

E-LEARNING-BASED TRAINING MODEL FOR ACCOUNTING TEACHERS

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Abstract: E-Learning-Based Training Model for Accounting Teachers. To improve the competencies of teachers located on remote and diverse areas, it is viable and commendable to implement e-learning-based training. In view of this purpose, the present action research examines the effectiveness of e-learning-based training for accounting teachers. The findings reveal that teachers with poor ICT skills need to take orientation around online class first in order to get familiar with the use of ICT for learning purposes. Meanwhile, teachers with good ICT skills are able to engage directly in the training. The research project also shows that the effectiveness of training can be achieved through sequentially organized materials and accessed through the learning progress of the trainees. Encouragement to the trainees for active involvement in the discussion forums during the training results in high final scores at the end of the training session.

Keywords: E-learning, teacher training, accounting, East Java

Abstrak: Model Pelatihan Berbasis E-Learning bagi Guru Akunting. Program pengembangan profesional bagi para guru merupakan agenda utama untuk meningkatkan kualitas pendidikan. Untuk meningkatkan kompetensi guru, implementasi pelatihan berbasis *e-learning* dimungkinkan untuk menjangkau para guru yang berasal dari berbagai wilayah terpencil. Penelitian tindakan ini menguji efektivitas pelatihan berbasis *e-learning* pada guru-guru akuntansi di Jawa Timur. Temuan penelitian mengungkapkan bahwa para guru yang memiliki kecakapan ICT rendah harus mengambil pelatihan orientasi pembelajaran *online* terlebih dahulu agar akrab dengan penggunaan ICT untuk tujuan-tujuan pembelajaran. Sedangkan para guru yang sudah memiliki kecakapan ICT memadai dapat langsung mengikuti pelatihan. Efektivitas pelatihan dapat dicapai dengan cara mengorganisasikan materi pelatihan secara berurutan dan hanya dapat diakses sesuai dengan kemajuan belajar peserta pelatihan. Dorongan partisipasi bagi peserta untuk terlibat aktif dalam forum diskusi menghasilkan nilai akhir yang tinggi pada akhir pelatihan.

Kata kunci: E-learning, pelatihan guru, akuntansi, Jawa Timur

A variety of studies have stated that teachers have prominent role in the successful students (Odhiambo, 2008; Heck, 2009). Considering their significant roles in learning process, teachers are encouraged to simultaneously improve competencies in accordance with development of knowledge and technology. A key success of teachers' performance quality depends on continuity of teachers' competencies enhancement (Craig et al., 1998). Teachers take roles as agents of development in school, and accordingly professional development program for them must be considered as the main priority for improving quality of education, despite other available resources at school (Hooker,

2010). Indonesia government has employed a number of education and training models for teachers. However, the training has been conducted primarily under conventional model which requires physical movement, specific space and time, and relatively spends high cost as well.

Rapid development in Information, Communication, and Technology (ICT) might be an alternative solution as ICT is more widely accessible at low cost. Moreover, the use of ICT makes it possible to create sharing of academic and experience among teachers in different ages and abilities from disperse areas with its idiosyncratic problems. It is confirmed by Chaku-

palesa et al. (2013) that distance education could improve access quality at low costs. Besides, Lindquist and Long (2011) affirmed that the application of ICT might result a 'digital native', a term to represent people who are living at and growing up with information and technology.

ICT for learning has been implemented by numerous universities. E-Learning is a part of distance learning that offers possibilities for delivering content of materials and providing communication in education process among participants from disperse areas geographically. In the digitally world, study contribution might be observed in the framework of innovative method supported by the use of ICT to maximize learners in a colloquy approach under the umbrella of students-centered learning philosophy (Salmon, 2002; Sandholtz et al., 2002).

E-learning has been applied as a principal media in overload teaching in a large number of universities in Egypt (Afifi, 2011). The advantage of e-learning is its flexibility either for number of students involved or time of study preferred. Moreover, utilization of e-learning is beneficial for improving students' capabilities through independent learning, and accordingly it yields longer retention of information acquired. In addition, e-learning deliveries enable to cover students from remote areas, to reduce educational costs, and to make possible students with disabilities to access. Learning process in e-learning encourages people to express ideas independently in virtual classroom and creates high quality in communication (Davis, 2012). Besides, e-learning broadens educational opportunities for learning through ideas sharing among colleagues and teachers. In its development, e-learning has been applied in training model. A study conducted by Li (2009) found that e-learning in pre-service teacher training was successful in terms of attaining learning objectives, improving independent learning capabilities, and stimulating and intensifying active engagement. Distance learning program was also employed by Lakatos, et al. (2003) with the aim of providing flexible space and time for learning. Both in developed and developing countries, e-learning has been widely implemented as service media to comply with demand of upgrading knowledge, skills, and qualification of teachers (Burns, 2011). Based on the above reasoning, this research aims to improve teachers' competency through e-learning-based training model supported by Moodle for accounting teachers in East Java.

METHODS

This action research examines the effectiveness of e-learning-based training model for Accounting

Teachers in East Java. There were three phases in model implementation which involve orientation of online class, training in Accounting for Inventory, and training in Accounting for Fixed Assets. Each phase had an evaluation process to seek its effectiveness by looking at increasing of teachers' competencies.

Targeted subjects of research were Senior High Schools Accounting Teachers in East Java. Area of study covers the cities of Probolinggo, Pamekasan, Malang, Mojokerto, Banyuwangi, Tulungagung, Ponorogo, Situbondo, Blitar, Lamongan, and Lumajang. By employing a purposive sampling, there were 35 teachers participated in this study. Characteristic of participants includes 80% female and 20% male. In terms of educational background, 75% of participants were S1 and 25% of them were magister. At average, participants were 30 years old. Data were collected by using documentation technique, learning assessment, and administering questionnaires. Then, data were analyzed both qualitatively and quantitatively.

FINDINGS AND DISCUSSION

E-learning-based training model developed in this research uses platform of Web-Based Model (WBM) that covers the use of computer as communication media, online learning, online communication, e-mentoring, webinars, web-chats, tele-collaboration, and tele-research projects (Burns, 2011). There were numerous format of WBM that might be used, but this research used Moodle. As a Course Management System (CMS), Moodle is a complement to face-to-face meeting. This format provides a set of web-based learning and teaching activities such as discussion forum, messaging, quiz, assignment, blog and database (Cole & Foster, 2008).

E-learning for this training had 64 MB uploaded capacity accessed by username and password. As participants of training, teachers were able to find e-learning content, download training materials, submit assignments, complete quizzes, and involve in online discussion forum. In general, web page was divided into three parts consisting of menu of the first web page, orientation of online class page, and materials page.

The first web page provides general information including training subjects, guidelines, news forum, and information for instructors. The main page aims to inform training participants to be physically and mentally prepared for being active and effective participants. Trainees must aware that being independent learner and highly participate in training are compulsory. Each web page provides menus for training materials, discussions, assignments, online meeting

forums, and other menus that are accessible for participants. Feedback obtained from questionnaire also signifies that navigation design allow participants to find all contents.

For participants categorized as newcomers in e-learning, the model provides orientation of online class. The class is designed to provide opportunities for them in understanding content of e-learning in order to avoid further technical difficulties in main session of training. This first page displays general information of e-learning-based training by the use of Moodle, training objectives, and tips for success in training. Several obligations for trainees consist of submission of assignments, involvement in forum of discussion, and completion of quizzes. This is relevant with the work of Li (2009) revealed that when participants learn materials independently, teachers or instructors encouragements are still highly required.

Main web page of online training on Financial Accounting presents learning components consisting of objectives, materials, guidelines, and evaluation. The objectives are displayed in every entering access of main page. Training materials are available in the form of module, power-point, tutorial video, and linked articles. Each module consists of a guideline how to use the module, prerequisite knowledge to learn, learning objectives, concepts mapping, and evaluation. Power-point exposes all information in module that covers learning objectives, list of contents, and main part of learning materials. Power-point content is exposed in animated displays through tutorial video run in Teacher-Tube. Learning evaluation is accomplished online by using features available in Moodle, and linked articles for reading comprehension are provided by external sources in several credible websites.

The implementation effectiveness of e-learning-based training model was examined on accounting teachers from 11 cities in East Java participated in this online training. The training was carried out into three phases, comprising orientation of online class, training in Accounting for Inventory, and training in Accounting for Fixed Assets.

In first phase, activities in orientation of online class were implemented in an online mode and participants joined the class were from distant areas. There were three major activities consisting of assignment of bio-data submission, involvement in discussion forum, and accomplishment of assessments and quizzes. Result of action shows that only 8 participants were successful in submitting bio-data on time, 10 participants had fulfilled bio-data but unsuccessful to submit, 12 participants submitted bio-data out performed of time required, and 5 participants were passive in this orientation of online class. It is predicted

that low participation in submitting bio-data are possibly caused by limited skills to operate computer related to the use of ICT, inadequate effort to understand guidelines for bio-data submission, and missed the time of submitting although they have filled bio-data.

Other fact shows that none of participants involved in forum of discussion and a similar condition also occurred in completion of quizzes, and only 15 participants have completed exercises. The zero participation in forum of discussion were a consequence that e-learning-based training as a new media for trainees who have lack of experiences in sharing open ideas, a feeling of hesitant or unconfident to express point of statement, and misunderstanding of guidelines that this forum was understood as a complement. In order to improve participation, they are encouraged to be active in next phase discussion.

In second phase, firstly a pre-test was carried out before training materials delivered. The coverage of pre-test items includes materials of Accounting for Inventory and Accounting for Fixed Assets. In order to achieve validity of the test, several requirements were considered in terms of participants unable to revise previous items that have been completed, participants have no information about true answer for each item except final score after the whole pre-test done, and the pre-test was designed to be completed within 15 minutes.

From 30 active participants in first phase, there were only 20 participants involved in pre-test. The average score of pre-test was 4.33 for Inventory Accounting, and 5.9 for Fixed Asset Accounting from 10 point scale. Learning activities were divided into three activities comprising of independent learning, discussion forum, and assessment. In independent learning, participants are able to access materials and learn independently within a certain amount of time. Effectiveness of independent learning process can be seen from kinds of topics discussed raised by participants in online discussion forum. Most of topics are related to materials that have been already described in modules and tutorial videos prepared by researcher.

It was found that several participants had no comprehensive understanding of learning materials, and trainees failed to understand steps of guidelines. From the field, it was discovered that they have watched video without reading modules first. In addition, they also have completed evaluation without understand content of modules appropriately. Based on result of reflection, design of e-learning materials uploaded on web in which could be accessed at the same session was not effective. Consequently, the final score of assignments for Inventory Accounting was only 4.2

(from 10 point scale). Besides, this training was delivered at school break schedule considered as a factor that contributes to low of participation.

In order to increase participation in forum of discussion, instructors encouraged participants to pay attention in two things. The first one was a statement that it is a compulsory to participate in discussion activities to have points for training certificate. The second one was participant status information concerning uncompleted assignments that was informed regularly. Those were considered effective since there was increasing percentage up to 60% of participants joined in forum of discussion. This forum was successful to encourage participants to response questions or cases both from lecturers and trainees in the area of inventory documenting process as most preferred topic.

In third phase, the number of active participants was 20 teachers participated in independent learning, forum of discussion, and evaluation. Different from previous phases, accessibility to materials in independent learning was designed in sequential basis. As a kind of improvement of module design that is when a material was accessed, the other materials were hidden. Subsequently, materials in form of power-point were shown, followed by tutorials video, and linked articles. Moreover, after participants learned all training materials, it was opened a forum of discussion and ended by accomplishment of assignments. This treatment was effective and had a great impact on assignment accomplishment average score at 8.0 (compared to 4.5 in previous phase) and achievement of Accounting for Inventory post-test score at 7.94 (compared to 5.9 in previous phase).

It was reflected that participation in training session had a significant increase. There were 20 teachers actively involved in discussion forum with topics either from instructors or trainees. The interested cases to discuss were the treatment of Accounting for Fixed Assets in International Financial Reporting Standards and cases related to Fixed Assets.

As research design, web-based model was applied in this action research. Quality of e-learning was observed based on four components incorporating content, communication, assessment or evaluation, and explicit learner support (Goldsworthy & Rankine, 2009). A good learning content is able to integrate explicit and tacit knowledge, and be delivered to students as in a conventional learning (Mubarik, 2012). Characteristics of good learning content can be seen from its accessibility and share-ability, interoperability, durability, reusability, and cost effectiveness.

Accessibility and share-ability means that the content is accessible from a wide spread location and disclosed used among participants. By using web browser, the model developed in this research met criteria of accessibility such as Internet Explorer, Mozilla, Google chrome, and others. Training contents are able to be accessed by registered participants, administrator, instructor, and guest visitors. The ease of access in learning materials are supported and executed by using Moodle Learning Management System (LMS) considered as a well established, comprehensive, and open source application (Sutanta, 2009).

Interoperability refers to content developed that can be applied and operated into different tools and operation system platforms. There are several types of operation system in mobile appliance facilities that support the process. Learning contents in this research involve text and multimedia based, and all of those have integrated all facilities to create interactive effects. Interactive multimedia is more interesting and able to motivate trainees to participate in enjoyment virtual learning process (Vamosi, et al. 2004).

Durability means that e-learning information and materials content must have capacity to be used in long term. Therefore, e-learning facilitators must assure that materials are updated, external links run effectively, contents are able to be modified specific to requirements needed, and operation system must be compatible with systems that widely used. Implementation of Moodle in this research is based on several considerations that this application is an open source and easy to modify, and covers updated information (Sutanta, 2009).

Reusability denotes that each previous level learning materials learnt is reused by trainees when they take at higher level that is more advance materials. It means that trainees have to comprehend learning materials step-by-step as a consequence that accounting is a procedural science. Content of learning developed and used in this training involves materials of Financial Accounting as the foundation to learn next level of accounting materials. Materials in Financial Accounting will be reused by trainees when they take Intermediate Accounting, and so forth.

Cost effectiveness means that the quality of e-learning must achieve learning objective at low cost. Although e-learning is considered as low cost media, but it demands on high initial investment to design and create LMS programs such as cost of developing materials, cost of introduction, cost of training, and other related expenses (Sutanta, 2009). Time and cost

efficiency can also be seen from training coverage that reach trainees from disperse and isolated areas at no transportation cost and physical movement. In addition, trainees are also able to manage their time schedule to study independently suitable for them (Sutanta, 2009).

Similar to face-to-face learning in conventional class, the success of e-learning-based training is determined by the role of communication between trainer(s) and trainees, and communication among them. Learning communication is designed by using both synchronous and asynchronous models. Synchronous model aids trainees to communicate directly with other training participants. It avoids trainees' frustration in arguing and answering questions in real time basis (Hrastinski, 2008). Communication is supported by Chat that enables communication directly between participants and instructors, and among other trainees. Direct communication is also compatible to other media such as mobile phone supported by Short Message Service, WhatsApp, Line, and other similar media. The use of asynchronous model is facilitated by email where participants are not communicating directly in real time basis.

Assessment or evaluation is an important part of teaching activities to look at the successfulness of learning. In this research, e-assessment is supported by the use of ICT to find out learning progress records, pre-test and post-test scores, and feedback from trainees and instructors (JISC, 2007). The form of e-assessment consist of Computer-Based Assessment (CBA) and Computer Assisted Assessment (CAA). CBA is associated with the delivery of evaluation accessed by computer to complete Moodle-based online quizzes where participants are able to see final total score. Besides, CAA is used to support trainees to participate in forum of discussion and accomplishment of assignments.

Explicit learner support is main component to assure quality of e-learning focusing on integrating Moodle, software, and linked articles chosen from credible external sources. This support involves text-matching software, and links to student support materials provided both internally and externally. The text matching software is used to evaluate whether or not students' assignments are free from plagiarism (Goldsworthy & Rankine, 2009). Characteristic of materials in Accounting and kinds of essay assignments in this training are free from plagiarism risk. Accordingly, this model excludes text-matching software.

This training provides both internal links for trainees to access files consisting of modules and

power-points, and guidelines of assessment activities, and external links to access materials or articles from credible websites. In essence, trainees are encouraged to search materials from external sites instead of articles provided in training web. Likewise, participants have opportunities to access video tutorials supported by screencast O-matic software linked to Teacher-Tube.

Research findings reveal that trainees with high performing ICT skills had advanced training scores. In addition, from 35 teachers registered as participants, there were only 20 people participated from the beginning up to the end of training. As a consequence of unfamiliarity, it is predicted that training conducted distantly as a possible cause of their low participation. Another barrier was low capabilities in operating ICT as a deteriorating aspect for trainees to engage actively during training process. Consequently, it is considered that e-learning-based training is more effective if trainees have minimum ICT skills required.

For low ICT skills participants, it is necessary for them to obtain ICT training first before joining e-learning-based training model. It is supported by Li (2009) that students who have difficulties to learn material independently caused by low ICT skills, therefore it is preferable if there was a guide how to join e-learning before real online class executed. This condition can be facilitated with two steps of training in terms of orientation of online ICT training as a first step and e-learning training as a second step. The first step is conducted either in face-to-face or in online meeting between instructors and trainees, depending on characteristic of ICT skills possessed. After they have completed the first step, then they are able to take the second one.

In accordance with the case in this research, online training model is able to be carried out into 2 models both direct and indirect models. In the direct model, teachers with good ICT skills are included as targeted trainees. Accordingly, all phases in e-learning starting from orientation of online class up to evaluation could be implemented directly. On contrary, indirect model is suitable for trainees with low ICT skills who should engage in ICT training first before following e-training session. In the orientation class, they are trained how to use ICT for e-learning conducted face to face in a class located at a school or other areas that is easily to reach. Institutionally, schools have responsibility to train teachers related to the use of ICT and its advantage applicability to support learning. If teachers have good ICT skills, consequently all kinds of e-learning based trainings can be initiated for their professional development.

It is a critical factor that independent learning determines the success of training. For effectiveness of achievement, independent learning process has to consider sequence of e-learning materials learnt. Learning materials must be arranged sequentially and it can only be accessed appropriately based on learning progress achieved. As pointed out (Chao, et al., 2006), students are influenced not only by study facilities but also by how the learning process is organized. Similarly, learning process is highly determined by materials organized and learning strategy used to deliver compared to instructional technology used.

After trainees capable to figure out module materials, power-points, and tutorial videos comprehensively, they are able to participate in forum of discussion. Feedback obtained from questionnaires reveals that 95% of participants were excited to hear opinion from others whose different background and ideas considered as prominent session to assist them in comprehending topics discussed. It is consistent with Li (2009) meaningfully pointed out that implementation of online discussion might increase learners motivation.

Coverage of participants' activities involves joining weekly in online class, participating in online forum to discuss latest issues and problems, reading materials, accomplishing assignments, and fulfilling pre-test and post-test (Goldsworthy & Rankine, 2009). Forum itself is expected as media to share ideas among training participants to solve problems discussed. Within the forum, it was found that participants enthusiastically contribute their thought and initiatives through asking, answering, and probing cases related to Accounting materials. High participation in the forum is reinforced with the implementation of new standard called International Financial Reporting Standards and most of teachers have lack information about this standard. This finding is important information either for government or parties who responsible to improve teachers competencies and to upgrade obsolete teaching materials with the new one to meet achievement of professional tasks.

Finding based on action research implementation analysis discovers that training schedule failed to be accomplished on time as a consequence that training was conducted in school break schedule, meanwhile most of teachers as trainees accessed e-learning at schools. Therefore, it is necessary to consider that the training must be scheduled not in school break. Although failed to reach schedule arranged, the trainees had achieved high scores in post-test indicating that there were improvement of skills and materials comprehension in the field of Accounting for Inventory and Fixed Assets. The achievement of this training

supports research finding that the use of e-learning implemented in pre-service teacher training is successfully reaching expected learning objectives (Li, 2009). Similar result is shown by the work of Moon, et al. (2005) who effectively conducted e-learning training in workplace-based for small and medium enterprise managers in Europe. It is also exposed by the study of Lakatos, et al. (2003) who excellently applied distance learning to find out more learning flexibility over areas covered and time used to learn. Both in developing and developed countries, e-learning training has been widely carried out to facilitate teachers to up grade knowledge, skills, and competencies to meet qualification required (Burns, 2011).

CONCLUSION

The ICT availability and teachers ICT capabilities lead to the possibilities of e-learning-based training model implementation to develop teachers competencies accessed from disperse areas. The training is only considered effective when trainees have appropriate ICT skills particularly in operating office application software, and conversely a lack of ICT skills was believed as the most barriers in this kind of training. A treatment is needed for them who have no ICT skills to engage in orientation of online class firstly to comprehend the use of ICT for learning purposes before completely participating in e-training session.

In order to achieve effectiveness of training, the materials have to consider the needs of teachers. Training materials can be designed in the form of modules, power-point, macromedia flash, tutorial video, and linked materials or articles from credible websites. Those materials are arranged in sequential basis and only it can be accessed appropriately based on learning progress as shown in guidelines. In turns, participants discipline to learn all materials orderly and to participate actively in activities required will determine the successfulness of acquisitioning materials comprehensively.

The effectiveness and successfulness of e-learning training requires a supporting policy from the government specifically from the Office of Education and Culture (Dinas Pendidikan dan Kebudayaan) located in each city. The policies itself are related to teachers' obligation to develop their professional competencies through training activities and the likes. Besides, teachers have to have a kind of academic culture to use ICT to strengthen teaching and learning strategies and other pedagogical activities to reach higher learning achievement.

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