Application development Learning Biology for class IX JUNIOR Al-Falah Dago method using Computer Based Instruction and Computer Assisted Instruction based Desktop

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ABSTRACT

Learning Media are tools, methods and techniques used in order to better streamline communication and interaction between teachers and students in the process of education and teaching in school. Association for Education and Communication Technology (AET) defining media namely every form used for a process of channelling information. While the Education Association's (NEA) defines as objects of Indonesia can be manipulated, see, hear, read or spoken with an instrument to be used with both in the teaching and learning activities, can affect the effectiveness of instructional programs. Computer-assisted learning Madia has important roles in the process of teaching and learning. One of the one of the computer-assisted learning is Computer Assisted Instruction (CAI). Computer Assisted Instruction is the development of an integrated information technology than IE communication (interactive), audio, video, image appearance (image) which is packed with multimedia technologies. The problem is the lack of the current package's book that is not balanced by the number of students and also a lack of understanding of the students in understanding biological material as well as student hardship in doing letihan-rehearsal reserved. For that it needs a solution the right solution in the settlement of these problems. With the building of the application of learning biology can help resolve problems that occur in JUNIOR HIGH SCHOOL, AL-falah Dago gave mafaat to the students more easily memehami biological material.
Keywords : Learning Media, interactive, Computer-Assisted Instructions (CAI).

1. INTRODUCTION

AL-Falah JUNIOR Dago, is one of the first high school located in an area of Bandung West Java-Falah AL junior high school, one HIGH SCHOOL, with complex CMS, SD AL-Falah and boarding schools that all of her under the auspices of the Foundation AL-Falah Islamic boarding school. Just like JUNIOR HIGH in General, education in JUNIOR HIGH SCHOOL of Al-Falah Dago is reached within three years, ranging from Class VII to Class IX. The school curriculum new 2006 Curriculum.

The process of teaching and learning activities of biological subjects for class IX in the Middle School (JUNIOR HIGH) Al-Falah Dago covers on biological subjects some material such as reproductive system, excretory system, a system of coordination, the survival of living things as well as biotechnology, the process is done directly at the time of lessons takes place by way of conveying with oral or writing by teachers based on book learning materials package , syllabus and RPP (plan of implementation of the study).

Other than that based on the results of the interviews and questionnaire in get some problems include: lack of time subjects of biology that is only 2 x 40 minutes are in a sense less to deliver the materials and practices, lack of laboratory facilities and infrastructure in schools less adequate, so that practical activities are having a bit of a hindrance, as well as the lack of learning materials in the form of book packages available at the school, was not balanced by the number of students and also many students Pack theory books and pictures that are less attractive , so that students/students learning interest less so that affect student learning outcomes that are less than optimal.

Based on the background of multimedia-based learning media to improve the understanding and interest of class IX students learning in middle school (JUNIOR HIGH) Al-Falah Dago biology lesson on using the method of Computer Aided Instraction and Computer Based Instraction.

2. THE CONTENT OF RESEARCH

2.1 Research Methods

Stages of system analysis in the development of media of instruction to be used is the model of the waterfall. This model implies a systematic approach

and sequential in software development. Stage by stage that will pass must wait for the completion of the previous stage and executed in sequence. As for the stages of the waterfall model is as follows:

1. Communication

Stage of communication is the stage of understanding the issues and organising the collection of data by conducting meetings with master class IX class IX students in particular and, as well as collect additional data either in journals, articles, and internet-related media learning using simulation.

2. Planing

This planning phase will produce the document user requirement or can be said to be data that is associated with the desires of the students of class IX and teachers as users in making learning media use in Biological subjects, including important plan would do.

3. Modeling

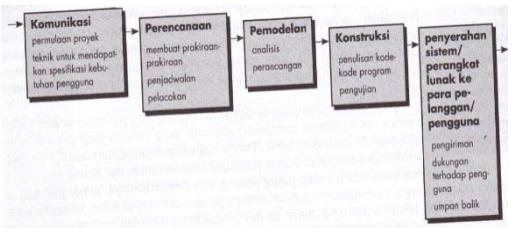
The modeling phase will translate the data into a form that is designed easy to understand by the user by describing modeling UML (Unified Modeling Language).

4. Construction

Stage of construction is the process of making the code. Coding or coding is a translation in the language of design that can be recognized by the computer. Data translation stages or problem solving that has been designed into the programming languages C # and xml as the data storage is reserved. After encoding is complete it will be done in the form of Black box testing testing of the system has been made. The goal of testing is to find the mistakes against the system to then be corrected.

5. Deployment

The final stage of deployment can be said of making software or systems. After doing the analysis, design and coding, then the system is already so it will be used by the user. Then the software has been created to do maintenance on a regular basis. In research done does not get to this stage..



Gambar 1. Metode Pembangunan Perangkat lunak

2.2 Analytical method of *Computer Based Instruction*

The existence of the CBI was able to provide learning application inverse (feedback) so the user can actively interact with media designed. In addition, CBI can also increase user motivation and attention to learn. Method of CBI (Computer based Instruction) have some form of interaction that can be diaplikasian as: Tutorial, Drill and Practice (practice), simulation (Simulation), games (games). In designing the learning application interaction forms, tenses that are offered can be dirincikan as follows:

a. Tutorials

The material presented in the tutorial is a matter of learning biology. where is the system discussed excretion, the reproductive system, the system of coordination, the survival of living things as well as biotechnology. In this tutorial, the user or the students can understand the material.

b. Drill and practice

Training and practice in this application form questions are given repeatedly and on completion of the learning materials are presented in detail, with a complete description so the user can master the material about biology. This application is available a few multiple choice question is shown.

c. Simulation

Simulation learning applications offered in this form of Biological simulation to understand the Biological material with working on the problems. Simulation on the menu is divided into 2 parts, namely based on semesters. Matter given multiple choice model totaled 10 questions taken from 2-3 material that has been given.

d. Game

On the Menu this is kidney saved games from viruses to be played by users or students, this menu is a very mengasikan game in the Burnout of learning..

2.3 Analysis Non-Functional Requirements

2.3.1 User Analysis

Analysis of the users intended to learn who the user is involved in the use of computer-assisted Learning Application for Class IX Biology subjects can be seen in Table 3.1.

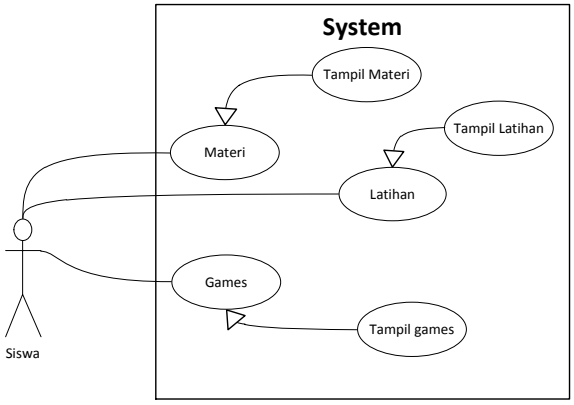
Table 1 User Analysis

Users	Education	Access Rights
Students	JUNIOR HIGH SCHOOL	Interact directly with the application to receive the material, do exercise and evaluate problem
User Experience		Students can read,write and remember well Students can use computer and mobile
User Job & Task		Students can understand the order or instruction Students can use the computer to play
User Physical Characteristic		Do not have physical barriers The motor is not too stiff

2.4 A Function needs analysis

2.4.1 UseCase Diagram

Use case diagrams describe the Application process on the Study of biology. Use case diagram this application is described in the figure below.



Gambar 2 Use Case Diagram

2.5 Testing The System

System testing is the stage to find errors or deficiencies in the software that is built so that it can be known whether the software meets the criteria in accordance with purpose or not. Testing is used to test Biological learning media development for Class XI JUNIOR AL-Falah Dago is 2 testing phase that is black box testing and beta testing.

2.5.1 Black Box Testing

Black box testing is testing that is done just observe the results of execution through test data and functional checks of the software. Black box testing, evaluating only from the outside appearance and functionality. Without knowing what truly happened in the process details. Black box testing is done on the construction of learning media for Class XI Biology SMP AL-Falah Dago is divided into 3 parts, i.e. scenario testing, black box testing and results case black box, as well as the conclusion of black box testing.

2.5.1.1 Black Box Front End Testing

As for scenario testing black box on the front end can be seen in table 2:

2.5.1.2 Black Box Testing Conclusions

Based on the results of testing the black box with the test case above, can be drawn the conclusion that the construction of this biology learning media not found error process and functionally running as expected.

Tabel 2. Black Box Front End Testing

No	Class Text	Scenario Testing	Types Of Tests
1	Material	Select material	*Black box*
		Select the material per chapter	
		Select a sub chapter material	
		Select the button next	
		Select teh button back	
2	Exercise	Choose an exercise question	*Black box*
		Select the start button problem (per chapter)	
		Select a question	
		Select a radio button(answer to question)	
		View score(rating)	
4	*Games*	Choose games	*Black box*
		Select main	
		Enter the name	
		Dispaly the time answer the question	
		Dispaly problem	
		Select an answer	
		Dispaly score	

2.5.2 Beta Testing

Beta testing is the testing that was done objectively, where testing is done directly in the place of research. Methods used in beta testing by giving questionnaires to students as well as the biology teacher interviews to class IX in the Al-Falah JUNIOR Dago.

2.5.2.1 Beta Testing Methods

Methods used in beta testing done at the stage where it is done directly to the respondent by way of giving a questionnaire and interview on learning constructed media users.

1. The questionnaire

The questionnaire is given to the user of the learning media, namely the students of class IX JUNIOR AL-Falah Dago. Samples taken as many as 130 students, and the results of these questionnaires will be made calculations for later assessment conclusions to be drawn.

2. The interview

The interview was conducted directly with the mother of Maya's Edwin s. Hartati Pd teaching Biology teacher as. SMP AL-Falah Dago, regarding the results of observations of students towards learning biology applications.

2.5.2.2 Beta Test Questionnaire

Beta test questionnaire is the media used the user media learning Biology Class IX to provide an assessment of the application of learning are built. From the results of the questionnaire will do the calculations to be taken towards the conclusion of the assessment of the application of the learning application inawoke. This questionnaire consists of 6 statement by using the scale likert scale of 1 to 5.

The following is an assessment score that is given with the use of likert scales on each question, indicated by table 3..

Tablel 3 Score Assessment

The Scale Of Answers	Description	Score
SS	Very agree	5
S	Quite agree	4
R	Heditation	3
TS	No agree	2
STS	Very no agree	1

2.5.2.3 Questionnaire Data

As for the questionnaire data from learning media development biology this is as follows:

1. The number of respondents is comprised of 130 students AL-Falah JUNIOR Dago.
2. The purpose of this research is to help students understand the lesson of biology by using media learning biology.

The following is a list of statements that will be presented to the students AL-Falah JUNIOR Dago can be seen in table 4.

Tabel 4 The List of Statements

No	Pernyataan
1	The application of learning is helpful in understanding the lessons of biology
2	Application study of biology have subject matter that is quite clear and complete
3	Application study of biology this ease in performing the exercise problem
4	Whether the look on a plikasi interesting biology learning
5	Application study of biology is not boring
6	I am glad to learn to use applications of learning biology

2.5.2.4 Hasil Kuisioner

Following are the results from the beta testing which is done by using questionnaires against students of class IX JUNIOR AL-Falah Dago.

1. application of this learning helps in understanding the lessons of biology

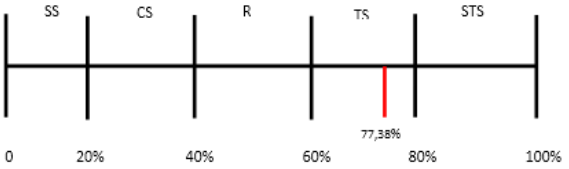
Tabel 5 Table Statement number 1

Description	Score	Respondents	The Amount Of Score
Very agree	5	53	265
Quite agree	4	29	116
Heditation	3	31	93
No agree	2	12	24
Very no agree	1	5	5
Total		**130**	**503**

If 1 the statement given to 130 respondents, then the number of his score is:

SS	5 * 130	=	650
CS	4 * 130	=	520
R	3 * 130	=	390
TS	2 * 130	=	260
STS	1 * 130	=	130
(503/650)*100%		=	77,38%

Based on the percentage value, then it can be concluded that the assessment of students towards learning biology applications using the CBI method can be helpful in understanding the lesson in General is 77.38% respondents with 130 students from the expected 100% and is located on the area agree. The following scale of assessment results number 1 shown in Figure 3



2. Application of learning Biology had subject matter that is quite clear and complete

Tabel 6 Table Statement number 2

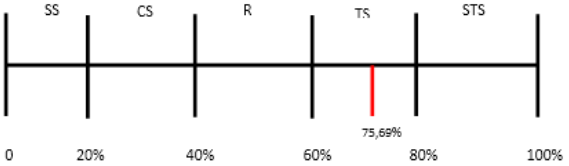
Description	Score	Respondents	The Amount Of Score
Very agree	5	45	225
Quite agree	4	37	148
Heditation	3	30	90
No agree	2	11	22
Very no agree	1	7	7
Jumlah		**130**	**492**

If 1 the statement given to 130 respondents, then the number of his score is

SS 5 * 130 = 650
CS 4 * 130 = 520
R 3 * 130 = 390
TS 2 * 130 = 260
STS 1 * 130 = 130

(492/650)*100% = 75,69%

Based on the percentage value, then it can be concluded that the assessment of students towards learning biology applications using the CBI method can be helpful in understanding the lesson in General was 75.69% with respondents 130 students from the expected 100% and is located on the area agree. The following scale of assessment results no. 2 shown in Figure 4.



3. Application of learning Biology this ease in performing the exercise question?

Tabel 7 Table Statement number 3

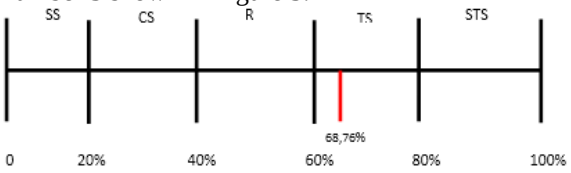
Description	Score	Respondents	The Amount Of Score
Very agree	5	34	170
Quite agree	4	41	164
Heditation	3	23	69
No agree	2	12	24
Very no agree	1	20	20
Total		**130**	**447**

If 1 the statement given to 130 respondents, then the number of his score is::

SS 5 * 130 = 650
CS 4 * 130 = 520
R 3 * 130 = 390
TS 2 * 130 = 260
STS 1 * 130 = 130

(447/650)*100% = 68,76%

Based on the percentage value, then it can be concluded that the assessment of students towards learning biology applications using the CBI method can be helpful in understanding the lesson in General was 68.76% with respondents 130 students from the expected 100% and is located on the area agree. The following scale of assessment results number 3 shown in Figure 5.



4. Is the view on the application of biological learning interesting?

Tabel 8 Table Statement number 4

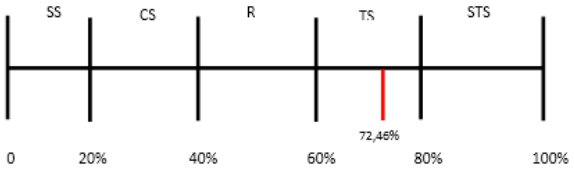
Description	Score	Respondents	The Amount Of Score
Very agree	5	41	205
Quite agree	4	34	136
Heditation	3	30	90
No agree	2	15	30
Very no agree	1	10	10
Jumlah		**130**	**471**

If 1 the statement given to 130 respondents, then the number of his score is:

SS	5 * 130	=	650
CS	4 * 130	=	520
R	3 * 130	=	390
TS	2 * 130	=	260
STS	1 * 130	=	130

(471/650)*100% = 72,46 v%

Based on the percentage value, then it can be concluded that the assessment of students towards learning biology applications using the CBI method can be helpful in understanding the lesson in General was 72.46% with respondents 130 students from the expected 100% and is located on the area agree. The following scale of assessment results number 4 indicated in Figure 6.



5. I am pleased to learn to use applications of learning biology?

Tabel 9 Table Statement number 5

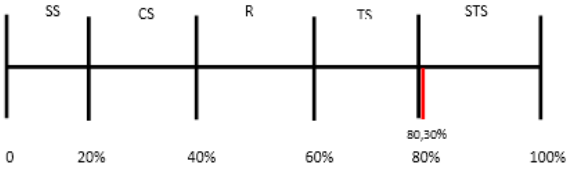
Description	Score	Respondents	The Amount Of Score
Very agree	5	52	260
Quite agree	4	38	152
Heditation	3	25	75
No agree	2	15	30
Very no agree	1	5	5
Jumlah		**130**	**522**

If 1 the statement given to 130 respondents, then the number of his score is:

SS	5 * 130	=	650
CS	4 * 130	=	520
R	3 * 130	=	390
TS	2 * 130	=	260
STS	1 * 130	=	130

(522/650)*100% = 80,30%

Based on the percentage value, then it can be concluded that the assessment of students towards learning biology applications using the CBI method can be helpful in understanding the lesson in General is 80.30% respondents with 130 students from the expected 100% and is located on the area agree. The following scale of assessment results number 6 shown in Figure 7



2.5.2.5 Conclusion The Result Of Questionnaire

Based on the results of the testing of the questionnaire, then fallow it can be concluded that the construction of this biology learning media provides convenience as a learning tool and can provide learning motivation of students for not boring and easy to use by students.

2.5.2.6 The Conclution Of The Beta Test

Based on the results of beta testing of biological learning media users it can be concluded that the development of the media learning Biology class IX in accordance with the objectives to be achieved, namely to assist students in memehami subjects of biology and membengkitkan spirit of students as well as helping students in doing the exercises solved.

3 PENUTUP

3.1 Conlusion

Based on the results obtained in this thesis report creation, then obtained as follows: with the development of the application of learning biology is able to assist students in understanding the biological material is more interactive and also exercises melukana reserved.

3.2 Advice

Biology learning applications can still be developed along with the development of user requirements specifications. Here are some suggestions for development that can be done:

1. The addition of more detailed material.
2. Display the 3D application so students can understand the more detailed material.

There are still plenty of facilities – other facilities need to be developed this application to help maximize learning with increasing needs for information and technological development that is increasingly rapidly.

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