DEVELOPMENT OF MODEL-BASED LEARNING ENVIRONMENT EDUCATION WEBSITE AT VOCATIONAL HIGH SCHOOL OF TECHNOLOGY

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Abstract

The purpose of this research is to develop a model based learning Environmental Education website for the technology area in Vocational High School (SMK) used by the teacher in delivering learning management environmental to be valid and effective. The type of this research is research development; the result of this research is produce a model based learning Environmental Education website by using three component products, namely: learning device, instrument, and the program's website (www. Asri-uncp.com) to measures the level of validity and effectiveness of the model. Environmental Education Model (PLH- Model) fulfills the Effective criteria of the process of student learning outcomes analyzed by using SPSS, in the first Trial PLH Model declared ineffective, judging from the results of student learning online where the mean score is 74.7 as a general score result graduation. if the KKM 70.0 refers to the value, and the maximum score with the highest value achieved by 88 students, and the lowest score is 50. The numbers of students who do not pass the test is 9students, and 44 students who have passed the test, so the percentage of the minimum number is 83.01%. If confirmed the standard of success in learning or mastery learning with the amount of 85% or ($\leq$ 85%), it can be categorized insatiable for mastery learning outcomes. The second trial was declared effective by the maximum score obtained is 86. This is the highest score and the lowest score was 56. The numbers of students who do not pass the test were3 people and pass the test were 33, so that the percentage of the minimum number of 91.4 percent, if confirmed on mastery learning standards by 85% or ($\geq$ 85%) it can be fulfills the completeness of criteria learning outcomes. Draft PLH Model development met the validity of all aspects assessed if: the theoretical aspects of supporting an average value of 3.5; sitaks aspect average value of 3.4; aspects of the social system of the average value of 3.5; principle aspects of the average value of 3.4; aspects of support systems 3.3; aspects of the instructional impact and impact Bridesmaids average value of 3.5; aspects of the implementation of online learning value average of 3.5; and aspects of the evaluation of the average value of 3.5. Through Trial I and Trial II Model PLH, the researcher stated PLH model fit for used in vocational areas of technology taught Environmental Education which integrated in Subjects IPA.

Keyword: *PLH Model, vocational environmental education, learning environment.*

Introduction

The ideology of education adopted in the curriculum creates graduates who are competent in their fields, and intelligently develop the potential in himself derived from the basic knowledge, skills, and learning experiences. The achievement of the ideals of education is a form of attention that the government has made changes to the education curriculum emphasizes the need to build national character based on the demands of the development of science and technology then Curriculum 2013 prepared in detail. The period of

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implementation of the Curriculum KTSP has beengone by possess basic framework curriculum drawn up by the National Education Standards Agency (BSNP), regions and schools can develop further without regard to the climate of freedom, discipline, order, creativity, and innovative that is created in the school environment so it is considered a failure. It will serve as the basis of changes in curriculum in 2013, and supported by empirical data through society's view that a decline in the quality and moral attitudes in children or young people, less creativity, less innovative and created in the school. By comparing the output of previous education, parents and the community now assesses setbacks attitudes or cultural values. They want their attitudes and behavior of children is more character, integrity, honesty, and act in manners. To produce students who are creative and innovative educational curricula it requires the character to the character formation of students.

Learning management environment is still needed by vocational students Technology and Engineering expertise to increase academic skills before entering the world of industrial work, where the source of environmental pollution by comparing the industry. Standard competency of vocational high school students will be prepared to fill the world of work in the industry or company. For the right time, vocational students equipped with knowledge of environmental management before they enter the workforce. According to Rachmat, (2009) there are three dominant human characters that need to be studied in depth, namely: (1) human as conquerors environment, (2) man as warrior environment, (3) human as a designer of environmental sustainability. Based on empirical data, the occurrence of damage to the environment will be influenced by the actions of human social uncontrolled allow a human being would have the character as described above. If human nature is not accompanied by a touch of knowledge and understanding of environmental management, the behavior concerned about environmental problems difficult to overcome.

Environmental Education (EE) is a program of environmental management subjects initiated since 1984 to the present curriculum, delivered in the form monolithic and integrative but the results and the impact has not been felt on the environment and society. The proof is still a lot of school leavers throw garbage on the street, smoking in public transport, relieving themselves out of place, and environmentally destructive activities. Based on the unsuccessful Environmental Education (EE), as described above, it is necessary idea of the subjects of environmental management applied in SMK in the form of practice order used by the teacher in the classroom, the design of learning model that can be used as a reference for teachers to plan and implementing learning with web-based learning model. The learning model is expected to: (1) teachers and students are accustomed to using a web-based learning, (2) teachers and students accustomed to listening to the material and LKS interact with computers using the website. (3) The student is evaluated according computer performance, so the teacher more easily evaluates the completeness of student learning outcomes, response to difficulties teachers to evaluate students with an integrative approach.

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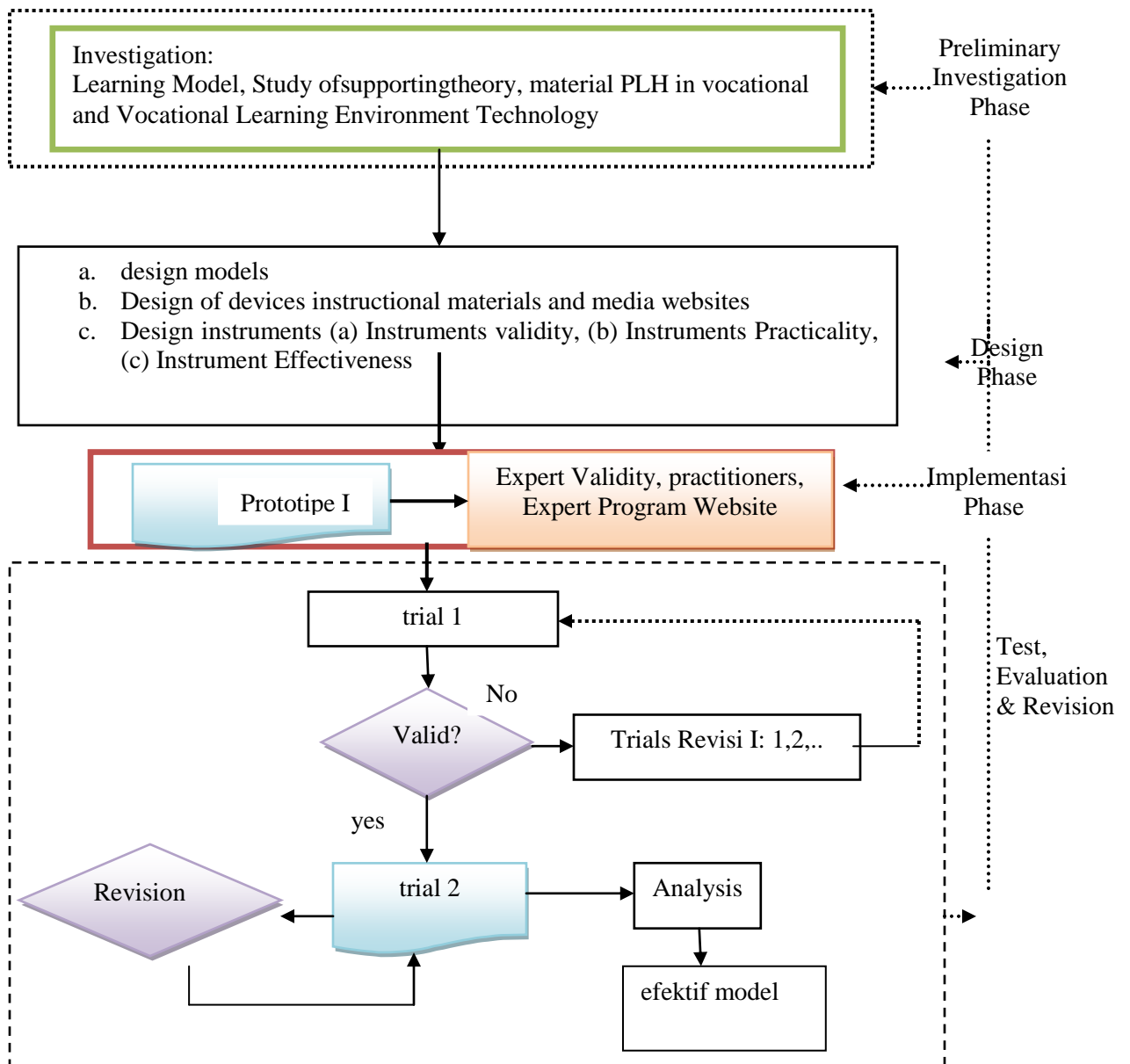
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Research Methodology

Type of this research is research development, through the phases of development will generate Learning Model of Environmental Education (EE Model). The model development assessed on criteria such as quality models according Nieveen (1999) concerning the validity and effectiveness. The phases that will be pursued in developing the Model PLH is the development of a general model according to Plomp (1997) referenced through modification. Characteristic of web-based learning model by Sharon, Deborah, and Russel (2012), Eggen&Kauchak (2012), and Darmawan, (2011) tutorials models using computer.

The trial Model PLH, can be done through tools of learning is packaged in a program application software, programming language website creation PHP (Hypertext Proprocessor), data base using MySQL (management system), and tested in the student group of technologies in N 2 Palopo Academic Year 2015 -2016.

Conceptual Frame Work Of Plh Model Development

Learning model development for Environmental Education, conducted a similar series of modifications to the general development model proposed by Plomp (1997). Referring to it has been put forward in a sequence of activities performed at each phase of development as presented in Figure 1.

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Technique Of Data Analysis

Analysis Data validity of PLH Model

a. Looking for expert assessment of the average results for each criterion according to the formula:

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$$\overline{K}_i = \frac{\sum\limits_{j=i}^{n} V_{ij}}{n}$$

with:

$\overline{K}_i$ = Mean criteria to-i

V_{ij} = results of a study of the criteria of the i by the appraiser to-j score

n = number of assessors

b. Looking average every aspect of the formula:

$$\overline{A}_i = \frac{\sum\limits_{J=1}^{n} \overline{K}_{ij}}{n}$$

With:

$\overline{A}_i$ = Mean aspects of all i

$\overline{K}_{ij}$ = Average for all aspects of the criteria i to j

n = number of assessors

c. Finding the average total () with the formula:

$$\overline{X} = \frac{\sum\limits_{i=1}^{n} \overline{A}_1}{n}$$

With:

$\overline{X}$ = Thetotal average

$\overline{A}_i$ = Mean aspects of all i

n = number of aspects

Calculating the reliability of the assessment sheet model using the modified formula PLH percentage of agreement (Grinnell, 1988) as follows:

$$R = \frac{\overline{d(A)}}{d(A) + \overline{d(D)}}$$

With:

R = coefficient of reliability

$\overline{(d(A))}$ = Mean degrees Agreement of assessors

$\overline{d(D)}$ = Average degree of disagreement of assessors

Sheets ratings learning device is said to be reliable if the reliability value (R) ≥ 0.75, or ≥75%, Borich (1994).

Analysis of effectiveness of Data Model PLH

Analysis Mastery Instructionalof Materials Waste and Pollution

Determining the ability to understand the categories of teaching materials waste materials and pollution are:

$85 \leq \overline{X} \leq 100$ very high Capabilities

$65 \leq \overline{X} < 85$ high Capabilities

$45 \leq \overline{X} < 65$ Ability being

$25 \, \overline{X} < 45$ low Capabilities

$\overline{X} < 25$ The ability is very low, Winkel, (2007)

The Result of the Research

1. Preliminary data of learning ability

Implementations of the introductory research in class XI of computer and network engineering in matter of Environmental Education were integrated into science subjects. The implementation process of learning is used by the teacher is still in the form of old models according their habits in measuring the success of learning. Preliminary observations indicate that: (1) the ability of students to understand the material an average performance score of 63, 83. Score values when confirmed at Vocational School graduation standards set by the KKM ≥ 70, the average student did not pass or fail; (2) the percentage of completeness of student learning outcomes obtained in the low category of 49.05%; (3) median of 70, these figures suggest there were 50 percent of them earn a score above 70. This may also mean that there are 50 percent of students did not pass by the standards of the KKM 70. The results of this preliminary study can be used as a reference the importance of creating a design for Environmental Education Learning Model for the technology group at Vocational School based websites.

2. The result of data validity PLH Model-Based on Website

The design of the website has a very important role to determine effectiveness of Model PLH. Display is an initial view website was designed as a form of animation material, Exam, and Value. This stage will be used by teachers and students to access learning materials online. There are several aspects that the experts and practitioners of information technology assessed on the design of the PHP website creation program (HytertextProprocessor), namely:

a. Display Home, website start screen animations used by teachers and students to create a user id and password as participants learn. Four aspects are assessed:

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Table 1. The result of website start screen animations

grader1	grader2	grader3	grader4	$\overline{X}$
4	3	3	4	3,5
4	4	3	3	3,5
4	3	3	3	3,25
4	4	3	4	3,75
Average				3,5

Referring to Table 1 above, the average of website start screen animations value obtained was = 3.5. If the score confirmed on the validity criteria as the standard categories of ratings assigned ($3.5 \leq \overline{X} \leq 4$), it can be concluded that the score was categories "Very Valid". It means that, based on four aspects is assessed as animation design, obtained Very Valid criteria used by students as a user to get into the material.

b. Topic display, animation in choosing subjects to be displayed by teachers and students in learning process, four aspects were assessed:

Table 2. The result of website start screen animations

grader1	grader2	grader3	grader4	$\overline{X}$
4	4	3	4	3.75
4	4	3	3	3.5
4	4	3	3	3.75
4	4	3	3	3.75
Average				3.68

Referring to Table 2 above, the average value that obtained on the subject was = 3.68. If this figure is confirmed on the validity criteria as the standard categories of ratings that have been assigned ($3.5 \leq \leq 4$), it was concluded that the value was categories "Very Valid", it means that, based on four aspects which are rated as the design of selecting Topic to be studied both by teachers and students can access their own. Display Materials, animated form input material, save inputting, cancel inputting results, and log out. 6 aspects are assessed:

Table 3. The result of observation based on form animation input materials

grader1	grader2	grader3	grader4	$\overline{X}$
4	4	3	4	3.75
4	4	3	4	3.75
4	4	3	4	3.75
4	4	3	4	3.75
4	4	3	4	3.75
4	4	3	4	3.75
Average				3.62

Referring to Table 3 above, animation form of teaching materials the average value obtained was = 3.62. If this figure is confirmed on the validity criteria as the standard categories of ratings that have been assigned ($3.5 \leq \overline{X} \leq 4$), it was concluded that the value are included in the category "Very Valid", it means based on six aspects assessed as animation design form input materials, save inputting results, cancel inputting the results have met the criteria Very Valid used both by teachers and students.

c. Display of Learning outcomes, evaluation from learning outcomes overall based on form animation. 9 aspects was assessed:

Grader 1	Grader 2	Grader 3	Grader 4	$\overline{X}$
4	3	3	4	3.5
4	4	3	4	3.75
4	4	3	4	3.75
4	4	3	3	3.5
4	4	3	3	3.5
4	4	3	4	3.75
4	4	3	3	3.5
4	4	3	3	3.5
4	4	3	4	3.75
Average				3.61
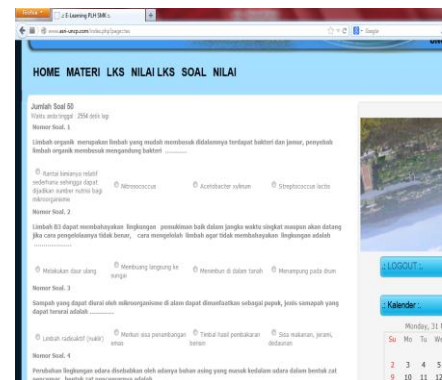
Referring to Table 4 above, the form animation did the task evaluation from learning outcomes, the average value obtained was = 3.61. If this figure is confirmed on the validity criteria as the standard category ratings that have been assigned ($3.5 \leq \overline{X} \leq 4$), it was concluded that the value were included in the category "Very Valid", it means that based on nine aspects rated as a form animation design did the task evaluation results has fulfilled the criteria Very Valid to be used in doing the students completeness of learning outcomes.

Results of Validation Data of PLH Model

Validity of PLH Model assessed by 4 (four) experts and practitioners by giving guidebook with model assessment sheet to be assessed and analyzed, it can shown in the following chart:
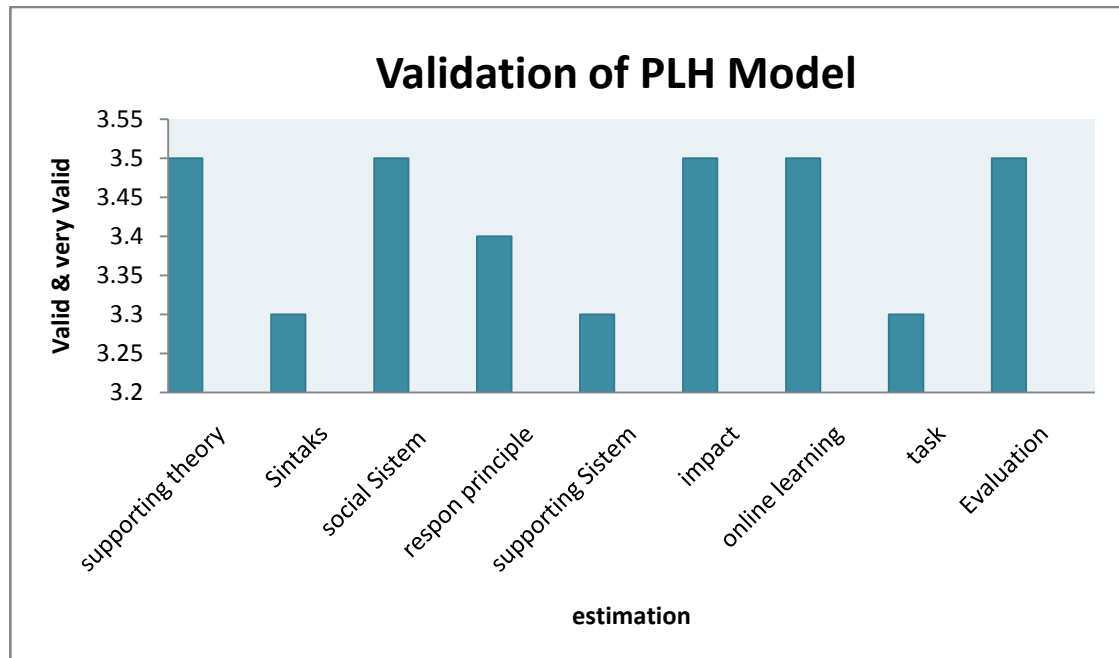
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Figure 2. Validation of PLH Model

Validity of PLH Model assessed by 4 (four) experts and practitioners by giving guidebook with model assessment sheet to be assessed and analyzed, as follows: (1) Aspects of Supporting Theory, the average value obtained X = 3.5 this value when confirmed into validity criteria categories was "Very Valid". that means that, the supporting theory used on PLH models conform in criteria very valid, (2) Aspects of Syntax, the average value of X = 3.3 we can conclude that value into the category of "Valid" means from the aspect of EE Model Syntax meets the valid criteria, (3) Aspects of Social Systems, the average X = 3.5 can be concluded that the value entered in category "Very Valid" means that when viewed from the aspect of Social Systems Model PLH conform into the validity criteria, (4) Principle Aspects of reaction, the average value of X = 3.4 conclude that the value may fall into the category "Valid" means that when viewed from the aspect of Principles reaction Model PLH has fulfilled the criterion of validity, (5) aspect of Support System, the average value of X = 3.3 we can conclude that value into the category of "Valid" means that when viewed from the aspect of EE Model Support System meets the criteria of validity, (6) aspect of Impact and Impact Instructional Companion, the average value of X = 3.5 we can conclude that value into the category of "Very Valid" means that when viewed from the aspect of Instructional Impact and Impact Model Companion PLH has met the criteria of validity, (7) aspects of Implementation online learning, the average value of X = 3.5 we can conclude that value into the category of "Very Valid" means that when viewed from the aspect of online learning Implementation Model PLH has met the criteria of validity, (8) aspects of learning online and Tasks Learning Activity, the average value of X = 3.3 we can

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conclude that value into the category of "Valid" means that when the review of aspects of Learning By online and tasks of Teaching and Learning Model PLH meet the criteria of validity, (9) aspect of evaluation, the average X = 3.5 we can conclude that value into the category of "Very Valid" means when viewed from the aspect of the Evaluation Model PLH meet the criteria for validity.

Discussion

Learning Outcomes in Test 1 By Using Website

The aspects that used to assess the student learning outcomes is learning completeness, it is obtained from graduation study using PLH Model-based website. The score Value that obtained from the value of learning outcomes data were processed by using SPSS. The results of the data showed that the score of the test results in two (2) classes with a total sample were 53 students that presented online, as shown in Table 1:

Table 5. The score of Statistical learning outcomes

Commentary	Statistical scores
Subject of the research	53
Ideal score	100
Standard Deviation	8.35
Variants	69.8
Median	76
Range Score	38
Average	74.7
Maximum score	88
Minimum score	50
The number of students who have passed	
The number of students who haven't passed	44
Percentage	9
	83.01

The table 5 above analyzed by using SPPS program descriptively, by using statistical data: the means score that obtained was 74.7. It can be stated that the result of students' passed generally. It refers to the mean value of 70.0 KKM, the average of students study results have been good, although still need to be improved. The results of students' graduation also obtained the maximum score with a value of 88, this is the highest score obtained by the students, and the lowest score achieved by students is 50. The number of students who did not pass were 9 people, and who graduated 44 people, so the percentage of the minimum number of 83. 01%, when it confirmed the standard of success in learning or mastery learning with the amount of 85% or ($\leq$ 85%), it can be categories completeness unmet learning outcomes. The median value obtained for 76 shows that there are 50 percent of them earn a score of 76. The test results determine the percentage of learning outcomes, scores aspects of learning outcomes are grouped into five categories can be seen in Table 6.

Table 6. Frequency Distribution of students learning outcomes

No	Score	Categorize	Frequency	Percentage
1	85 – 100	Excellent	2	3.8
2	65 – 84	Good	44	83.01
3	45 – 64	moderate	3	13.3
4	25 – 44	Fair	0	0
5	0 - 24	Poor	0	0

Based on the table above, from 53 students who have tested this exam in two classes referring from standard KKM of ≥ 70 set at vocational school. There were 2 students who got excellent with percentage 3.8%. It means that one student represent from each class. Although it is stated that the value of a high score as many as 44 people from 53 students with the percentage (83.6%), which also certainly there are some students who do not pass anything when referring to the standard KKM 70. While 3 students who got moderate with percentage (13.3 %), and no one got fair and poor with the percentage 0% is the lowest category of learning completeness outcomes from the students.

Students' Respond

There are two aspects that are used in students' response to the application of Model PLH, namely: (1) The students' response about online learning model; (2) The response to the material online. Test results of the analysis I was response analysis of the PLH online students in class XI A tested in the Department of Computer Engineering and Networks, acquired a 77.7% percentage of the results of analysis of students gave a positive response to online learning, and 81.4% of students gave positive response to the student book online.

The material is presented online is a new thing for the teachers and students so that the assessment results of Trial I still level less effective. Some aspects become important notes to the improvement in online learning, thus affecting the effectiveness of learning, namely: (1) the internet is important and greatly affect the learning activity. If the learning process takes me downloading the material is slow due to network or disconnected then the mental affect teachers and students in the class bring in saturation; (2) the material is presented online payload theory too long where teachers and students are not accustomed to reading material via the media of computer monitors, so that the achievement of learning outcomes less than the maximum. Overcoming the next step is to prepare the implementation of Trial II by improving the device to be used. In the form of the Internet network in laboratory fix the computer, re-edited the material will be presented to make it more attractive with images of environmental problems that occur, and provide guidance and training on intensive teacher and focus on implementing the learning Model PLH online.

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Learning outcomes Trial 2 Using Website

The completeness of learning outcomes in Trial I was not achieved its full potential. Then performed again the Test II in a different class to measure mastery of learning outcomes as set forth in Table 3

Table. 7 the score of Statistical learning outcomes

Commentary	Statistical Score
Subject of the research	35
Ideal score	100
Standard Deviation	6.9
Variants	48.3
Median	78
Range Score	30
Average	76
Maximum score	86
Minimum score	56
The number of students who have passed	32
The number of students who haven't passed	3
Percentage	91.4

The aspects to be considered for do the problems online are that students expected to choose the right answers by reading the questions repeatedly before dropping choice. The completeness of student learning outcomes derived from the passing score, a score obtained the result of relearning the value of the data using SPSS 70.0 KKM value based standards. Obtained the maximum score of 86 is the highest score achieved by students, and the lowest score was 56. The number of students who did not pass the 3 person, and who graduated 33 people, so the percentage of the minimum number of 91.4 percent, when confirmed on learning completeness standards by 85 % or ($\geq$ 85%) it meets the criteria for completeness of learning outcomes. The median value is obtained at 78 indicates that there are 50 percent of them earn a score of 78. The scores exam results to determine the percentage of learning outcomes, can be presented in Table 7.

Table7. Frequency Distribution of students learning outcomes

No	Score	Categorize	Frequency	Percentage
1	85 – 100	Excellent	1	2.9
2	65 – 84	Good	31	88.4
3	45 – 64	moderate	3	8.7
4	25 – 44	Fair	0	0
5	0 - 24	Poor	0	0

Based on the table above, this data when confirmed at the KKM amounted to 70.0 standard set by CMS. Then it can be stated that there is one person students get a very high score or percentage of 2.9%, followed by scores of high category with total number 31 people of 35 students and the percentage (88.4%), which scored the medium category totaling 3 students or the percentage is 8.7%. the Results of learning completeness of trial 1 and trial 2 when compared to the conventional way of learning is much better when the teacher teaches what to use information technology in the form of websites. According what was raised by Heather et al., (2009) that learning is not only determined the amount of the number of hours of instructional time provided, but more important is the form of understanding what students understand materials conveyed by the teacher.

Conclusion

The validity of PLH Model based website; from the theoretical assessment experts and practitioners, and based on the evaluation of empirical data analysis through the results of the tests, the learning device cause information technology in the form of a website, and the instrument used all of whom had qualified the validity of that model PLH feasible for use on top Secondary education. The effectiveness of PLH Model through the phase of Trial I and Trial II in the learning process online; in phase of Trial I thoroughness of learning outcomes is still smaller than $\leq 85\%$ of all students due to: (1) the internets is essential and very affect the activity of learning. If the learning process takes me downloading the material is slow due to network or disconnected then the mental affect teachers and students in the class bring in saturation; (2) the material is presented online payload theory too long where teachers and students are not accustomed to reading material via the media of computer monitors, so that the achievement of learning outcomes less than the maximum. Then made overall improvements both teachers and students prior to the trial continued. Through Trial II Model PLH been effective because of completeness of student learning outcomes overall percentage is 91.4%.

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