



International Journal of Applied Business and Economic Research

ISSN : 0972-7302

available at <http://www.serialsjournal.com>

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Volume 15 • Number 20 • 2017

Development of Multiple Learning Resources Based on ICT to Support Learning Autonomy in Introduction to Accounting Course

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Abstract: The purpose of this research is to develop multiple learning resources based on ICT as learning support of Introduction to Accounting course.

The process of autonomous learning at home needs a source of learning that allows students to learn. The development and use of ICT-based Multiple Learning resources as a learning resource is expected to increase students' motivation in learning. The use of ICT is essential, especially the use of educational resources based on android and e-learning so that students can easily access various existing learning resources.

The development process consists of three stages, namely: Analysis Stage, Design Stage and Development Stage, where each stage has an output that supports the process of content development the learning media. This research has produced a learning media based on information technology of introduction to accounting course, which has been validated by expert judgment.

Keywords: Multiple learning resources, learning media, learning autonomy.

INTRODUCTION

Learning media is a teaching tool to support the delivery of lecture materials so that students can be more leverage in understanding the lecture materials. According to Dwiyogo (2013), the media is anything that can be used to channel the message from the sender to the receiver to stimulate the thoughts, feelings, attention and interests and care of students.

The learning process becomes more efficient with the existence of multimedia. Multimedia technology causes increased interaction between teachers and students, as well as improved quality of education (Malik and Agarwal, 2012). The use of multimedia in learning can be utilized in the classroom so that students can learn actively (Teoh and Neo, 2007). The results of the study on the development of Interactive Learning Module (ILM) component in forming the multimedia-mediated student-centered learning environment (MMSLE) indicate an increase in student achievement, liveliness, and motivation (Leow and Neo, 2014)

Introduction to Accounting is a basic course, which is not only a compulsory subject in the curriculum of accounting study program but also a mandatory subject in the curriculum of all education programs in the Faculty of Economics Malang State University (Universitas Negeri Malang), such as management and development economics department. The Introduction to Accounting Course is designed to provide an understanding and skills of analyzing, recording, classifying financial information as well as preparing Financial Statements for service companies and trading companies. The subject-matter relates to accounting information and financial statements as the reporting media as well as the processes that produce such information. This course is a basic knowledge of other subjects requiring accounting knowledge as a foundation of understanding before taking other related topics, such as Secondary Financial Accounting, Advanced Accounting, Taxation, Banks and Financial Institutions, Auditing, etc.).

The Introduction to Accounting Course is taught to students in the first semester. The input of Malang State University (Universitas Negeri Malang) students has a different educational background of high school majors such as social sciences (IPS), natural sciences (IPA), and vocational (SMK), so their fundamental understanding is different. The introduction to Accounting course is usually given by conventional method and according to the agreement of expertize group lecturer in Financial Accounting.

After taking this Introduction to Accounting Course, students are expected to be able to: 1). Describe the function and importance of accounting in economic decision making comprehensively at the introductory level, 2). Identify users of financial statements, 3). Have an understanding and skills about basic accounting characteristics and concepts, financial recording procedures and accounting cycles 4). Describes the development of the conceptual accounting cycle, 5). Communicating in the business world with language (concepts, methods, and techniques) accounting, 7). Preparing, composing, interpreting and analyzing financial statements, 8). Utilizing accounting data for decision making

Introduction to Accounting Course needs a deep understanding of the making of Financial Statements, so that the time of 3 credits per week perceived less, especially for students with a high school background of science majors who have never received the accounting material. The primary English language reference is also an obstacle for students because even though the context of the students is high school majoring in Social Studies, the accounts currently used are accounts in the Indonesian language. Based on this, the students are expected to learn at home, to improve their understanding of accounting.

To simplify the process of independent learning at home is necessary for the source of learning that allows students to learn. The development and use of ICT-based Multiple Learning resources as a learning resource is expected to increase students' motivation in learning. The use of ICT is essential, especially the use of educational resources based on Android and e-learning so that students can easily access various existing educational resources. The result of this research is Multiple Learning Resources based on ICT is expected to be used in learning introduction to accounting in Group of Expertize Financial Accounting.

Based on the existing background, the formulation of the problem in this study is: How to design and Implement Multiple Learning resources based on ICT as a learning resource subject of Introduction to Accounting?

RESEARCH METHOD

According to the purpose of research, the development process conducted for seven months development of ICT-based Multiple Learning Resources in Introductory Course, and get the validation of the expert of material and do the trial test to the student. The development process consists of 3 (three) stages, namely: Analysis Stage, Design Stage and Development Stage, where each stage has an output that supports the process of content development Introduction to Accounting course.

Out put for each step in the development of ICT-based learning media is illustrated in figure 1.

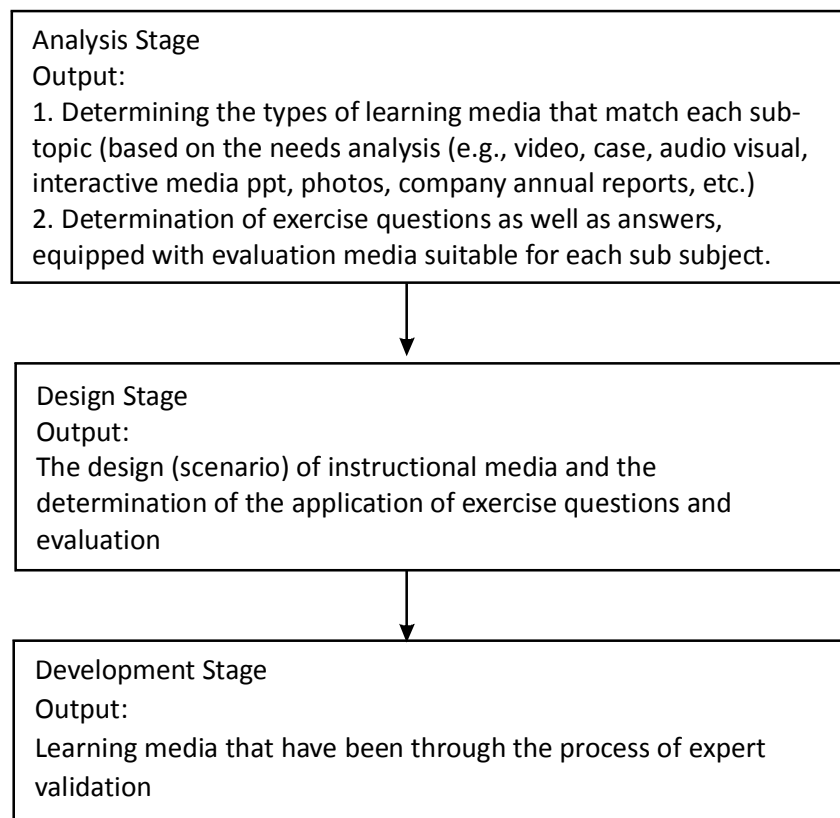


Figure 1: Learning media development steps

TYPE OF DATA

The data used in this research is quantitative data and qualitative data. Quantitative data are an assessment based on the average percentage assessment of the instructional media of quantitative data will be used to infer the validity of this media. Qualitative data in the form of comments, criticisms and suggestions in the form of comments from the validator to this learning media. The indicators used are: The Suitability Of The Material and The Accuration of Material.

(a) Validation Instrument

Instruments used in the validation of a questionnaire. This questionnaire using a Likert scale (4 scale). Criteria for each rating scale is as follows:

Score 4 If excellent/very interesting/clear/is very easy/very precise/highly fit/very decent

Score 3 If the good/interesting/obvious/easy/appropriate/feasible

Score 2 If no good/unattractive/unclear/no easy/false/not fit/unfit

Score 1 if it is not good/very unappealing/very unclear/is not very easy/very imprecise/was incompatible/not very feasible.

The questionnaire used as an instrument in the validation of the learning media also includes comments and suggestions section validator as a further revision

(b) Data Analysis Technique

For qualitative data, the analysis carried out an analysis of suggestions, comments, and criticism of the validator, whereas for quantitative data analysis used analysis techniques percentage, according to the formula:

$$P = \frac{\sum x}{\sum x_1} \times 100\%$$

Explanation:

P = percentage

$\sum x$ = Number of answers of all respondents in 1 item

$\sum x_1$ = Number of ideal answer in 1 item

To determine the conclusion, each item is validated by several criteria: valid, valid enough, less valid and not valid. The score for each criteria can be seen in table 1.

Table 1
Validation Criteria

<i>Answer</i>	<i>Criteria</i>
80-100	Valid
60-79	Valid Enough
40-59	Less Valid (Revision)
0-39	Not Valid (Revision)

Source: Sudjana (2005)

(c) Revision

Revision of the learning media is based on the feedback received from the expert.

Achievement Indicators: Learning media that has been revised in accordance to the feedback from the expert.

3. RESULTS AND DISCUSSION

3.1. Program Mapping

The result of the analysis phase is the program mapping of learning media based on the learning strategy on each topics. The program mapping is shown in table 2 below:

Based on expert analysis of the suitability of the material (conformity with existing theory, the suitability of the material with learning objectives), the material accuracy (the accuracy of definitions, formulas and illustrations) has meet the criteria, so the interactive learnig media declared valid and does not need to make revisions. Table 3 shows the results of expert validation.

From the results of the validation expert, then be revised by the advice given by specialists in the field of accounting studies and experts in education. After revisions, the learning media is ready to be implemented and evaluated (validated second stage/field testing) by the user in the learning process, such as students who take a course in Accounting Department

DISCUSSION

Learning is a process between learners, teachers, and teaching materials. Communications will not work without the help of messengers or media. Utilization of optimal learning media can improve the effectiveness of learning activities. For learning, media can be utilized optimally need the selection of appropriate learning media as necessary and exciting for students learning media have benefits in clarifying the presentation of messages, overcoming the limitations of space, time and sense power. Appropriate and varied learning media can generate learning arousal and can overcome teacher difficulties due to differences in background and experience of students, while the curriculum and educational materials that are determined to the students are the same (Dwiyogo, 2013).

The theory that became the basis for research and development of accounting learning media is the theory of constructivism. The essence of the constructivist learning theory is that each student must find and change complex information independently. The constructivist strategy is often called student-centered teaching because of its emphasis on students as active learners. Lecturers act as facilitators who help students find and change information independently.

The relation between constructivism learning theory and learning media is characterized by the value of the character that is on the education that emphasizes the students to learn independently, finds the problem-solving independently. The lecturer becomes the student facilitator in solving the problem. Self-study exercises demonstrate the self-learning process in a digital magazine by students and some examples and material summaries that support student learning independently. Multimedia supports constructivist learning environment. Multi media technology support students to solve a problem using self-explorations collaboration and active participation (Malik and Agarwal, 2012).

CONCLUSION

This research has produced a learning media based on information technology of introduction to accounting, which has been validated by expert judgment. Introductory accounting courses is designed to enhance

Table 2
Program Mapping of Learning Strategy

<i>Learning Strategy</i>							
<i>Number</i>	<i>Topic</i>	<i>Face to face</i>	<i>Virtual synchronous</i>	<i>Asynchronous Independent</i>	<i>Asynchronous Collaborative</i>	<i>Evaluation File</i>	<i>Format</i>
1.	Characteristics and basic concepts of accounting.		Regular Chatting	1. Identification of different types of companies: services, trade and manufacturing (photos and video of company activities) 2. Identification of differences in financial statements for each type of company (pdf) (c) Identification of the parties who need financial statements (video, ppt files)	Student Discussion (a) Multiplechoice questions (b) True and False Question		FLY, pdf, ppt
2	- Definition of the transaction - The basic equation of accounting - Transaction analysis		• Regular Chatting • Team viewer	1. The meaning of the transaction (pdf) 2. The basic equation of accounting and Transaction analysis (Video Tutorial, PPT, book)	Discussion about the various cases, whether an activity including a transaction or not		FLY, pdf, ppt
3	Preparation of Financial Statements: - Comprehensive Income Statement - Retained earnings statement - Statement of Financial Position	Presentation of the results of the discussion on the analysis of the transaction, as well as making financial reports	Dual Mode	Preparation of Financial Statements: (video , PPT, PDF)	Discussion about preparation of Financial Statements.		FLY, pdf, ppt

Contid. table 2

<i>Learning Strategy</i>							
<i>Number</i>	<i>Topic</i>	<i>Face to face</i>	<i>Virtual synchronous</i>	<i>Asynchronous Independent</i>	<i>Asynchronous Collaborative</i>	<i>Evaluation File</i>	<i>Format</i>
4.	Principles of Debit and Credita. (a) Understanding Accounts (b) Double entry accounting system (c) Debit-credit account (d) Real and nominal accounts	Regular Chatting	1. The meaning of Account (PPT) 2. Double entry accounting system (video)	Discussion about Debit-credit account (d) Real and nominal accounts	Multiplechoice questions	FLV, pdf, ppt	
5.	Recording Process: - Accounting cycle - General journal, - Ledger - Trial balance	Regular Chatting	Video and PPT	Multiplechoice questions	FLV, pdf, ppt		
6.	Adjustment Journal Student Discussion	Dual Mode -Team viewer	Video and PPT	Student Discussion and presentation	Multiplechoice questions	FLV, pdf, ppt	
7.	Correction Journal	Regular Chatting	Video and PPT	Multiplechoice questions	FLV, pdf, ppt		
8	- Financial Statement of Service Company	Regular Chatting	Video, PPT and PDF	Multiplechoice questions	FLV, pdf, ppt		
9.	Completion of the accounting cycle: - Closing journal, - trial balance after closing - Reversing journal	Regular Chatting	Video and PPT	Multiplechoice questions	FLV, pdf, ppt		

Contd. table 2

<i>Learning Strategy</i>							
<i>Number</i>	<i>Topic</i>	<i>Face to face</i>	<i>Virtual synchronous</i>	<i>Asynchronous Independent</i>	<i>Asynchronous Collaborative</i>	<i>Evaluation File</i>	<i>Format</i>
10.	Accounting Trading Company: – Characteristics of trading companies – Operation cycle – Recording of purchase and sale transactions at trading companies	Student Discussion and observation	– Dual Mode – Team viewer	Video and PPT	Presentation of observations on the financial statements of trading companies	Multiplechoice questions	FLV, pdf, ppt
11.	Accounting cycle of trading company		Regular Chatting	Video and PPT		Multiplechoice questions	FLV, ppt
12.	Completion of the Accounting Cycle Trading Company – Adjusting journal entry – Financial statements	Student Discussion and presentation	Regular Chatting	Video and PPT	Student Presentation about Accounting Cycle for Trading Company	Multiplechoice questions	FLV, pdf, ppt
13.	– Closing Journal – Trial balance after closin – Reversing journal			Video and PPT		Multiplechoice questions	FLV, ppt
14.	Special Journal	Student Discussion and presentation	Dual Mode – Team viewer	Video and PPT	Student Presentation about Special Journal	Multiplechoice questions	FLV, ppt
15.	Subsidiary Ledger		Regular Chatting	Video, PPT and PDF		Multiplechoice questions	FLV, ppt
16.	Final Exam					– Multiplechoice questions – Essay	

Table 3
Validation Results from Expert

<i>Number</i>	<i>Explanation</i>	<i>Score</i>			<i>Result</i>
		<i>X</i>	<i>Xi</i>	<i>Prosentage (%)</i>	
1.	The Suitability of The Material				
(a)	The material presented is in accordance with the prevailing theory	4	4	100	Valid
(b)	The material presented is in accordance with the learning outcome	3	4	100	Valid Enough
	Average	3,5	4	87,5	Valid
2.	The Accuration of Material				
(a)	Definition Accuracy	4	4	100	Valid
(b)	Formula Accuracy	4	4	100	Valid
(c)	Ilustration Accuracy	3	4	75	Valid Enough
	Average	3,67	4	91,6	Valid

Table 4
Summary

<i>Number</i>	<i>Explanation</i>	<i>Prosentage (%)</i>	<i>Validity Criteria</i>
1.	The Suitability of The Material	87,5 %	Valid/Be Used
2.	The Accuration of Material	91,6 %	Valid/Be Used

students' ability in self-study. The resulting media displays the material presented in the form of the word, ppt, video and music, in addition to containing learning media material also include evaluations given in the shape of interactive quizzes that can display the score after the student's work and practice questions to train students' understanding.

SUGGESTION

For utilization of information technology-based accounting learning media are as follows.

1. Students are directed to read the instructions for using the media available before carrying out the learning activities
2. Application of the use of classroom learning media should be made independently by students with teachers as facilitators.

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