and interactive presentation that combines texts, graphics, animations, audios, and video images".

There are four important components of multimedia, namely:

1. There should be a computer that coordinates what is seen and heard that interact with users
2. There should be a link that connects users with information
3. There must be a navigational tool that guides user
4. Multimedia provides a place to gather, process, and communicate information and ideas from users.

If one component is missing, then it is not a multimedia in the broadest sense.

1. RESEARCH

2.1 Analysis Applications Will Be Built

In designing this system will be built an interactive multimedia application which contains material about the sound system assembly . Applications built using Computer Aided Learning (CAL) to the concept of simulation with the concept tutorials , training concepts . Features contained in the application to be built assembly amplifier and tone control , evaluation in the form of questions and essays Pg . The concept of the election materials were conveyed wage flash files , image and video pdf image If the user selects one of the concepts that the system will show the concept to the user . If not, then the user can select the application using the instructions

2.2 Analysis of Material Applications In Interactive Multimedia Learning Simulations sound system

The materials will be displayed in interactive multimedia learning applications and simulations sound system consists of :

Materi pokok	indikator
Architect front universal amplifier circuit Pre - amplifier circuit DC and AC Components pre - amp Frequency response pre - amp Factors cross disability and pre - amp Specifications technical data pre - amp universal audio system	Understanding the amplifier circuit architecture front (Universal pre - amplifier) Merencankan universal front audio amplifier circuit Medimensikan static DC components and parts universal front audio amplifier ACdinamis Mendimensikan frequency response of the amplifier circuit universal front audio Describe factors defects and crosstalk (cross talk) universal front audio amplifier stereo system

2.3 Analysis Software Requirements

The software required to build interactive multimedia applications and simulation learning are as follows :

1. Microsoft Windows 7 Enterprise
2. Adobe Flash CS5.5
3. Corel Draw X6
4. Adobe Audition CS6

5. Adobe Photoshop CS6Microsoft Visio 2013

The software required to support the use of interactive multimedia applications that are built are as follows : Operating system : Windows XP , Windows 7 , Windows 8 , Windows 8.1

2.4 Hardware Requirements Analysis

Analysis of the needs of the hardware used to facilitate the design and implementation .
The hardware used by the user that consists of client and server in the implementation of the application using the minimum specifications as follows :

No	Hardware	Spesifikasi
1	Processor	Intel® Core™ i3-2330M 2.20 GHz
3	VGA	Intel HD Graphics 3000
4	Harddisk	500 GB Serial ATA 5400 RPM.
5	Memori	2 GB DDR3 SDRAM PC-8500
6	Optical Drive	DVD±RW
7	Mouse	
8	Keyboard	
9	Speaker	

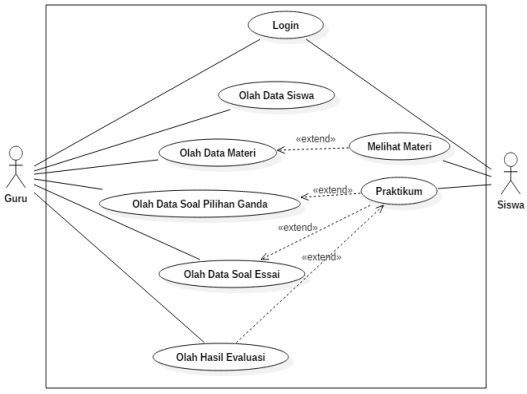
2.5 Analysis of User Needs

The users who are involved in the development of multimedia applications and interactive learning simulations and Umrah Hajj jurisprudence as follows :

Pengajar
Pendidikan Terakhir : S1,S2 atau sederajat Kemampuan yang dimiliki :Mampu menggunakan komputer
Pelajar
Usia : ≥ 15 tahun Pendidikan Terakhir : SMK Kemampuan yang dimiliki : Mampu menggunakan komputer

2.6 Functional Needs Analysis

Analysis of functional requirements describe the activities to be implemented in a system and explain the system requirements necessary for the system to run smoothly and according to need. Modeling system modeled using Use Case Diagram , Activity Diagram , Class Diagram and Sequence Diagram

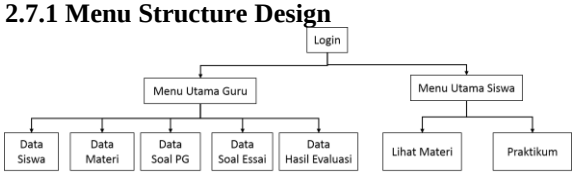


The following use case diagram illustrates the process of each procedure runs contained in the application of learning media sound system assembly

2.7 System Design

The system design is the stage of planning applications , application design , application development by combining multiple elements into one piece intact. At this stage, will be presented about the design of menu structures , interfaces , messaging and semantic networks .

2.7.1 Menu Structure Design



Information :
1. Home
2. Login teachers
   2.1 . menu teachers
   2.2 . Menu student data
   2.3 . Menu material data
   2.4 . Menu data on pg
   2.5. Menu Data essay
   2.6. Menu data of students' grades
3. Login students
   3.1 . Menu select material
   3.2 . The main menu pratikum students
   3.3. Menu amplifier simulation lab
   3.4. Practical simulation menu sound system
   3.5. Menu evaluation Pg
   3.6. Menu Evaluation essay

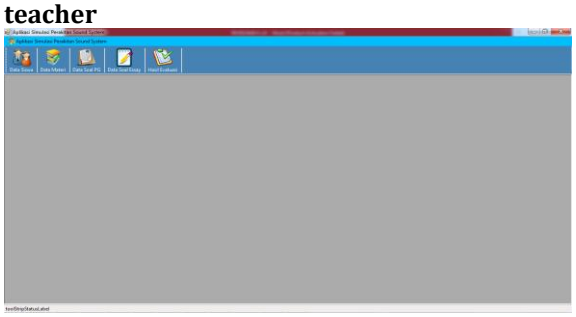
2.7.2 Implementasi Antar Muka

In the implementation of this interface will implement a program interface that has been built

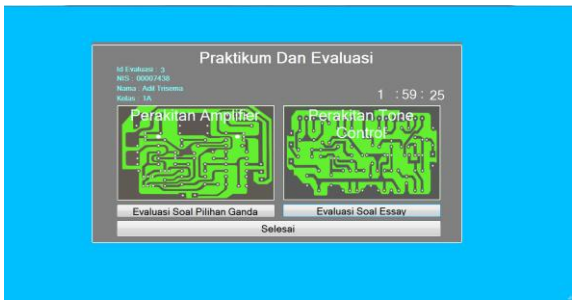
2.7.2.1 Implementation Interface Home



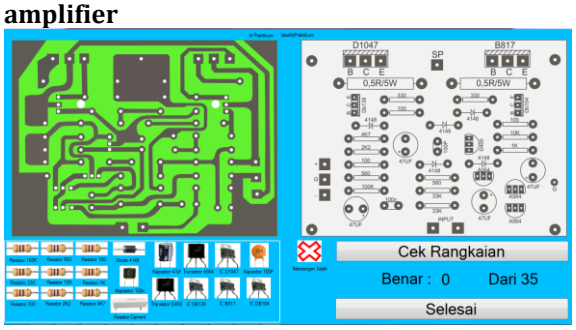
2.7.2.2 Implementation Interface Main Page teacher



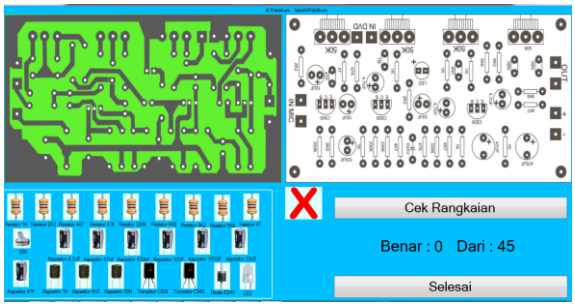
2.7.2.3 Implementation Interface main menu student



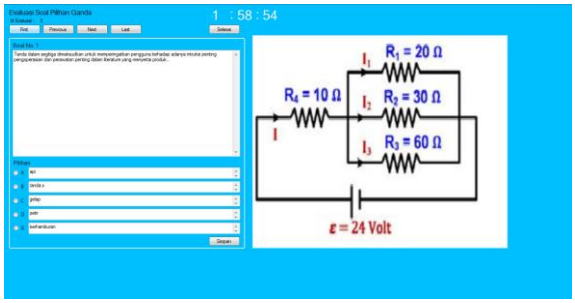
2.7.2.4 Interface Implementation practicum amplifier



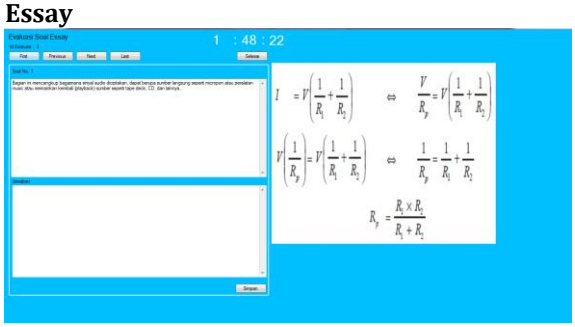
2.7.2.5 Interface Implementation practicum tone control



2.7.2.6 Interface Implementation Evaluation PG



2.7.2.8 Interface Implementation Evaluation Essay



2.8 Testing Systems

Testing is the stages to find flaws and errors in the software being tested . The purpose of the test is to determine whether the software is built in accordance with the original purpose built application or not

2.8.1 Black Box Testing Plan

Plan testing will be done by using the black box can diliat in the table below

2.8.2 Black Box Testing Results

Based on the testing plan , the results of testing Black box on the application system are as follows :

No	Component Tested	scenario Testing	Expected results
1	Login	Teachers choose	*Black Box*
		Enter a username	*Black Box*
		enter the password	*Black Box*
		Selecting Students	*Black Box*

		enter the NIS	*Black Box*
		entering Grades	*Black Box*
2	Main Menu Master	Pressing Menu Student Data	*Black Box*
		Pressing Menu Data Material	*Black Box*
		Pressing Menu Data Problem PG	*Black Box*
		Pressing Menu Data Problem Essay	*Black Box*
		Pressing the menu Evaluation Results	*Black Box*
3	Student Data	Pressing the button Add	*Black Box*
		Students entering data	*Black Box*
		Push the Button Change	*Black Box*
		Pressing the Delete Key	*Black Box*
		Pressing the OK button	*Black Box*
		Pressing the Cancel button	*Black Box*
4	material Data	Pressing the button Add	*Black Box*
		Enter data Material	*Black Box*
		Pressing the button Open File	*Black Box*
		Push the Button Change	*Black Box*
		Pressing the Delete Key	*Black Box*
		Pressing the OK button	*Black Box*
		Pressing the Cancel button	*Black Box*
5	Data Problem PG	Pressing the button Add	*Black Box*
		Enter data Problem PG	*Black Box*
		Pressing the button Open File	*Black Box*
		Pressing the Edit button	*Black Box*
		Pressing the Delete key	*Black Box*
		Pressing the OK button	*Black Box*
6	Data Problem Essay	Pressing the button Add	*Black Box*
		Entering Data Problem Essay	*Black Box*
		Pressing the button Open File	*Black Box*
		Pressing the Edit button	*Black Box*
		Pressing the Delete key	*Black Box*
		Pressing the OK button	*Black Box*
7	Evaluation result	Push the Button See Jawabab PG	*Black Box*
		Push the Button See Answer Essay	*Black Box*
8	See Answer PG	choosing Answer	*Black Box*
		Pressing the OK button	*Black Box*
9	See Answer Essay	choosing Answer	*Black Box*
		entering Values	*Black Box*
		Pressing the button Update Value	*Black Box*
		Pressing the OK button	*Black Box*
10	Main Menu Students	choosing Materials	*Black Box*
		Pressing the button Practicum	*Black Box*
11	Practice	Pressing the button assembly Amplifier	*Black Box*
		Pressing the button assembly Tone Control	*Black Box*
		Pressing the button Evaluation of Multiple Choice Questions	*Black Box*

		Pressing the button Essay Evaluation Problem	*Black Box*
		Pressing the button Done	*Black Box*
12	Practical Installation Amplifier	Doing Drag And Drop Image Component	*Black Box*
		Push the Button Checks Networks	*Black Box*
		Pressing the button Done	*Black Box*
13	Practical Pemangan Tone Control	Doing Drag And Drop Image Component	*Black Box*
		Push the Button Checks Networks	*Black Box*
		Pressing the button Done	*Black Box*
14	evaluation PG	First pressing	*Black Box*
		Pressing Previous	*Black Box*
		Pressing the Next button	*Black Box*
		Push the Button Last	*Black Box*
		Choosing Option A, B , C , D , E	*Black Box*
		Pressing the Save button	*Black Box*
		Pressing the button Done	*Black Box*
15	evaluation Essay	First pressing	*Black Box*
		Pressing Previous	*Black Box*
		Pressing the Next button	*Black Box*
		Push the Button Last	*Black Box*
		entering Answers	*Black Box*
		Pressing the Save button	*Black Box*
		Pressing the button Done	*Black Box*
16	print Reports	Pressing the Print button	*Black Box*

2.8.3 questionnaires

Testing of the questionnaire aims to determine the user 's response to the application and the following is a list of questions

answer	**Point Rate**
Strongly agree	5
Agree	4
Less Agree	3
Disagree	2
Strongly Disagree	1

The results of observations of a questionnaire distributed to students at SMK 6 for Applications Interactive Multimedia Learning simulation sound system :

Calculation of percentage of questions all 1

Question	**Information**	**Skor**	**Frekuensi**	**S**
1	Strongly agree	5	27	135
	Agree	4	8	32
	quite Agree	3	0	0
	Disagree	2	0	0
	Strongly Disagree	1	0	0
amount			35	167

Calculation of percentage of questions all 2

Question	**Information**	**Skor**	**Frekuensi**	**S**
1	Strongly agree	5	25	125
	Agree	4	10	40
	quite Agree	3	0	0
	Disagree	2	0	0
	Strongly Disagree	1	0	0
amount			35	165

Calculation of percentage of questions all 3

Question	**Information**	**Skor**	**Frekuensi**	**S**
1	Strongly agree	5	30	150
	Agree	4	5	20
	quite Agree	3	0	0
	Disagree	2	0	0
	Strongly Disagree	1	0	0
amount			35	170

Conclusion of keada informant interviews were teachers in the country Smk 6 Bandung shows that the application of Interactive Multimedia Learning assembly simulation sound system :

a. This application can help students determine the position of each component of the amplifier and tone control
b . This application can help teachers deliver material relating to audio- video technique
c . This application can assist teachers in providing the materials evaluation
to 35 students in the country Smk 6 Bandung shows that :
a. Applications Interactive Multimedia Learning interesting
b . Applications Interactive Multimedia Learning Simulations sound system assembly is easy to use
c . Applications Interactive Multimedia Learning Simulations sound system can be used to learn the material sound system
d . The use of text , images , animations , sounds can help students understand the material sound system

2. CLOSING

Applications built enough support to be used as a medium of learning for teachers to use the media convey the material to the students . This app is also interactive and interesting enough to be used by students when studying the material sound system. And the availability of instructional media needed by the country Smk 6 Bandung

BIBLIOGRAPHY

[1] Ariona, R. (2013). Belajar HTML dan CSS Tutorial Fundamental Dalam Mempelajari HTML dan CSS.
[2] Djamarah, S. B., & Zain, A. (-). Strategi Belajar Mengajar (Edisi Revisi). Jakarta: Rineka Cipta.
[3] Al-Fatta, H. (2007). Analisis dan Perancangan Sistem Informasi. Yogyakarta: Andi.
[4] F., S. (1996). Manajemen Jilid II. Yogyakarta: BPFE.
[5] Hadi, A., & Sutopo. (2003). Multimedia Interaktif dan Flash. Yogyakarta: PT Graha Ilmu.
[6] Hasrul. (2010). Langkah-Langkah Pengembangan Pembelajaran Multimedia Interaktif. urnal MEDTEK, 1-8.
[7] Moh. Nazir, P. (2011). Metode Penelitian. Bogor: Ghalia Indonesia.
[8] Pressman, R. S. (2002). Rekayasa Perangkat Lunak. Yogyakarta: Andi.
[9] Rahmad. (2014). Perancangan Perangkat Lunak Pembelajaran Bermain Gitar Akustik Dengan Metode Computer Aided Learning (CAL). Informasi dan Teknologi Ilmiah (INTI), 1-7.