



Developing Learning Media Based on E-Learning on Accounting Subject for Senior High School Students

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Developmental Media; Used Moodle Software

Abstract

This research aims to create the accounting learning media based on e-learning that uses Moodle software. It was one of e-learning applications which could be used in the learning activities and it was easy to be created. It was a Research and Development study which used Borg and Gall model. The stages of the research were: the initial needs analysis, the initial product development, the expert validation, the first revision; the limited field tests; the second revision; and the final product. The material validation was performed by the materials experts; whereas the media validation was performed the media experts and users (students). Findings show that there is 100% validated by the material experts and 96.67% by the media experts; 81.49% by the users (students), and thus the average validation was 92.72%. It means that the learning based on e-learning for accounting subject using Moodle application is very suitable in learning process. Thus; it is suggested to teachers to use the learning media based on e-learning. Then, facilities and infrastructure in the classroom should be provided in order to support the optimal utilization of the media.

How to Cite

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INTRODUCTION

The fast development of the information technology has caused various changes on the way how people live including education. The use of information technology such as internet in the learning process has become necessary not only for long distance learning but also for current conventional education system. The implementation of national education which is still conventional facing many obstacles when it should serve wider community in Indonesia.

The big change of information technology happening in global environment requires development on education system which is open and is easily accessible for everyone who needs it and is unlimited to age, gender, location, and social economic condition. The learning process requires to adapt the people's dynamics (Munchith, 2008) because the information technology development has changed the people's way of life while the long distance e-learning system which is currently developed by higher education including Open University or *Universitas Terbuka* (Husna, 2008) is not yet well implemented.

The use of internet in the media in some cities are commonly implemented and even some schools already have access to internet even though its use is still limited. The e-learning as a learning model made in the form of digital aims to make it widely accessible for wider community. Socialization is needed for teachers because the internet is not only used for trade but also for optimally use in the learning process or education.

The change in the use of technology using computer as the media has big potential in changing the way how people study, gather information, adapt information, etc. The development of information technology can improve performance and is possible to implement activities fast, appropriate, and accurate so that it results to high productivity. It has been proven by the study conducted by Harandi (2015) confirming that e-learning has influence on students' motivation to study.

The communication between students and lecturers are not only by having a direct face-to-face interaction but it can also be done electronically using certain media so that the learning environment can be more interesting and interactive. One of the learning media that can be shared in e-learning is the learning module. Setyosari & Sihkabuden (2005) say that by using modules, students can learn and develop their learning process optimally in accordance with their capabilities

and opportunity. Besides, they are also able to adapt their own way to study and ensure the activeness of the students (CBSA). The use of media based on computer is a learning concept which is more interesting and interactive compared to the media used in a conventional way. Arsyad (2011) says that the interactive concept in learning is related to computer-based media. Interaction in computer-based media is generally having three elements, (1) instructional steps which are adaptable, (2) answers or responses or students' tasks, and (3) adaptable feedback.

The above explanation confirms that there is a need to develop learning media on the basis of e-learning. The result of a study on the Development of Learning Media on the basis of E-Learning on Accountancy subject for Senior High School (SMA) aims to formulate a product that is learning media especially for material related to basic competence on writing financial report for service companies. It has proven that the learning media using moodle application has improved the learning quality both for teachers and students. This is supported by a research conducted by Rapi (2016) saying that the learning achievement of the students who use interactive media is higher compared to those who use conventional learning method.

The development of the use of internet technology and the web is followed by the technology innovation and data communication. Many application and information system have been based on internet technology. This condition has made things easier to be conducted such as long distance learning or e-learning. E-learning is a new way in the learning process as the consequence of the development of technology, information, and communication.

E-learning is an electronic web-based media that can be applied to computer connected to a local and global network such as computer laboratory. The use of e-learning in the learning process has been developed as the improvement of technology and information. Purbo (2002) explains that e-learning is a form of technology information applied in education system at cyber school. E-learning used in all education activities employ computer and internet. In line with Purbo's argument saying that e-learning is a new learning paradigm using internet. E-learning is not limited to time and space as said by Min-Lin (2014). Besides, it also offers various interaction so that it can accommodate traditional classes. The concept is also supported by the argument made by Rohendi (2012) saying that e-learning is a transformation from conventional to digital both

from the perspective of content and also system.

Currently, computer technology is not only used to computing and word processor, but also as the media used for multi media which make it possible for students making design and other concepts on engineering and science. The computer multimedia means that technology which optimizes the role of computer as the infrastructure to display and engineer texts, graphs, and audio in one integrated display. By displaying and combining many elements conveying information and messages, computer is designed to be used as the technology media which is effective to use as the media for learning and delivering relevant learning materials such as graphic and animation design. The concept of visualisation is helpful to make the abstract and theoretical concept concrete. Many researches have proven the advantage of visualisation in the form of picture, animation, simulation, and video in the learning process (Kirna, 2014), computer media can visualize the learning materials to be more concrete.

Computer-based multimedia can be also used as a tool to do simulation for improving skills and certain competence. For example, the use of airplane cockpit which make participants possible to be trained without having the risk to fall down. Another example is the use of animation for students in doing certain trial without being present in the laboratory. Computer-based media for learning can be helpful to improve students' comprehension because students will be active in the learning process. For example the use of powerpoint, learning video, CD based on HTML, interactive learning multimedia (moodle, wondershare quiz creator) and other applications.

MOODLE stands for Modular Object-Oriented Dynamic Learning Environment. It is one of Course Management Systems (CMS) especially for long distance e-learning. MOODLE is one of interactive learning multimedia which is currently widely used and developed using the software of Learning Management System (LMS) namely Moodle. It is an open source software supporting e-learning implementation with integrated paradigm in which many supporting learning features can be easily accommodated in one portal of e-learning. Important features supporting learning such as tasks, quiz, communication, collaboration, and main features that can upload any kinds of learning materials format. Kurniawan (2009) says that moodle is one of applications from learning concept or mechanisms making use of information technology based on web which is well-known as e-learning concept.

Moodle application can build system using

e-learning concept (electronic-based learning) or distance learning which is not limited to space and time. A lecturer can deliver the material anywhere and anytime. Besides, students can also join the lectures anywhere and anytime as long as they are connected to internet. Moreover, the learning process test or quiz can be conducted online easily. Whenever the tests or quizzes are conducted online, the participants are not required to be present at one place. The participants can join the tests from home, office, internet cafe, and even during their way having laptop supported by internet connection.

Some advantages that can be gathered from developing e-learning by using moodle are: 1) simple, efficient, light, and compatible with many browsers; 2). easy to install and support many languages; 3). the provision of sites management to manage the whole sites, change themes, and add media, and etc; 4) the availability of the users management; 5) course management, course add and deletion, or course change; 6). Media for chat, polling, forum, journal, quiz, survey, workshop, and many more; 7) free and open source software (Hasbullah, 2002). The material development using moodle application in this article is named as Manual for Course Development. The other advantage using online learning is also mentioned by Nguyen (2015) saying that one of the reasons why many people discuss online learning is due to many claim that there are many benefits in using it. Some of them are the effectiveness in teaching students because this kind of media can be used for professional development, cost effectiveness to decrease the high cost of education, and is possible to give world class education for anyone connected to broadband.

According to Winkle (2005), Module is the smallest learning program studied by students individually or self-instructional, and is learned step by step. Then, Mulyasa (2004) says that a module is an independent learning package involving a series of learning experience planned to design systematically for students to achieve the learning objectives. In line with Mulyasa, Sadiq (2014) mentions that module provides instructional package for students in doing independent learning. Module consists of instructions and steps that can be conducted to build skills. Winkle (2005) also mentions that the learning features using module involve: a) teachers' guidance, b) students activity papers, c) students task paper, d) students tasks key papers, and e) Test paper.

The learning on service company accountancy is classified as social science in Senior High School (SMA) in class XI. And, the accountancy

subject is started from the step of taking notes to reporting step. The material to write financial report is the last step from accountancy cycles of service companies. The module for learning is made in the form namely Learning Module.

METHODS

Learning media for accountancy subject especially on writing financial report for a service company based on e-learning is developed by using Moodle. Moodle is an open source software developing the implementation of e-learning using integrated paradigm in which many features for supporting learning can be accommodated in one e-learning portal. Some important features supporting the learning process are Task, Quiz, Communication, Collaboration, and other main features that can upload many kinds of format of learning materials. The research model developed in this research is development model offered by Borg & Gall (1983) as in Figure 1.

Need Analysis

Identification of the need is conducted by reviewing learning materials available in Accountancy syllabus in Senior High School and is consulted with the expert of accountancy such as accountancy teachers and students' condition. To have a qualified internet-based interactive learning (PIBI), there is a need to plan and develop existing procedures begun by doing need analysis (Padmantara, 2014).

Develop initial product

The result of the analysis is used to develop learning media based on e-learning for accountancy material in writing financial report for service companies. In this stage, some activities involved are designing products, finding the sources for material, and making the products.

Expert Validation

Expert validation aims to gather data as the basis for decision whether the media is valid to use for learning activities and to achieve the objective of the learning itself.

Product Revision I

Product revision 1 is conducted whenever

the learning multimedia product that has been developed based on the need analysis is found to be not appropriate in terms of media performance, expert validation, and material expert.

Limited Field Trial Assessment (Users)

The field assessment is conducted by asking 30 SMA students (class XI, IPS 2) to learn how to write financial report for a company by using e-learning. First, the learning is conducted in the classroom in which the researcher informs the students how to use e-learning using LCD provided by school, and is connected to internet. Then, students are given questionnaires to be filled in to finally evaluate the media.

Product Revision II

The result of the product evaluation by the users becomes the basis for revising the previous product. The reference is used to find out whether there is weakness and a revision based on the data from the filled questionnaires.

Final Products

Then, after revision, the last product is the e-learning media for accountancy subject in writing financial report for a service company. This e-learning media is connected to internet so that it can be accessed anytime and anywhere.

Product Trial

The product trial is conducted as a formative evaluation step. The product trial is used by the users related to multimedia programme quality. There are some steps conducted: 1) validation, 2) revision, and 3) field trial

The subjects for trial in this products are a) media expert refers to a lecturer for information and communication technology, b) material expert for accountancy learning teachers, c) field trial for 30 students of SMA having their accountancy subject especially for a service company in writing financial report.

There are two kinds of data. First, qualitative data including critique, and opinion on learning module from expert validation, and limited field trial (users). Second, quantitative data which include assessment towards learning module gathered from closed questionnaires from expert validation and product trial during the limited field



Figure 1. The Development Stage of Learning Media (adapted from Borg & Gall)

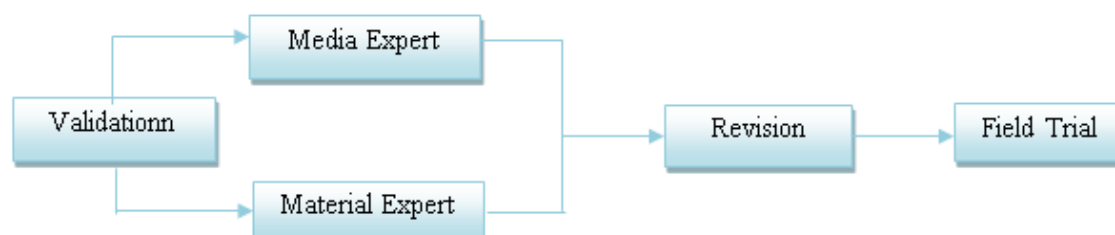


Figure 2. Design for Product Trial

assessment (users).

The data in the e-learning module development use closed questionnaires employing likert because it is related to the measurement of behaviour, opinion, and one's perception or group on learning media.

The technique for data analysis used is descriptive analysis percentage which is only to find out the percentage (Sudjana, 1990: 45). The formula used to manage the data is:

$$P = X/X_i \times 100 \%$$

Description:

P= Percentage of the trial result

X= The amount of the answer scores from the subjects

X_i = The amount of maximum answers from the aspect of assessment during the trials

100% = Constant

The criteria used to determine the level of the success is illustrated in table 1. The multimedia which can be called successful should reach the score of 60%.

Table 1. The Percentage of the Result of Evaluation on Subject for Trials

Percentage	Description
80 % - 100 %	Valid/ used
60 % - 79 %	Valid enough/ used
50 % - 59 %	Les valid/ changed
<50 %	Not valid/ changed

Source: Sudjana, (1990)

RESULTS AND DISCUSSION

Need Analysis

Based on the result from observation and interview with some teachers, it is found that the existing facilities such as computers are enough to use, but its use is still limited. Practical application using the computer is possible such as to develop learning media. The use of the existing computer is still limited to the practical accountancy and limited application. The provision of facilities can be maximized to support the aca-

demic activities. Therefore, one of the academic activities that can be developed is developing learning media such as e-learning as one of the references to solve the problems in teaching material for writing financial report.

The learning media based on e-learning is expected to become alternative interactive media for students to get new learning sources which is accessible and can be learnt everywhere and anywhere because it has been connected to the internet. The development of e-learning media should also considers the capacity of the teachers to operate the software. The teachers fully support this activity because it can be one of the references used to be applied in the learning process so that the objectives of the learning can be achieved. Students who are sometimes having less concern on the learning process are expected to be interested in understanding the materials which have been explained.

Product Development

The product development is conducted by developing the material and media learning.

The learning material developed and provided using the learning media using the basic of e-learning which is accordance with curriculum is the competence in writing financial report for service companies. Figure 3 shows the summary of the learning material. The detail materials are available in accountancy module. Figure 3 is one of displays of moodle application in which the display is in the form of description, animation, picture, and others which depend on the initial setting. The setting process in the book is Manual for the Use of Learning-based Media in which it is part of this research. To begin, every one has to register as users (administrator can also register someone else to be users manually). Figure 4 illustrates the Login display.

After the new page appears, click "Create new account" on the right side on the bottom so that figure 4 will appear. Then, click "Create new account" in front page of e-learning SMA Negeri Malang. Remember your username and password because you need them to log in. Af-

SEKOLAH	: UPTD SMA NEGERI 1 BOYOLANGU
MATA PELAJARAN	: AKUNTANSI
KELAS / PROGRAM	: XI / IPS
SEMESTER	: 2 (DUA)
STANDAR KOMPETENSI	: 5. Memahami peran sunan si kluwuk dalam akuntansi perusahaan
ALOKASI WAKTU	: 6 x 45 MENIT

KOMPETENSI DASAR	MATERI PEMBELAJARAN	KEGIATAN PEMBELAJARAN	INDIKATOR	KARAKTER	PENILAIAN	ALOKASI WAKTU (MENIT)	SUMBER / BAHAN / ALAT
5.7 Menyusun laporan keuangan perusahaan jasa	<ul style="list-style-type: none"> Tahap pelaporan Siklus Akuntansi Perusahaan Jasa Pengertian laporan keuangan Jenis laporan keuangan dan cara menyusunnya 	<ul style="list-style-type: none"> Menerapkan tahap pelaporan transaksi pada perusahaan jasa dengan menggunakan sumber bahan Menyusun klipring tentang laporan keuangan dari Koran, majalah, internet dll. Praktik menyusun laporan keuangan secara lengkap (pencarian bukti transaksi, analisis transaksi, jurnal, posting ke buku besar, jurnal penyesuaian, kertas kerja laporan keuangan) 	<ul style="list-style-type: none"> Menjelaskan pengertian laporan keuangan Mengidentifikasi jenis-jenis laporan keuangan Mendeskripsikan tahapan penyusunan laporan keuangan Menyusun laporan keuangan 	<ul style="list-style-type: none"> Cermat Tanggung jawab 	<ul style="list-style-type: none"> Jenis Tagihan : uraian, laporan kerja praktik, Tugas Individu, Tugas Kelompok Bentuk Tagihan : uraian obyektif, Tes tertulis, Uraian bebas. 	6 x 45 menit	<ul style="list-style-type: none"> Buku Panduan Guru Modul Penelitian dan Pengajaran, 117 – 132

Mengetahui,
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Tulungagung, 11 Juli 2011
Guru Mata Pelajaran

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Figure 3. Syllabus for Accountancy Subjects

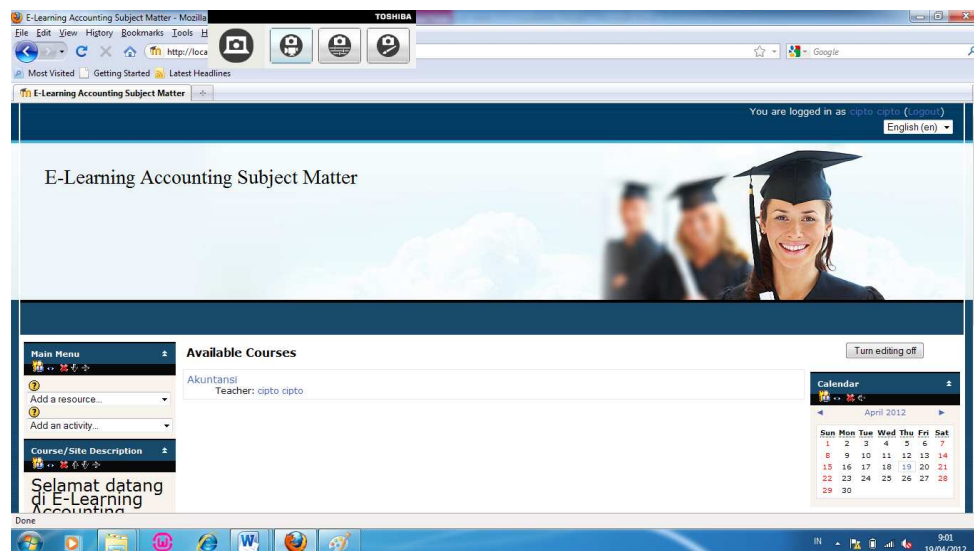


Figure 4. The Display for Login

ter the registration form is filled in, click “Create my new account”, then you will see the following display.

The result of the analysis at the early situation gives us insight that the learning media development on the basis of e-learning is required to be filled in because the hardware and software are available at school. The result is used as the basis to determine the components used for e-learning media by using the moodle application to learn financial report for service companies.

Moodle is one of Learning Management System (LMS) open source which is popular and is easily used to develop e-learning system portal. By moodle, e-learning portal is modified as needed. Moodle application has been used as the

learning media to deliver materials accompanied by online module, tasks, and online quizzes and other new issues related to accountancy used as reading sources for students. By modifying the materials on writing financial report, it is expected that the materials can be interesting and is easily to comprehend.

To ease the comprehension on operating moodle on the learning process, manual book is made and it explains many steps starting from how to register as a new user, change the profile, change course setting, input learning materials, make assignment, make quizzes, forum and charts. The display of the “course” after login is as Figure 5.

Figure 5. The Figure of Registration Form "Create new account"

Figure 6. The Course Display after Login

Figure 7. Entering Quiz Material

Teachers can test students' ability by making quizzes. Some kinds of quizzes that can be used through moodle such as in the form of multiple choices, right and wrong options, filling the blank, essay, match options, and others. Making the quizzes is started by making the form first, then continued by making the questions. Click menu "Add an activity" in certain week in which we can input quiz and choose Quiz. Then, it will appear Quiz at Figure 6.

Validity

Validity from material expert can be validated by a material accountancy expert in writing financial report subject for service companies to determine the material. Meanwhile, the validity of media expert is made by a media expert to determine the media quality using e-learning as the basis whether it meets the required criteria. The limited trial to the users (students) at SMA involved 30 students class XI Social Science or IPS which were conducted on April 2012. The result of the validity result is illustrated in Table 3, 4, 5, and 6.

Quantitative Data

The quantitative data were gathered from closed questionnaires and tests. This data were used as the basis to determine the validity of the e-learning media developed to write financial report. The data were analyzed using the descriptive analysis resulting percentage data of material and media experts and also the limited trial tests.

Table 2 shows the validity from the material expert illustrating that aspects of material, feedback, and tasks have been valid to use and have met the required criteria. The result of the media validity from expert shows 100% of the learning media use on writing financial report for a service company is valid and is applicable for senior high school students.

Table 2. Analysis of Material Expert Validity

Components	Percentage (%)	Validity Criteria
Material delivery	100	Valid / usable
feedback	100	Valid / usable
Tasks (evaluation)	100	Valid / usable
Others	100	Valid / usable
Average	100	Valid / usable

Table 3 shows the analysis of expert validity illustrating that the aspects of material, interaction, and tasks for evaluation are all valid and other aspects are valid enough. The result of media validation using e-learning from media expert has the average of 96.67% and can be summed up that the e-learning media which has been developed can be used in the learning process for accountancy subject at senior high school.

Table 4. Analysis of Validation from Media Expert

Components	Percentage %	Criteria for Validity
Material Attraction	91.67	Valid / usable
Material delivery	100	Valid / usable
Interaction	100	Valid / usable
Tasks (evaluation)	91.67	Valid / usable
Others	100	Valid / usable
Average	96.67	Valid / usable

Table 5 shows the trial analysis on the aspects of material attractiveness, material delivery is valid, aspect of feedback is valid enough. In the aspect of interaction, it is valid and other criteria are also found to be valid. The result from the expert of limited field trial was found to have percentage average of 81.49% and can be summed up that the e-learning media can be used in process of learning accountancy for SMA.

Table 5. Analysis of Limited Trial for Users

Components	Percentage %	Validity Criteria
Material Attraction	90.75	Valid / usable
Material Delivery	82.74	Valid / usable
Feedback	73.00	Valid enough / usable
Tasks (evaluation)	83.13	Valid / usable

Table 6 shows the whole validity analysis. It illustrates that the material expert valued the percentage as much as 100%, the media expert valued 96.67%, and limited trial field has 81.49%. It is summarized that the e-learning media used for writing financial report is valid or can be applied to support the learning process in the classroom.

Table 6. Analysis on the whole Validity

Components	Percent-age %	Validity Criteria
Average Validity from Material Expert	100	Valid / usable
Average Validity from Media Expert	96.67	Valid / usable
Average Validity of Trial for Users (students) Rata-rata	81.49	Valid / usable
Average from the whole Validity	92.72	Valid / usable

Qualitative Data

Closed questionnaires result quantitative and qualitative data gathered from suggestion, critique, and general opinion on e-learning media. The results are:

Generally, teachers said that e-learning media for learning process using moodle is good to apply and can be used to support the learning process especially for material related to writing financial report for a service company and this application can also be applied for other learning materials. This opinion should also be supported by other teachers because it is related with other materials. The e-learning media make students easily learn the materials while teachers can easily deliver it to the students as teachers have software and hardware in the computers.

The general validity found that the moodle application has high validity and is valid to use as learning media. The opinion from media expert or material from students show that the trial on the application has showed the good combination between colours, pictures, animation, and themes. The materials delivered in accountancy learning is complete, and the language is easily understood. The developed learning material is good and can improve students' motivation and comprehension.

To make this media better, there is need to improve the display, content of the material, and resources. Internet connection should become the focus for improvement because it will influence the learning process. Besides, the duration for task illustration should be added because it seems to be too limited.

CONCLUSION

The learning media developed by Borg and Gall (1983) is learning media which can be used

to deliver learning materials to write financial report of a service company. The media displaying e-learning contains features such as chart on-line, on-line quiz, on-line task and are connected to internet so that the learning process can be conducted anywhere and anytime. E-learning based media have certain strengths compared to written or audio media so that students are easy to like the learning and make them less get bored during the learning process. To make it easy to operate the learning media, the manual book is also provided.

Finally, the use of e-learning media is supposed to be assisted by teachers. Hence, teachers are supposed to also learn the e-learning media. The good speed internet connection should be available to support the learning process. The available media learning discussed in this paper is still limited to learn writing financial report for service companies so that for further development, it is expected to develop other materials and also to try to other wider environment. From the perspective of information and technology, the media need high speed internet connection such as modem, wifi, and internet cafe as this kind of e-learning media highly depends on the speed of the internet connection.

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