Supporting and Inhibiting Factors for The Application of Blended Learning for Professional Vocational Teacher Education in Indonesia

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Abstract

The objective of the paper is: (1) evaluate the need for vocational teachers in Indonesia, (2) describe the availability of facilities and infrastructure of eLearning in Vocational Teacher Education Institutions, and (3) analyze the supporting and inhibiting factors of the blended learning implementation in professional education of vocational teachers in Indonesia.

Based on the description and analysis of the data from web surveys, questionnaires, and regulatory documentation, it can be concluded that: (1) vocational high schools still need teachers especially productive teachers, (2) all vocational teacher education institutions have the facilities and infrastructure to implement eLearning, and (3) supporting the implementation of blended learning factors are: the availability of extensive Internet network organized by some telecom providers, the availability of LMS eLearning in all Vocational Teacher Education Institutions, the rules and regulations as the basis for the implementation of distance learning / eLearning / blended learning, while inhibiting factor is the lack of institutional support in the implementation of eLearning, unpreparedness faculty and participants, the award for eLearning implementation is still inadequate, and most teachers prefer to apply the method of face-to-face learning.

Keywords : eLearning, blended learning, vocational teacher.

I. INTRODUCTION

The lack of highly qualified teachers and trainers who can perform well in the sector of Technical and Vocational Education and Training (TVET) is a pervasive phenomenon in emerging economies in the ASEAN region. Teaching staff not only directly influences the quality of the workforce but also have direct impact on additional functions such as social integration and the support of regional learning and innovation processes. This presupposes that teaching personnel are at the highest technical and vocational pedagogic levels and are quickly available in order to respond to the requirements of the economic and educational reform goals.

Teachers have a position as professionals in primary education, secondary education, and early childhood education in formal education are appointed in accordance with the legislation (Law no. 14 of 2005 on Teachers and Lecturers, chapter 2). Basic education includes primary schools, secondary education is junior high school, and early childhood education is kindergarten. Secondary education consists of general education or high school, and vocational education or vocational high schools. Legislation has set requirements to become teachers at all levels of education.

At the same laws in chapters 8 and 10 explained that the teacher competencies include: pedagogical competence, personal competence, social competence, and professional competence that can be acquired through professional education. Pedagogical competence include: master the characteristics of learners, planning and implementing learning, develop learner competence, communication, using information and communication technology (ICT), evaluating learning outcomes, and to reflect the results of the evaluation. Personal competence include: personal appearance, good character, work ethic, and implement a code of ethics. Social competencies include the ability in communication, attitude, and the ability to adapt. Professional competencies include: mastery of teaching materials, develop teaching materials, master the competency standards of the material being taught, as well as use of information and communication technology to develop themselves (Regulation of the Minister of National Education No.16 of 2007).

Professional teachers are teachers who have the above four competency shown by having a certificate. Teacher certifications until now have not been able to reach out to all the teachers who are currently teaching. In the other hand, the certification process for the vocational school teachers through education of teacher profession at this time has not held. Professional education of teachers is now implemented in-service professional education, and integrated professional education for teachers of vocational high school.

Implementation of professional education of teachers is held at the time still using face-to-face and internships. Professional education of teachers who have accomplished is for elementary school teachers since 2010. While the Professional Teacher Education for vocational school teachers is implemented by the integrated teaching profession. Integrated professional education of teachers for vocational teachers coordinated by Director of teacher and education staff since 2011. The providers of the integrated
professional education of vocational teachers are 10 university education and one faculty of education, namely: (1) State University of Medan, (2) State University of Padang, (3) Education University Indonesia (UPI), (4) State University of Jakarta, (5) State University of Semarang, (6) Yogyakarta State University, (7) State University of Surabaya, (8) State University of Malang, (9) State University of Makasar, (10) State University of Manado, and (11) Sebelas Maret State University. The college was given the task to organize teacher professional education for teachers: automotive engineering, geology and mining, information and communication technology, refrigeration and air-conditioning engineering, textile technology, agribusiness of farm products, agribusiness production of marine resources, shipping, aircraft technology, techniques of shipbuilding, and tourism. Providing education for the teaching profession these fields, because until now there is no university education that produces teachers for the areas of expertise.

According to the Ministry of National Education (2007: 42-49) model of teacher professional education consists of: hybrid models, integrated models, models of self-face, face-to-face models, and models of distance learning. The learning model that has been implemented at this time is mostly face-to-face models. Model of distance learning using eLearning has not been applied because of the unavailability of facilities and resources. Availability of communication network is limited especially in small towns outside Java. The availability of resources, especially human resources in designing distance learning materials, learning processes, and evaluation of learning.

The estimated number of graduates of vocational teacher training in all educational institutions is about 2000 people per year. All graduates of the teacher education require professional teacher education to become professional teachers. Integrated education teaching profession, and collaborative teacher professional education has graduates number about 500 people per year. Needs of teachers who have a teaching certificate if implemented through professional education of teachers by conventional methods would take a long time, and a very large cost.

Disadvantages of using conventional methods in professional education of teachers are: very large costs and low productivity. Such costs include: costs of the event, personal expenses, transportation expenses, administrative expenses, cost of internships, teacher salaries, administrative personnel salaries, and overhead costs. Total huge funds are currently paid for by the ministry of education and culture. Aside from that, the number of participants is limited when using conventional methods. If the professional education of teachers using blended learning methods, it is possible to save on running costs. Blended learning is a combination of learning methods eLearning and face-to-face. Strengthening the implementation of learning theory or theory implemented through eLearning, while the implementation of learning practices and internships with face to face. Thus, the implementation of profession education for teachers is efficient and productive. Based on this, it needs a description of: the prospective participants, availability of facilities and infrastructure for eLearning, and the supporting and inhibiting factors of eLearning that are currently implemented.

According to background above, the objective of the paper is:

1) Evaluate the need for vocational teachers in Indonesia,
2) describe the availability of facilities and infrastructure of eLearning in Vocational Teacher Education Institutions, and
3) analyze the supporting and inhibiting factors of the blended learning implementation in professional education of vocational teachers in Indonesia

1. Blended learning

Kyong-Jee Kim, Curtis J. Bonk, and the Ya-Ting Teng (2009) conducted a study on the implementation of blended learning in five countries. The results showed that: “Blended learning will become a popular delivery method in the future of workplace learning not only in Western countries but also in Asian countries. Still, the respondents indicated that there were several barriers to blended learning; one of the most noticeable issues was their lack of understanding of blended learning. There is a pressing need, therefore, to provide practitioners with guidance on how to implement blended learning in their organizations”. The study was conducted in China, South Korea, Taiwan, the United States and Britain. Based on these results and the progress of technology and information at this time, and then in Indonesia, which is now widely available internet access, can be held learning with blended learning models. Blended learning is conducted through the Internet as a means of delivery of materials, evaluation, and discussion. The material can be text, video, and the most interesting is the form of animation. Information and Communication Technology (ICT) can help in learning such as: presenting information, completing routine tasks fast and automatic, accessing and handling information, modeling and control, interactivity, and extending school to the student's home (Muijs and Reynolds, 2008: 346-351).

According to Noe (2008:303-304) some of the methods used in the training using ICT are: computer based training, CD-ROM, internet, intranet, eLearning, distance learning, intelligent tutoring, simulations and virtual reality. Among all these the best use of technology in the learning outcomes, learning environment, transfer of training, cost, and effectiveness are simulations and virtual reality. Virtual reality and intelligent tutoring systems are best suited for teaching complex processes related
vocational education, namely: the operation of machine tools, industrial machinery and equipment. Computer-assisted learning has advantages than conventional learning. The advantage of learning by using the computer are: learning with each speed, interactive, has the consistency of content, has a consistency of delivery of materials, can be accessed anywhere, provide immediate feedback, have an integrated guide system, exciting the senses, can test and determine the completeness, and can maintain privacy (Noe, 2008: 272-274). Batista, et al (2009) conducted a case study of the use of CAL-CBT (Computer-Aided-Learning Computer-Based Training) with virtual learning in the training of CNC lathes. In the case study noted that the training using machines that may not actually be implemented in the Learning Centers because of the high cost of the machine, in addition to the ratio between students and the engine is very high. The use of CAL-CBT can help implement a practical training exercise machine use. Based on these results, it turns out vocational skills can be taught using computer-based learning in virtual environments.

Johnson, et al (2004) conducted a study on the use of distance learning via the internet. The results showed that: “It may be useful for benchmarking purposes to know that community colleges teach an average of 36 credit and 67 noncredit CTE courses via the Internet”. However, the important finding is the large proportion of the CTE courses taught via distance learning being delivered using the Internet. The Internet courses represent nearly three-fourths of all of their distance credit courses and nearly half of their noncredit courses. Given that the feasibility of using the Internet is a fairly recent phenomenon, these data show that the community colleges have made significant progress in developing Internet based courses in a short amount of time. These data also imply that other forms of distance learning delivery (e.g., correspondence courses, interactive television) are being replaced by Internet-based courses. Based on the results of these studies indicate that the implementation of learning can be done via the internet. Learning through the internet (distance learning) in the future will replace the other electronic media content delivery.

2. The Need Of Vocational School Teacher In Indonesia

The number of vocational schools in Indonesia is 10375, with the details: the number of public schools is 2848, and the number of private schools is 7887. Number of vocational high school students in Indonesia was 3,318,068 people, and the number of vocational teachers is 141988 people (http://www.psp.kemdiknas.go.id/). If the ratio between teachers and students is 1:16, it still takes teachers 65392 people. According to data from the Directorate of Secondary Education and Directorate of Higher Education, shortage of vocational schools teachers is 5980 for the theory teachers, and the practice teacher is 18165 people. Vocational teacher shortage will be even greater with the construction of 150 new vocational high schools in 2013 and 200 schools in 2014. Aside from that, starting this year, the Ministry of Education and Culture will develop universal secondary education, so the need for vocational teachers will be many more.

3. Blended Learning For Professional Vocational Teacher Education In Indonesia

All universities in Indonesia have had internet access for the purposes of administration, communication, and instructional media. Especially for instructional media through eLearning, some college of teacher education providers has made an official website. Table 1 below shown college name, eLearning LMS address, and the contents. In addition to 10 college of education as providers of vocational teacher education, also displayed two teacher training institutes and two universities with educational courses are University of Sebelas Maret and Open University Indonesia.

According to the table 1 above, it can be seen that all university education has had a computer infrastructure and internet networks. The hardware and software are adequate for the learning process through the internet. Although, there is not all subjects use eLearning. Seven universities have a lot of content (>100 subjects) in their LMS, but the activity of teaching and learning through eLearning is low. It seems that the LMS just as a tool to collect and publish the learning material. In other word, the eLearning is not use optimum according to the eLearning process (delivery, learning, discussion, and assessment).

Comparison of learning to use eLearning implementation in two university education (Malang State University/MSU) and Yogyakarta State University/YSU), and two vocational teacher training institutions (Vocational Education Development Center/VEDC, and Technical Education Development Center/TEDC) obtained through questionnaires. Questions on the questionnaire contains: hardware and software specifications, the number of courses through eLearning, internet providers, inhibiting and supporting factors, and the difficulties faced in implementing eLearning. Comparison of the data obtained can be seen in Table 2 below.

According to the data from the table 2 above, it can see that blended learning have not yet run well because of many constrains. The constrain factors is come from: lectures, participants, and management.
Table 1. ELearning website address of college of education and teacher training institutions in Indonesia

<table>
<thead>
<tr>
<th>No</th>
<th>Name of the University</th>
<th>Website/ LMS address</th>
<th>Content (undergraduate/S1, Graduate S2, Profession/ PPG)</th>
<th>e-Learning components</th>
<th>Supporting factors</th>
<th>Inhibiting factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>State University of Padang</td>
<td><a href="http://elearning-ft.unp.ac.id/">http://elearning-ft.unp.ac.id/</a></td>
<td>S2= 29 subjects S1/D3/DIV=9 subjects PPG = 0</td>
<td>Hardware</td>
<td>Intel Xeon X5675 3GHz, RAM = 4GB, Hard disk = 500GB SAS, CPU Intel Xeon X5675 3GHz, RAM = 8GB, Hard disk = 110GB SAS</td>
<td>Teachers should improve their knowledge continuously</td>
</tr>
<tr>
<td>2</td>
<td>State University of Medan</td>
<td><a href="http://sipoeleum.ac.id/elearning/">http://sipoeleum.ac.id/elearning/</a></td>
<td>S3/S2=0 S1/D3/DIV= 72 subjects PPG=1 subjects</td>
<td>Software</td>
<td>LMS open source Moodle, Moodle, Claroline, eFront</td>
<td>Not yet identified</td>
</tr>
<tr>
<td>3</td>
<td>State University of Jakarta</td>
<td><a href="http://ft.unja.id/elearning/">http://ft.unja.id/elearning/</a></td>
<td>Content cannot access</td>
<td>Infrastructure</td>
<td>Participation of lectures in using eLearning is low; lectures have not sufficient knowledge in multimedia learning and eLearning, limitations of time and effort in using eLearning, the existing of eLearning as a burden for lectures and students.</td>
<td>eLearning certificate not yet acceptable, internet connection in vocational school is limited, participants are not accustomed to using internet, participant did not work seriously when use eLearning.</td>
</tr>
<tr>
<td>4</td>
<td>State University of Makasar</td>
<td><a href="http://elearning.unm.ac.id/">http://elearning.unm.ac.id/</a></td>
<td>S2&gt;100 subjects S1/D3/DIV= 134 subjects PPG=n.a</td>
<td></td>
<td>Content cannot access</td>
<td>Not yet identified</td>
</tr>
<tr>
<td>5</td>
<td>State University of Semarang</td>
<td><a href="http://elena.unnes.ac.id/">http://elena.unnes.ac.id/</a></td>
<td>S1&gt;100 subjects S2=19 subjects PPG = n.a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>State University of Surabaya</td>
<td><a href="http://elearning.unesa.ac.id">http://elearning.unesa.ac.id</a> /</td>
<td>S1&gt;100 subjects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>State University of Malang</td>
<td><a href="http://e-learning.unipa.id/">http://e-learning.unipa.id/</a></td>
<td>S1= 55 subjects PPG= 1 subjects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Yogyakarta State University</td>
<td><a href="http://bescmmart.uny.ac.id/">http://bescmmart.uny.ac.id/</a></td>
<td>S1&gt;100 subjects PPG=50 subjects PPG=6 subjects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Education University Indonesia (UPI)</td>
<td><a href="http://lms.uis.edu/">http://lms.uis.edu/</a></td>
<td>S1&gt;100 subjects S2/S3=1 subjects PPG=n.a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>State University of Manado</td>
<td><a href="http://elearning.unima.ac.id/">http://elearning.unima.ac.id/</a></td>
<td>Contents cannot access</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Universitas Pendidikan Indonesia</td>
<td><a href="http://undiksha.ac.id/moodl">http://undiksha.ac.id/moodl</a> e/</td>
<td>S1&gt;100 subjects S2=2 subjects PPG = n.a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Sebelas Maret University</td>
<td><a href="http://elearning.uns.ac.id/">http://elearning.uns.ac.id/</a> and <a href="http://www.s">http://www.s</a> emar.fkip.uns.ac.id/</td>
<td>S1=7 subjects Faculty of Education/FKIP = 11 subjects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Open University Indonesia</td>
<td><a href="http://student.un.ac.id/">http://student.un.ac.id/</a></td>
<td>S1, and S2 (all subjects is delivered with distance learning)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>P4TK BMTI Bandung/ PEDC</td>
<td><a href="http://etraining.tedbandun">http://etraining.tedbandun</a> g.com/</td>
<td>5 subjects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>P4TK BOE Malang/ VEDC</td>
<td><a href="http://elearning.vedmalan">http://elearning.vedmalan</a> g.or.id</td>
<td>18 subjects</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Comparison of components of the implementation of eLearning in four institutions

CONCLUSION

Based on the description and analysis of the data from web surveys, questionnaires, and regulatory documentation, it can be concluded that: (1) vocational high schools still need teachers especially productive teachers, (2) all vocational teacher education institutions have the facilities and infrastructure to implement eLearning, and (3) supporting the implementation of blended learning factors are: the availability of extensive Internet network organized by some telecom providers, the availability of LMS eLearning in all Vocational Teacher Education Institutions, the rules and regulations as the basis for the implementation of distance learning / eLearning / blended learning, while inhibiting factor is the lack of institutional support in the implementation of eLearning, unpreparedness faculty and participants, the award for eLearning implementation is still inadequate, and most teachers prefer to apply the method of face-to-face learning.

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B-87


