

Analysis of Validity and Effectiveness of Implementation of Inquiry Model With the Assistance of Computer Media in Learning Financial Management

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This study analyses the validity of the design content and the effectiveness of the inquiry learning model with the help of computer media in financial management learning developed to increase student competency in making business decisions. The results of the data analysis will then be described along with the support of quantitative data and qualitative arguments. The instrument used in this research and development uses an instrument validation sheet. Implementing the developed inquiry learning model has been effective in terms of attitude and participation process assessment, assessment of assignments, and assessment of student products.

Keywords: validity, effectiveness, inquiry learning model, computer, financial management

INTRODUCTION

The current digital era requires university graduates who have adequate competence. Adequate competence of graduates can be realized if there is a synergy from all parties related to the learning process, such as educators, students, learning facilities, and infrastructure. Learning facilities need to be updated according to current technological developments. One of the learning facilities can be in the form of a learning model. For example, one of the competencies expected of Bachelor of Accounting graduates is the ability to make investment decisions in learning financial management (Undiksha, 2016).

Currently, the learning model used is still conventional. Therefore, this research tried to develop an inquiry model with the help of computer media in investment appraisal in financial management courses. The developed model has previously analyzed the material requirements needed and the competencies expected from learning financial management.

The model that has been developed needs to be tested for feasibility by experts who are competent in their field. If the model is declared feasible, then the model can be implemented to determine whether the developed model is adequate.

The formulation of the problem to be examined is (1) what is the validity of the content validity of the inquiry learning model with the help of computer media in the developed financial management learning, (2) What is the design validity of the inquiry learning model with the help of computer media in the developed financial management learning, and (3) What is the effectiveness of the inquiry learning model with the help of computer media in financial management learning that is developed towards student competence in making business decisions.

The aims of this study were (1) to analyze the content validity of the inquiry learning model with the help of computer media in the developed financial management lesson, (2) to analyze the design validity of the inquiry learning model with the help of computer media in the developed financial management lesson, and (3) to analyze the effectiveness of the inquiry model with the help of computer media on the developed financial management learning.

LITERATURE REVIEW

Inquiry Learning Model

There are various concepts of learning models that we know. Learning Model “According to Joyce, B., at all (2009: 6), the learning model is , *a plan or pattern that we can use to design face-to-face teaching in classrooms or tutorial settings and to shape instructional materials, including books, film, tape, computer-mediated program, and curricula*” (Joyce, B. et al., 1992, 4) (Parta, 2017).

Further explained the components of the learning model according to “Joyce, B. (1992:14-16) et al., made four concepts to describe the implementation of the learning model. The four concepts are called components of the learning model and consist of; (1) syntax, (2) social system, (3) reaction principle, and (4) support system. The impact of learning is not placed as a component because the impact can be directly designed from the content or skills that underlie the activity. Joyce, B. et al. distinguished the impact of learning into two, namely; (1) instructional impact and (2) accompanying impact” (Parta, 2017).

The learning model can be seen as a “center” that connects the three main learning components: materials, instructors, and students.

Organizing and learning a learning material will always be based on the learning model. The delivery of learning materials also uses learning steps which are the implementation of the model syntax. The learning model is also used as a reference to set the pattern and direction of interaction between the learning components. Therefore the learning model plays a central role in learning.” (Fuady et al., 2017; Parta, 2017)

COMPUTER MEDIA

The development of science and technology has led to the development of information and communication technology (ICT) or what is often called computers (information and communication technology). Education as an aspect of human life also benefits from the development of science and technology. In the world of education, computers can also be used to facilitate the process of achieving educational goals. For example, one of the ways to use computers or ticks is as a learning aid. Even further, learning in the world of education can be done with a computer-based.

“Computer-based learning is the management of learning using computer hardware and software. The use of computer equipment is also often identified with the use of internet site networks. However, computers are not limited to computer and internet devices but also include information media such as television, radio, multimedia players, mobile phones, and various other computer devices. Learning media in computer-based learning can be in the form of the Internet, Learning Software, Email, Information Source CD-ROM, Network, Data Processing (Database Spreadsheet), Desktop Publishing, Video Conference, Digital Scanner, Word Processing, Digital Camera, On-line Information Resources” (Adimphrana, 2008; Hardianto, 2015; Mata & Fiqh, 2015; Uwes A. Chaeruman, 2008).

Further, “computer-based learning will certainly focus on using computer-based learning media. However, using computer-based learning media is not as easy as turning the palm. The media must pay attention to several techniques so that the media used can be utilized to the fullest. Besides that, media use

does not deviate from the learning objectives. Media are divided into two categories based on the readiness of their procurement: finished media, which is a trading commodity that is readily available on the open market in a usable state (media by utilization), and design media, which must be specially designed and prepared for particular learning purposes and objectives. So that the use of computer-based learning media does not deviate from the learning objectives, in implementing learning, it is also necessary to pay attention to several principles” (Adimphrana, 2008; Hardianto, 2015; Mata & Fiqh, 2015; Uwes A. Chaeruman, 2008).

“These principles according to Kwarto Adimphrana are as follows: (1.) Active: allows students to be actively involved by the existence of an exciting and meaningful learning process, (2) Constructive: allows students to incorporate new ideas into the knowledge they already have beforehand to understand the meaning or desire of knowledge and doubts that have been in his mind, (3) Collaborative: allows students in a group or community to work together, share ideas, suggestions or experiences, advise and provide input to fellow group members, (4) Enthusiastic: allows students to actively and enthusiastically try to achieve the desired goals, (5) Dialogical: allows the learning process inherently is a social and dialogic process in which students benefit from the communication process both inside and outside of school Contextual: allows learning situations directed at meaningful learning processes (re al-world) through a problem-based or case-based learning approach, (7) Reflective: allows students to realize what they have learned and reflect on what they have learned as part of the learning process itself. (Jonassen (1995), cited by Norton et al. (2001)). (8). Multisensory: enabling learning to be delivered for various learning modalities (multisensory), both audio, visual, and kinesthetic (dePorter et al., 2000), (9). High-order thinking skills training: allows for training higher level thinking skills (such as problem-solving, decision-making, et cetera.) and indirectly improves computer & media literacy (Adimphrana, 2008; Hardianto, 2015; Mata & Fiqh, 2015; Uwes A. Chaeruman, 2008).

METHODS

In this study, the development model was used according to Sugiono, which includes the steps namely “(1) design validation, (2) design revision, (3) product trial, (4) product revision (Aslikah, 2017; Sugiyono, 2013; Wibowo & Pratiwi, 2018). The first stage is design validation involving colleagues and expert colleagues, and the second stage is improving the product before the product is tested. The third stage of product trials is to carry out limited product trials for four students in one class. Finally, the fourth stage is product revision by perfecting the weaknesses of the existing media. This research was conducted in the Department of Economics and Accounting, especially the Economics Education Study Program, Faculty of Economics, University of Education, Ganesha.

The subjects of this study were lecturers in financial management courses, validation experts related to the content, appearance, and learning models developed, and accounting study program students who program financial management courses. The data analysis technique used in this research follows qualitative data analysis procedures by giving meaning to the stages carried out along with the results from the stages carried out. This analysis also uses quantitative data, which is the success of the implementation carried out by descriptive disclosure by comparing the average value and the percentage that occurs. The results of the data analysis will then be described along with the support of quantitative data and qualitative arguments.

The instrument used in this research and development uses an instrument validation sheet. The instrument validation sheet is used with the hope that a valid instrument can be obtained by involving experts in their field. Furthermore, the valid instrument is used to measure the validity of the Inquiry Learning Model with Computer Assisted Media (PIMK).

The data analysis carried out are:

a. Instrument validity analysis

Before the instrument is used to measure the validation, practicality, and effectiveness of the PIMK model, its validation and reliability must first be tested. Therefore, to obtain data on the validity of the developed learning tools, the validation format, learning tools, and instruments

to be validated are given to experts & practitioners who are deemed appropriate to assess the aspects listed in the tools and instruments. The aspects assessed generally consist of objectives, instructions, materials, and language.

The validity category for each aspect or all aspects assessed is determined based on the criteria adapted from the categorization according to (Bloom, Madaus., 1981) as follows.

$0,80 < V_a \leq 1,00$	Very Valid
$0,60 < V_a \leq 0,80$	Valid
$0,40 < V_a \leq 0,60$	Valid Enough
$0,20 < V_a \leq 0,40$	less valid
$0,00 < V_a \leq 0,20$	Invalid

Note: V_a is the average validation score for each aspect assessed

The criteria used to decide that the instrument used has an adequate degree of validity if the V_a value is in the minimal valid category.

Furthermore, to determine the level of instrument reliability using a percentage of agreements (Grinnell, 1988) with the following formula:

Information:

A is the magnitude of the frequency of matches between the data of two validators/observers

D is the frequency that does not match the data of the two validators/observers

R adalah koefisien (derajat) reliabilitas instrumen.

The instrument sheet criteria are said to be reliable if the reliability value is $R \geq 0.70$ (Nitko & Brokhart, 2007)

b. PIMK model validity analysis and the validity of learning devices

Based on the data from the results of the PIMK model validation and the validity of the learning tools from experts and practitioners, then the average value of the average value given by each assessor was determined. Furthermore, the total average value of the PIMK model validation and the validity of the learning tools were determined, then referred to the quality categorization intervals adapted from Bloom (Bloom, Madaus., 1981), namely:

$0,80 < V_a \leq 1,00$	Very Valid
$0,60 < V_a \leq 0,80$	Valid
$0,40 < V_a \leq 0,60$	Valid Enough
$0,20 < V_a \leq 0,40$	less valid
$0,00 < V_a \leq 0,20$	Invalid

Note: V_a is the average validation score for each aspect assessed

The criteria for the validity of the PIMK model and the validity of the learning device, if according to expert & practitioner assessments, it shows that the V_a value is in the minimal valid category. If this is not the case, it is necessary to revise it based on the validator's suggestion or look back at the aspects with less value. Next, re-validation is carried out, then re-analyzed. And so on until the PIMK model and the validity of the ideal learning device are obtained based on the size of content validity and construct validity.

The effectiveness of the learning model is measured through the attainment of competency learning outcomes as measured by using a description test. After the sub-discussion, the students take a test to see how well they retained the information from the class. The Student UAS Product Assessment Criteria for Competency Test is used to assess this learning outcome assessment. Results of Student Learning Evaluation of Participation Processes, Evaluation of Attitudes, Evaluation of Assignment Processes, and UTS Product Assessments. If at least 80% of all students get a minimum of 75 for a score range of 0-100.

RESULT AND DISCUSSION

Results of Learning Module Design Validation

The study of financial management that was developed contains the formulation of learning outcomes and learning materials. For example, the digital module design is shown in the following figure.

FIGURE 1
FRONT VIEW OF THE DIGITAL MODULES

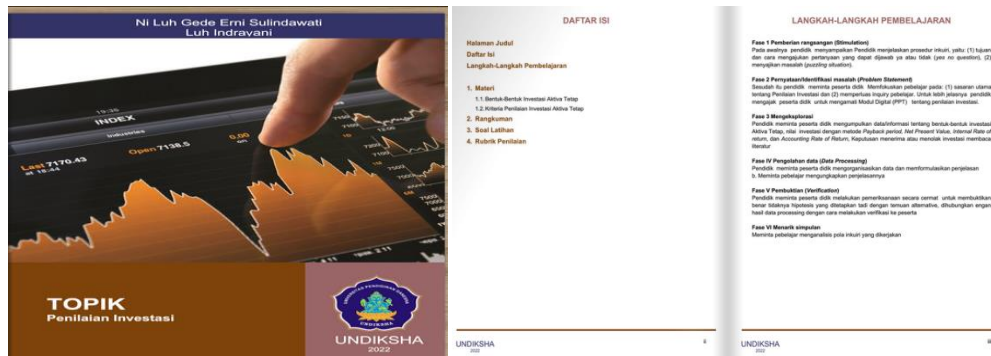
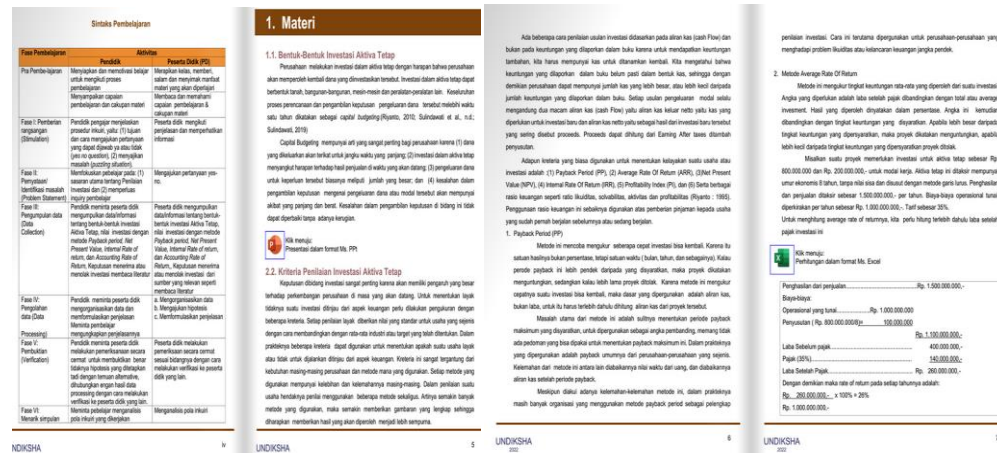


FIGURE 2
DISPLAY OF MICROSOFT EXCEL WORKING PAPER MATERIAL AND LINKS



The model that has been developed needs to be tested for feasibility by experts who are competent in their fields.

The instruments used in assessing the module design are assessed for feasibility by the Expert/Validator. Material experts and media experts assess the module design's feasibility. The evaluation instrument for material experts is measured through 2 aspects, namely, the content aspect and the learning aspect. Aspects of the content include the breadth and depth of the material content, the clarity of the material content, the structure of the material content, the actualization of the material content, the clarity of the examples included, the adequacy of the examples included, the clarity of the language used, the consistency of the language with the target user, the clarity of the information in the illustrated pictures, the suitability of practice questions with learning outcomes, the balance the proportion of practice questions with the sequence of questions presented. The learning aspect consists of the clarity of the learning steps, the accuracy of the learning syntax, the accuracy in explaining conceptual material, the accuracy in explaining practical material, the attractiveness of the material in motivating users, the level of difficulty of

questions/tests, the clarity of ppt presented, the clarity of illustrations of working papers in Microsoft programs excel. Evaluation instruments for media experts include proportional layout (layout of text and images), appropriateness of background selection, appropriateness of color proportions, appropriateness of selection of fonts, appropriateness of selection of font size, suitability of ppt with material, the attractiveness of cover design, and completeness of information on the outer packaging. The results of the feasibility assessment of the summary instrument are presented in Tables 1, 2 and 3

TABLE 1
EVALUATION RESULTS OF CONTENT ASPECTS OF MODULE MATERIAL EXPERTS

No.	Indicator	MAXIMUM SCORE	ACQUISITION SCORE
1	Coverage (breadth and depth) of the content of the material	5	5
2	Clarity of content	5	4
3	Organizational structure/sequence of content material	5	5
4	Actualization of the content of the material	5	4
5	Explanation examples are included	5	5
6	Sufficient examples are included	5	4
7	Clarity of language used	5	4
8	Language suitability with the target user	5	4
9	Clarity of information on image illustrations	5	5
10	Appropriateness of exercises/tests with learning outcomes	5	4
11	Balance the proportion of practice questions/tests with the material	5	5
12	The sequence of questions presented	5	5
	TOTAL SCORE	60	54
	Rating Score = $\frac{\text{Gain score} \times 100\%}{\text{Max Score}}$	54	= 90%
		60	

TABLE 2
RESULTS OF EVALUATION OF MATERIAL EXPERT LEARNING ASPECTS

No.	Indicator	MAXIMUM SCORE	ACQUISITION SCORE
1	Clarity of learning steps	5	5
2	Learning syntax accuracy	5	5
3	Accuracy in the explanation of conceptual material	5	4
4	Accuracy in the explanation of practical material	5	5
5	The attractiveness of the material in motivating users	5	4
6	Difficulty level of questions	5	4
7	The clarity of the presented PPT	5	5
8	Illustrative clarity of Investment working papers in the Microsoft excel program	5	4

No.	Indicator	MAXIMUM SCORE	ACQUISITION SCORE
	TOTAL SCORE	40	36
	Rating Score = $\frac{\text{Gain score}}{\text{Max Score}} \times 100\%$	36	=90%
	Max Score	40	

The results of the evaluation of the content aspect of the expert material are from table 1. It is known that the assessment score is 90%, and the evaluation results of the learning aspects obtained an assessment score of 90%. Therefore, the assessment score achieved is more than 85%, which means that the learning module design can be tested as valid and reliable from the content and learning aspects. Suggestions and comments from media experts related to the learning model developed include. Overall, the evaluation instrument for developing digital learning modules is excellent and clear, and practice questions should be equipped with an assessment rubric.

TABLE 3
RESULTS OF EVALUATION OF MEDIA EXPERT LEARNING ASPECTS

No.	Indicator	MAXIMUM SCORE	ACQUISITION SCORE
1	Proportional layout (text and image layout)	5	5
2	Background selection suitability	5	5
3	Conformity of color proportions	5	4
4	The suitability of the selection of fonts	5	4
5	Appropriate font size selection	5	5
6	PPT suitability with the material	5	4
7	The attractiveness of the cover design	5	4
8	Complete information on the outer packaging	5	4
	TOTAL SCORE	40	35
	Rating Score = $\frac{\text{Gain score}}{\text{Max Score}} \times 100\%$	35	= 87,5%
	Max Score	40	

The data in Table 3 shows that the evaluation results of material and media experts with an assessment score of 87.5% are declared very valid instruments, so they are feasible to use.

In addition to the instruments being evaluated by the material and media experts, the instruments used in designing digital learning modules were also assessed for their feasibility by the Expert/Validator. The feasibility assessment of each instrument is reviewed based on 3 (three) aspects: Instructions for use, material (content), and language. The results of the feasibility assessment of the summary instrument are presented in Table 4.

TABLE 4
INSTRUMENT FEASIBILITY RESULTS

No.	Instrument Type	validity		Reliability	
		Va	Criteria	PA	Criteria
1.	validation sheet for the material expert module instrument	0,89	Very Valid	0,85	Reliable
2.	validation document for the media expert module instrument	0,88	Very Valid	0,75	Reliable

Concerning the information in Table 4, all instruments are incredibly valid, and if the Va value falls within the minimal valid range, the criteria utilized have a sufficient level of validity. Therefore, it is possible to use the data. While the reliability level of the instrument using the percentage of agreements (PA) with the criteria for the instrument sheet is said to be reliable if the PA value is ≥ 0.70 . Concerning the information in Table 4, it can be stated that all instruments are reliable. Thus, the instrument can be used to collect data on the validity of the digital module being developed.

- Limited product trials for students.** After the learning model was developed and received a valid assessment, a limited trial was carried out on four students. Individual trials are given to educators and students in the Bachelor of Accounting study program, which is intended to see whether the draft module developed can be clearly understood by students. There are several comments related to the limited trial for students as a revision of the learning model that was developed, namely: (1) The material presented in the PPT and the processing steps in the Microsoft excel program are good, (2) it is better if the size of the model image can be automatically enlarged and reduced, and (3) it is necessary to add practice questions that are real in the industrial world. To comments from students, revisions were made to the prepared model. The updated model was evaluated on a larger scale, specifically by a group of students taking the Financial Management course.
- The Effectiveness of the Developed Learning Model.** After being tested in a limited scope, it is continued by analyzing the effectiveness of the learning model developed on the learning outcomes of student financial management courses. The student learning outcomes can be seen in Tables 5, 6, and 7 below:

TABLE 5
LEARNING OUTCOMES FROM ASSESSMENT OF ATTITUDES AND PARTICIPATION PROCESSES

NO	Information	Percentage of Number of Students with grades								
		0-39	40-60	61-64	65-68	69-72	73-76	77-80	81-84	85-100
1	understand the forms of Investment in Fixed Assets	0%	0%	0%	0%	7%	7%	13%	17%	57%
2	Understand and be able to make decisions to accept or reject investments with the payback period method	0%	0%	0%	0%	10%	7%	17%	13%	53%
3	Understand and be able to make decisions to accept or reject investments with the Net Present Value method,	0%	0%	0%	0%	7%	3%	13%	10%	67%

NO	Information	Percentage of Number of Students with grades								
		0-39	40-60	61-64	65-68	69-72	73-76	77-80	81-84	85-100
4	Understand and be able to make decisions about whether to accept or reject the internal rate of return investment method	0%	0%	0%	0%	3%	7%	13%	13%	63%
5	Understand and be able to make decisions to accept or reject investments with the Accounting Rate Of Return method	0%	0%	0%	0%	3%	7%	17%	23%	50%
6	Understand the forms of risk, the relationship between risk and return, the general pattern of risk and return, the decision to accept the project, maximizing the benefits and risks, approximation with the mean and standard deviation	0%	0%	0%	0%	3%	3%	17%	17%	60%
7	Be able to explain the definition of the cost of capital and be able to compare the company's cost of capital with the cost of individual capital	0%	0%	0%	0%	3%	7%	17%	17%	57%
8	Understand and be able to calculate the weighted average of the cost of capital	0%	0%	0%	0%	7%	7%	13%	17%	57%
	Rata-rata	0%	0%	0%	0%	5%	6%	15%	16%	58%

From table 5, it can be seen that the average Score of student attitudes and participation obtained is in the range of 5% (69-72), 6% (73-76), 15% (77-80), 16% (81-84), and 58% (85-100) belonging to the perfect category.

TABLE 6
LEARNING OUTCOMES FROM TASK PROCESS ASSESSMENT

NO	Information	Information								
		0-39	40-60	61-64	65-68	69-72	73-76	77-80	81-84	85-100
1	understand the forms of Investment in Fixed Assets	0%	0%	0%	0%	3%	7%	13%	17%	60%
2	Understand and be able to make decisions to accept or reject investments with the payback period method	0%	0%	0%	0%	7%	7%	13%	13%	60%
3	Understand and be able to make decisions to accept or reject investments with the Net Present Value method,	0%	0%	0%	0%	3%	3%	10%	17%	67%
4	Understand and be able to make decisions about whether to accept or reject the internal rate of return investment method	0%	0%	0%	0%	3%	7%	10%	7%	73%
5	Understand and be able to make decisions to accept or reject investments with the Accounting Rate of Return method	0%	0%	0%	0%	3%	3%	13%	10%	70%
6	Understand the forms of risk, the relationship between risk and return, the general pattern of risk and return, the decision to accept the project, maximizing the benefits and risks, approximation with the mean and standard deviation	0%	0%	0%	0%	3%	3%	13%	17%	63%
7	Be able to explain the definition of the cost of capital and be able to compare the company's cost of capital with the cost of individual capital	0%	0%	0%	0%	3%	3%	13%	17%	63%
8	Understand and be able to calculate the weighted average of the cost of capital	0%	0%	0%	0%	3%	3%	10%	20%	63%
	Average	0%	0%	0%	0%	4%	5%	12%	15%	65%

From table 6, it can be seen that the average student assignment assessment score, which is obtained is in the range of 4% (69-72), 5% (73-76), 12% (77-80), 15% (81-84), and 65% (85-100) belonging to the excellent category.

TABLE 7
LEARNING OUTCOMES FROM PRODUCT ASSESSMENT

NO	Information	Percentage of Number of Students with grades								
		0-39	40-60	61-64	65-68	69-72	73-76	77-80	81-84	85-100
1	understand the forms of Investment in Fixed Assets	0%	0%	0%	0%	3%	7%	13%	13%	63%
2	Understand and be able to make decisions to accept or reject investments with the payback period method	0%	0%	0%	0%	3%	7%	13%	13%	63%
3	Understand and be able to make decisions to accept or reject investments with the Net Present Value method,	0%	0%	0%	0%	3%	3%	7%	17%	70%
4	Understand and be able to make decisions about whether to accept or reject the internal rate of return investment method	0%	0%	0%	0%	3%	7%	7%	7%	77%
5	Understand and be able to make decisions to accept or reject investments with the Accounting Rate Of Return method	0%	0%	0%	0%	3%	3%	10%	10%	73%
6	Understand the forms of risk, the relationship between risk and return, the general pattern of risk and return, the decision to accept the project, maximizing the benefits and risks, approximation with the mean and standard deviation	0%	0%	0%	0%	3%	3%	13%	13%	67%
7	Be able to explain the definition of the cost of capital and be able to compare the company's cost of capital with the cost of individual capital	0%	0%	0%	0%	3%	3%	10%	17%	67%
8	Understand and be able to calculate the weighted average of the cost of capital	0%	0%	0%	0%	3%	3%	10%	17%	67%
	Average	0%	0%	0%	0%	3%	5%	10%	13%	68%

From table 6, it can be seen that the average Score of student product values, which is obtained, is in the range of 3% (69-72), 5% (73-76), 10% (77-80), 13% (81-84), and 68% (85-100) belonging to the excellent category.

From the assessment of attitudes and participation processes, task assessments, and product assessments, it is known that 89%, 92%, and 91% of all students obtain a minimum score of 75 which means learning competence is achieved so that the inquiry learning model developed has been effective. That is supported by the results of several studies, which are described below.

Lahadis' research concluded that "inquiry learning is one of the solutions to address various educational problems now and in the future (Lahadisi, 2014). Inquiry learning is a strategy that emphasizes the process of thinking systematically, logically, critically, analytically, and meaningfully to seek and find answers to a problem, both in the learning process in the classroom and in the environment in which they are located. In this case, students are encouraged and directed to develop their abilities and potential, hoping they will feel confident in solving a problem they face (Lahadisi, 2014). Setiasih's research results state that using the inquiry model can improve learning outcomes and student activity" (Setiasih & Panjaitan, 2016). The results of Hidayati Suhada's research concluded that "Students who learn to use the Inquiry model gain higher science process skills compared to students who learn to use the Problem-solving model" (Suhada, 2017). The results of Qurotul A'yun's research concluded that, "there is an effect of using the guided inquiry learning model and modified free inquiry if it is associated with multi-representational abilities" (Qurotul et al., 2015). Likewise, the results of Wahyuni's research "The average score of the physics learning outcomes test for the experimental class using the guided inquiry learning model with the experimental method is higher than the control class using the conventional learning model" (Wahyuni et al. 2017). The results of Ulansari's research concluded "that the inquiry learning model can increase student activity and learning outcomes" (Ulansari et al., 2018). And the results of Sugeng Nugroho's research that "guided inquiry learning through virtual and real laboratories has a significant effect on cognitive learning achievement."

CONCLUSION

Based on the research results above, it can be concluded that the inquiry learning model, with the aid of computer-mediated learning materials in the digital module Investment Appraisal Learning, has received an expert assessment. The results of the Evaluation of the Content Aspects of Material Experts found an assessment score of 90%, and the results of the evaluation of the learning aspects obtained an assessment score of 90%. The assessment score achieved is more than 85%, which means that the learning module design can be tested as valid and reliable from the content and learning aspects. The evaluation results of material and media experts, with an assessment score of 87.5%, stated that the instrument was very valid, so it was feasible to use. The developed inquiry learning model has been effective in assessing attitudes and participation processes, assessing assignments, and evaluating student products.

ACKNOWLEDGEMENT

The authors would like to thank all parties who supported this research, namely University of Education Ganesha, the government and agencies of Singaraja Bali Indonesia, Hopefully, this research will be helpful for knowledge and a better future.

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