



Learning Evaluation Based on ICT

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Abstract. The specific objectives to be achieved are to produce the instructional material in the form of validated and tested evaluation tools that are limited to the subject and have been tested in learning that can be used as a try-out student, able to increase motivation and study habit and able to overcome student learning difficulties. This research development research. The development model used is the development model according to Thiagarajan which is the development model of 4D (four D method) which consists of defining (Define), Designing, Development, and Disseminate. Using the trial subjects was limited to accounting education students. Based on the results and the discussion that has been achieved. The results showed, this research produces products in the form of evaluation tools based on ICT in the assessment of the learning process that can foster stimulation of interest, able to increase motivation. Thus the research of this development model is very important in order to create a product that can be used in the evaluation process of students with ICT-based, so as to provide learning experiences to students and able to grow stimulation of interest, contextual or based on real-life reality, able to increase motivation and learning habits and able to overcome the difficulties of studying accounting. Thus, students can utilize ICT not only limited to learning activities but also during the assessment process. For teachers, this will provide ease in conducting the assessment process of students.

Keywords: Evaluation of learning · development model · CBT

1 Introduction

Education is the root of the culture of the nation where the process of education is the process of developing the potential of learners so that they are able to become the heirs and developers of the nation's culture [11]. In education, there is a learning process where the learning process requires the role of teachers and student activeness to achieve a goal of learning success. Learning outcomes can be demonstrated through evaluations made by teachers toward students. Evaluation is a process that can be used as one reference for an educator to know whether or not successful teaching and learning process. Evaluation is a systematic and continuous process for collecting, describing, interpreting, and presenting information about a program to be used as a basis for making decisions, preparing policies and preparing the next program [7].

In the 21st century the role of Information and Computer Technology (ICT) in the field of education is very unlikely to be avoided. In the world of learning technology education continues to develop along with the times. In the implementation of daily learning

of Information and Communication Technology is often encountered as a combination of audio/data, video/data, audio/video, and internet technology. Even since 1986, there has been the idea of bringing about a virtual class by Hilt. According to the results of the Hiltz [6] research conducted in 2003, creating a "wall-less laboratory" to develop and assess the various structures for communication in learning through computer networks. Over the past few years, [6] has been exploring the use of communication in learning through computers.

2 Literature Review

2.1 Computer Based Test (CBT)

In Indonesia, National Computer Based Examination is different from the national Paper-Based Test (PBT) which has been running. Almost all learning activities have been using IT-based learning media. So, the learning process also needs to be evaluated using IT-based. For that need an application that can be used as an evaluation tool that is based IT learning. Application Google quiz form is one of the application programs that can be designed to be an IT-based evaluation tool.

The use of application in the evaluation of learning is still not found. Therefore, it is necessary to research for the development of this Google quiz form, so it can be used as an evaluation tool in learning, especially try out National Examination. So it can be seen that a systematic process in determining the value or purpose of a particular form of evaluation in Indonesia has been developed. The main purpose of learning evaluation is to determine the effectiveness of teaching and learning process. Effectiveness can be seen from changes in behavior of learners.

The behavioral changes are compared with the expected behavioral changes by the objectives and content of the learning program. Therefore, evaluation instruments should be developed based on the objectives and content of the program. Almost all learning activities have been using IT-based learning media. The learning process also needs to be evaluated using IT-based. For that need an application that application action tool that is based IT learning. Google quiz form can be designed to be an IT-based evaluation tool.

2.2 Application/Software

It is necessary to research the development of Google quiz form. Then, it can be used as an evaluation tool in learning, especially for a try out National Examination. The evaluation according to [1] evaluation is a process of collecting data measurement results and information assessment results that have many dimensions and used as a basis for determining further treatment or policy making.

As a very important part of a learning process, assessment in the learning process should be designed and implemented by the teacher. By doing an assessment the teacher will be able to know level of success of the learning process and will obtain input material to determine the next step. Thus, the effectiveness of a learning process is determined by assessment.

Here researcher want to find out how to develop an ICT-based evaluation tool." Knowing the appropriateness of ICT-based Economics/Accounting learning apparatus at accounting education based on the study and validation from material experts and graphic media experts and to know the student's response to the evaluation tool of Economics/Accounting based on ICT. Learnings a process by which individuals gain a whole new behavioral change, as a result of their own experiences in interaction with the environment [10].

In the process of the learning learners should be instilled self-confidence and sense of ability, useful, have relationships, and empowered [13]. The essence of learning is the conscious effort of a teacher to teach his students (directing student interaction with other learning resources) in order to achieve the expected goals [4].

There is some understanding of the evaluation put forward by experts as proposed by [4] that evaluation is determining the benefit or value of an evaluation object. According to [7] there are seven elements to be done in the implementation of the evaluation and the seven elements include: 1) determining the focus to be evaluated; 2) designing the evaluation; 3) collecting information, 4) analyzing and interpreting information, 5) reporting information, 6) managing evaluation, and 7) evaluating evaluation. [9] states that evaluation is an activity to gather information about the operation of something and then the information is used to determine the right alternative when making a decision.

According [2] objective evaluation of students in schools that use the teaching system PDSI (Procedure Development System Instructional) basically can be classified into four categories, as follows: Provide feedback to the teacher as a basis for improving the program unit lessons or learning process. Determine the progress of student learning, among others, useful as a report material to parents (filling report cards), determination of class increase, and determination of passing a student. Place students in appropriate teaching and learning situations (e.g. in the determination of levels, classes or majors), according to the level of ability or other characteristics students have. Knowing the psychological, physical, and environmental background of students, especially those experiencing learning difficulties, to further be used as a basis for improvement and coaching.

3 Method

3.1 Context of the Study

The type of research used is the type of research development or R & D (Research and Development). According to Borg and Gall [5], "research development or R & D (Research and Development) method is a method to develop and to product new used in education and learning." While the development model used in this research is the development model.

3.2 Participant

The subjects used in testing the development of computer-based evaluation tools as a matter of simulation of national-based online exam on the basic competence of accounting cycles of trade firms is an accounting education student. The respondents in this study will be involved in a limited trial.

3.3 Design of the Study

The development model can be a procedural model, conceptual model and theoretical model. The procedural model is a descriptive model that is to outline the steps which must be followed to produce the product. Implementation of this development model is a product in the form of simulation problem based on the online exam is Google quiz form application. The development model used is the development Thiagarajan model which is 4D Development model consisting of the defining, designing, development and disseminate.

3.4 Materials

Learning media is a tool used by teachers to help convey the message of learning materials to facilitate the learning process, so that the learning objectives can be achieved with the maximum. Interactive media is an intermediary tool designed with the utilization of computers by using elements such as audio and visual as well as text to convey a message where the recipient (student) can respond actively. Interactive learning media can also be used to design computer-based evaluation tools. To determine the design of the right product design in order to achieve the learning objectives that have been formulated in the previous stage then the required materials in the form of computer quiz creator applications, flash media player and a set of computers along with the modem.

3.5 Instrumentation and Data Sources

The data collection instrument used is a questionnaire. Data obtained from questionnaires were analysed descriptively and quantitatively using percentages. This technique is done by providing a statement about the material about the simulation of the national-based online exam with Google quiz form application based on the value given to the material about the simulation of the national-based test online with the application of the Google quiz form. The types of data used in this research are qualitative and quantitative data.

3.6 Procedures

At this stage a procedural step is required to answer the problems that have been analyzed in the previous stage. Researchers designed a tool for evaluation of learning-based applications computer. This study produces a product in the form of media learning evaluation tool that contains exercise questions, which can be done by students as a form of try out facing the National Exam.

3.7 Analysis

The purpose of data analysis is to answer the problem formulation contained in the research. Data analysis technique used in this research is using statistic of central tendency. The value of the material on the simulation of the national-based online exam with

Table 1. Interpretation Criteria

Value	Interpretation Criteria
0% - 20%	Very Low
21% - 40%	Below average
41% - 60%	Average
61% - 80%	Above Average
81% - 100%	Very High

Table 2. App Valve of Application-Based Evaluation Tool Computer

No	Statement	Scale			
		1	2	3	4
1	Evaluation tools contain elements of simplicity, integrity, emphasis and balance				√
2	The evaluation tool is easy to use				√
3	There is a clear visualization of the form of evaluation tool				√
4	Count time timing workmanship accordingly			√	
5	Provide clear workmanship instructions			√	
6	Evaluation tool is able to motivate students in doing the problem				√
7	There is a matching indicator with the item				√
	Value			6	20
	Total Value	28			
	Percentage of Value	93%			

wonder-share application on the basic competence of the trading company's accounting cycle is obtained from the questionnaire calculation using Likert scale. Calculations using Likert scale are as follows (Table 1):

Based on these criteria, CAI-based interactive media as a supporting medium of Curriculum 2013 on Small Accounting Cash material in this study is said to be worth if the percentage is $\geq 61\%$ (Table 2).

4 Results and Discussion

4.1 Quantitative Results

This development using Thiagarajan development model, that is 4D (Four D Models) consists of define, design, develop, and disseminate. At this defining stage, the researcher defines and defines the terms of learning. The researcher performs the necessary needs analysis before designing the development of the ICT-based learning evaluation tool. The concept analysis is done by the researcher by identifying the main concepts that will be developed, arranging them in a systematic form, and linking the concepts relevant to the material to be developed. Here are the validation results of the preparation of computer-based evaluation tools:

Based on the acquisition of the above table, the value given by the media expert is 93%. Thus, the media expert states that the ICT-based evaluation tool is very feasible to be used in the process of assessment of learning in the field of accounting studies. The validation results of the ICT-based evaluation tool on the accounting company's accounting cycle materials by media experts, shows that the average score of all aspects is 93% with very decent category. The first aspect of technical quality gets very decent criteria. This is because the technical quality aspect of the evaluation tool contains elements of simplicity, integrity, emphasis and balance in form.

In this ICT-based evaluation tool, the items are developed in accordance with the expected Learning Objectives. In the second aspect the instructional quality gets very reasonable criteria. This is because in the aspect of instructional quality, media evaluation tools have a precise time count as well as having clear instructions and evaluation tools able to motivate students. The ICT-based evaluation tool developed has the title of the trading company's accounting cycle, for the length of time used to work on the number of questions and the time will follow during the test. It aims to remember the students about the time they have because when the time is up then the computer assumes that the student has finished working on. Questionnaire of student responses contains about students' opinions on evaluation tools developed.

Respondents' responses to the use of ICT-based evaluation tools were enthusiastic. The students argue, that the ICT-based evaluation tool is very feasible to be used in the assessment of the learning process. Most students responded positively to each of the aspects asked on the student response questionnaire on the ICT-based evaluation tool developed by the researcher. From the results of limited trials, the data presented above is analyzed by using descriptive analysis technique percentage. Where descriptive analysis percentage is the way used to convert quantitative data into percentage form which is then interpreted with qualitative sentences consisting of the assessment of construction problems and implementation of ICT-based evaluation tool. Analysis of student response data is described as follows student opinion questionnaire analysis during the limited trial as a whole is considered very feasible.

4.2 Discussion

Analysis of the front end is done by analysing the phenomena that occur in the field, especially in accounting education. The researcher discovers some phenomena that occur, as most students perceive and experience difficulties in the subject matter of accounting cycle of the trade. Understanding of students is also less because the available teaching materials are inadequate, in the sense that the material presented in the material that is available short and less support the application of scientific approach in the implementation of Curriculum 2013. Meanwhile, according to students, in understanding the subject matter of the use of special journals required other teaching materials. However, students are also less active in their own search activities referencing other learning resources, for example from the internet. Factors that occur that hinder the implementation of the Curriculum runs less than the maximum.

In general, accounting education students have good learning motivation for the material learned. Cognitive abilities continue to grow during the accounting education (adolescents). Cognitive changes during the age of accounting education leads to an

increase in potential. Sometimes some cognitive abilities degenerate with age. They are not yet understanding true about social norms that apply in the life of society. Both can lead to less harmonious social relationships, because they are difficult to accept sexual norms with conditions in groups or communities. Resistance and awkward attitude in the relationship will harm both parties.

There are universal changes in adolescence at the age of accounting education that is the heightening of emotions whose intensity depends on the level of physical and psychological changes, body, interests and roles that certain social groups expect to play problems, changing interests, behaviours, and values, being ambivalent toward change. These changes have an impact on their physical, cognitive, affective, and psychomotor development. One of the fundamental ways is to encourage them to compete with themselves.

The cognitive development of the early accounting education phase, suggested by Schaie that Piaget's cognitive stages represent an improvement efficiency in the acquisition of new information. Growth of the brain reaches perfection at the age of accounting education functionally, cognitive development (ability of thinking) adolescent can be described as follows: a. Intellectually adolescents begin to think logically about abstract ideas. b. The functioning of high-level cognitive activities is to make plans, strategies, make decisions, and solve problems. c. Already able to use abstractions, differentiate the concrete from the abstract. d. The emergence of reasoning abilities in an scientific, learning to test the hypothesis. e. Thinking about the future, planning, and exploring alternatives to achieve adolescent psychology. f. Begin to realize the process of efficient thinking and learning to introspection. g. Insight is widespread thinking, may include religion, justice, morality, and identity.

Eligibility of ICT based learning evaluation tool at trading company accounting cycle for accounting education has been developed from subject validation and material expert sheet. First, based on media validation questionnaire get 93%, it means material content at ICT based learning evaluation tool by correct writing rules. So, the development of ICT based learning evaluation tool by Quiz has been suitable with subjects taught which is trading company accounting cycle. Second, construction aspect gets 93%. It means the item has been appropriate for measuring each component which mentioned in specific instructional objectives. It means that the construction aspect in evaluation has been appropriate with standard and correct writing rules. So, the development of ICT based learning evaluation tool by Quiz Creator application at trading company accounting cycle very feasible as an evaluation tool of accounting learning.

The result of student's response can be seen from component of technical quality obtained by criterion very feasible. Users satisfied with evaluation tool which has been created. It is supported by Riduwan [12] said that learning evaluation tool is feasible if students' response. By using ICT based learning evaluation tool at trading company accounting cycle encourage the students to answer the question correctly, reduce cheating process during examination and assist teachers in performing correction by using ICT. It is supported by [13], learning motivation arising from intrinsic and extrinsic factors.

5 Conclusion

The role of the use of computers with network technology and servers will determine the success of the research results. The existence of this service is a limitation in compiling and designing a computer application-based evaluation tool, because the speed of the internet network is not always stable. The material used for evaluation questions is also limited to trading company accounting. This is because the proportion of exam questions presented is accounting for trading companies. The process of validating the evaluation tool based on computer applications is only limited to the display of evaluation questions in the form of multiple choice because only multiple-choice types can be developed.

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References

1. Aziz Azmahani, Khairiyah M. Yusof, Jamaludin M. Yatim. (2012). Evaluation on the Effectiveness of Learning Outcomes from Students' Perspectives. *Journal of Procedia - Social and Behavioural Sciences*, (56), 22-30.
2. Bundsgaard Jeppe, Thomas Illum Hansen. (2011). Evaluation of Learning Materials: A Holistic Framework DPU. *Journal of Learning Design*, 4(4), 31-44.
3. Dyson, R. and Renk, K. (2006). Freshman Adaptation to University Life: depressive symptoms, stress, and coping. *Journal of Clinical Psychology*. Fitzpatrick, R., Rokshar, C. (2005). The Treatment of Melasma with Fractional Photo the Molysis A Pilot Study. *Journal American Society dor Dermatologic Surgery*.
4. Gooch Deanna L. (2012). Kansas Research, Development and Validation of a School Leader's Resource Guide for The Facilitation of Social Media Use by School Staff. Kansas: Kansas State University press.
5. Hiltz Goldman. (2004). Media Mixes and Learning networks. In S.R. Hiltz and R. (Eds). *Learning Together Online: Research asynchronous learning*, pp. 215–237.
6. Handler Beth. (2010). Teacher as Curriculum Leader: A Consideration of the Appropriateness of that Role Assignment to Classroom-Based Practitioners. *International Journal of Teacher Leadership*,3 (3),
7. Hurt Bob. (2007). Teaching What Matters: A New Conception of Accounting Education. *Journal of Education for Business*, 295–299
8. Krauss Ferdinand, Mohamed Ally. (2005). A Study of the Design and Evaluation of a Learning Object and Implications for Content Development. *Journal of Knowledge and Learning Objects*, (1), 2-22
9. Matanluk Ovelyn, Baharom Mohammad, Dg. Norizah Ag, Kiflee, MolodImb. (2013). The Effectiveness of Using Teaching Module based on Radical Constructivism toward Students Lesson Process. *Journal of Procedia - Social and Behavioural Sciences*, (90), 607-615.
10. Misra Srikant. (2012). Implications of Globalization on Education. *Romanian Journal for Multidimensional Education*,

11. Riduwan. (2015). Skala Pengukuran Variabel-Variabel Penelitian. Bandung: Alfabeta.
12. Stuffleber, Daniel and Anthony J. Shinkfield. (2007). Evaluation Theory, Model, and Applications. San Francisco: A. Wiley Imprint.
13. Warren. (2015). Pengantar Akuntansi. Jakarta: Salemba Empat.

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