

Evaluation of E-Learning Implementation using HOT Fit Model in State Vocational High School, Jakarta

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Abstract

The purpose of this study is to produce solutions related to the implementation of e-learning such as lack of learning motivation and unattractive learning resources by evaluating using the HOT-Fit evaluation model at the Jakarta Vocational High School. The approach in this study uses a mixed method. Data collection by conducting interviews and questionnaires. Quantitative data processing uses guttman scale measurements and qualitative data uses inductive and continuous analysis techniques. The results of evaluating have constraints such as the lack of available material for vocational subjects and the inability of some teachers to create attractive learning resources for e-learning implementation. The solution is to hold teacher training evenly for the implementation of e-learning in schools, teachers need to have expertise in making or finding interesting material, especially in the field of subject matter expertise for students so that learning resources are not limited and increase student motivation in learning.

Keywords: E-learning, HOT-Fit, Vocational High School

1. Introduction

Vocational High School are secondary education that prepares students especially to work (Law of the Republic of Indonesia Number 20 2003). Vocational graduates prepared for three things, namely:

- i. Vocational High School are ready to work in the business and industrial fields.
- ii. Vocational High School prepared to be able to continue their education to the next level through vocational education channels to improve expertise in certain fields.
- iii. Vocational High School are prepared for entrepreneurship.

Vocational School prepares students to meet the target after graduation, namely Work, Continuing Education and Entrepreneurship, this is the responsibility of various aspects including curriculum, educators, and educational institutions. According to Charles Prosser in 16 Principles of Vocational Education, one of which is vocational education will be efficient in proportion as the environment in which he must subsequently work, from one of the principles states that vocational education will be useful if the climate trained as an environmental replica where later it will work. Vocational graduates are also prepared to have employability skills as an ability to actively adjust someone to a job.

The results of research by (Slamet, 2013, p. 20) the current state of vocational high school shows that vocational high school graduates have not produced superior human resources and have creative, innovative, flexible, adaptability, technology literate, skilled, and has multiple intelligence. Data from The Central Statistics Agency (BPS) Republic of Indonesia (2019) shows that most vocational school graduates experience unemployment with up to 10.42 percent of the 7.05 million unemployed people. This is very unfortunate considering that vocational high school graduates are prepared to be ready to work, but empirical data shows the opposite, that most vocational school graduates become unemployed. One factor in the occurrence of unemployment can occur because vocational high school graduates are not by the competencies of the business world and industry.

Based on data obtained from the website <http://datapokok.ditpsmk.net> there are 63 State Vocational Schools in Jakarta spread across six regions. State Vocational Schools in Jakarta have accreditations including 61 State Vocational Schools accredited A and 1 State Vocational School accredited B and 1 State Vocational School that have not been accredited. Vocational Schools have several fields of expertise, one of which is information and communication technology. In this field, advancing computerized technology is all that is done in the field using computers and the internet. Based on observations of interviews with several companies in the field of information and communication technology obtained information that companies utilize email-based information systems and use e-learning website-based for research and development purposes. This can be referred to as employability skills that need to be prepared for vocational high school graduates in order to have the skills to run information systems that use computers and the internet. In an effort to gain experience and employability skills need to be supported by using learning models that utilize computers and the internet network. The learning model is e-learning.

The model of e-learning according to (Darmawan, 2011, p. 15) is necessarily a form of traditional education that is poured into digital format and presented through Information Technology. E-learning has a legal protection, namely the Minister of Education and Culture Regulation of the Republic of Indonesia Number 119 of 2014 concerning the Implementation of Distance Education for Elementary and Secondary Education which defines distance education is education in which students are separated from educators and learning uses a variety of learning resources through the application of principles educational or learning technology principles. The e-learning standard refers to a system of general rules for content, software developers and Learning Management Systems (LMS). The rules that determine how programs can be created and delivered through various devices (platforms) so that all can operate together smoothly. One of the e-learning standards is instructional design standards for distance learning from the Association for Educational Communications and Technology (AECT).

Before the implementation phase of e-learning requires measurement of readiness in implementing e-learning learning models or commonly called e-learning readiness. E-learning readiness (Fariani, 2013, p.2) illustrates how prepared an organization is in several aspects to implement e-Learning. Based on the results of preliminary research that has been done related to the measurement of e-learning readiness in State vocational schools in Jakarta get the results that the level of e-learning readiness as measured by the aydin & tasci index model at State vocational schools in Jakarta get an index value of 3.42 of the vulnerable values 1 to 5 which shows that e-learning readiness at Jakarta State Vocational Schools is ready but needs a little improvement to implement e-learning. Indicators that are included in the category are not ready but need improvement to implement e-learning, namely indicators of motivation, initiative, content, and interaction. Implementation of e-learning should be done after e-learning readiness has received a category ready for the implementation of e-learning with e-learning index readiness 4.2 to 5. Not all State Vocational Schools in Jakarta have a category ready for e-learning learning but the implementation of e-learning continues. This is unfortunate because good e-learning readiness can increase the effectiveness of e-learning implementation.

This is reinforced by the results of research conducted by (Hanum, 2013, p.101) showing that there are factors that inhibit the implementation of e-learning in vocational high schools Telkom Sandhy Putra, among others: the absence of licenses and copyrights for e-learning learning that has been implemented, lack of motivation for teachers in developing e-learning learning, there are teachers who do not understand about classroom management in e-learning, time limitations in managing e-learning learning, limited facilities in terms of education and training to improve e-learning abilities and support for implementing e-learning learning, lack of commitment from schools and teachers regarding the development of e-learning learning, as well as the funds needed to implement e-learning are still limited.

The initial step in fixing these inhibiting factors is by evaluating the implementation of e-learning. There are several evaluation models including CIPP (Context, Input, Process, Product), Goal Oriented Evaluation, and HOT (Human, Organization, Technology) -Fit. The CIPP evaluation model is used in research related to program evaluation and policy in education. Goal Oriented Evaluation evaluation model is used to measure student achievement and progress. The HOT-Fit model evaluates the system from three aspects including human beings who judge the system from the user's side, organizations that value a system from organizational management and management support, and technology that evaluates the system quality and e-learning features.

Based on the characteristics of e-learning and the results of preliminary research on e-learning readiness at State vocational schools in Jakarta, it is necessary to evaluate e-learning related to lack of motivation, lack of initiative, unattractive content/material, lack of facilities, lack of organizational/school commitment and lack of interaction. HOT-Fit evaluation model is a model that has all the components contained in the e-learning evaluation needs. The HOT-Fit evaluation model is a comprehensive model for assessing the implementation of e-learning in human, organizational, and technological aspects. The HOT-Fit evaluation model aims to measure the suitability of e-learning implementation in Jakarta State Vocational Schools. Therefore, researchers really need to evaluate e-learning using the HOT-Fit evaluation model in State vocational schools in Jakarta.

2. Methods and Equipment

2.1. Methods

The approach in this study uses a mixed method. The mixed method approach according to (Basuki, 2014, p.5.1) is a research method that combines qualitative and quantitative approaches into a single study or multistage study. The type of design or strategy in the mixed method used in this study is the convergent parallel mixed method. The design of the convergent parallel mixture method is that the researcher collects qualitative and quantitative data, analyzes it separately and compares the results to see whether the findings confirm one another or not confirm one. The main assumption of this approach is that qualitative and quantitative data provide different types of information, often in the form of detailed views of participants qualitatively and scores on instruments in quantitative terms and together they both produce results that should be the same. This strategy generally applies qualitative and quantitative methods separately to cover or balance the weaknesses of one method with the strengths of other methods. The collection of qualitative and quantitative data was carried out simultaneously in one stage of the study.

Data collection is done by conducting interviews and questionnaires. Quantitative data processing uses guttman scale measurements and qualitative data uses analysis techniques that are inductive and sustainable with the ultimate goal of obtaining saturated data. According to (Sugiyono, 2011, p.96) the measurement scale with this type, will get a firm answer, namely "yes-no"; "True False"; "Never-never"; "Positive-negative"; and others. Research using the Guttman scale is done if you want to get a firm answer to a problem being asked.

2.2. Equipment

The questionnaire used for data collection is based on instruments that have been validated by three Education experts who master the concepts of e-learning. This research focuses on the human component which consists of two aspects, namely aspects of system use and aspects of user satisfaction are as shown in table 1 as follows:

Table 1: E-learning Evaluation Instrument for Human Components

Aspect	Indicator
System use	User of e-learning
	Level of user e-learning
	E-learning training
	Knowledge using e-learning
	User response to e-learning
User satisfaction	Usefulness
	User interface

3. Results

The evaluation of the human component in the implementation of e-learning in State vocational schools in Jakarta focuses on teachers and students, there are two aspects, including aspects of system use and

aspects of user satisfaction. In the aspect of system use based on the results of the questionnaire on the user e-learning indicator given to teachers at Jakarta State Vocational Schools who implement e-learning with appropriate category results that indicate that teachers and students use e-learning for learning. This is in accordance with the instructional design standards for distance learning from the Association for Educational Communications and Technology (AECT) in the section on sample rubrics of activities and regulations Minister of Education and Culture Regulation of the Republic of Indonesia Number 119 Year 2014 concerning the implementation of distance education at primary and secondary education levels, that The teacher utilizes the use of technology for learning that can increase the effectiveness and efficiency of student learning. There is an admin to help teachers and students to implement e-learning in schools in terms of e-learning registration if there are students who have difficulties and enter materials and questions that teachers provide. Thus e-learning users in Jakarta State Vocational Schools include teachers, students, and admins.

Based on Figure 1, it can be seen that all students gave responses from 24 statements that there were 22 statements got percentages with criteria in accordance. The appropriate criteria are obtained if the response score is between 76% - 100%. However, there is one statement that gets a percentage with inappropriate criteria. Less suitable criteria are obtained if the response score is between 26% - 50% and there is 1 statement that gets a percentage with inappropriate criteria. Inappropriate criteria are obtained if the response score is between 0% - 25%.

Based on Figure 2 it can be seen that all teachers gave responses from 35 statements, there were 31 statements that received a percentage with appropriate criteria. The appropriate criteria are obtained if the response score is between 76% - 100%. Whereas 4 statements that get a percentage with the criteria are quite appropriate. Quite appropriate criteria are obtained if the response score is between 51% - 75%.

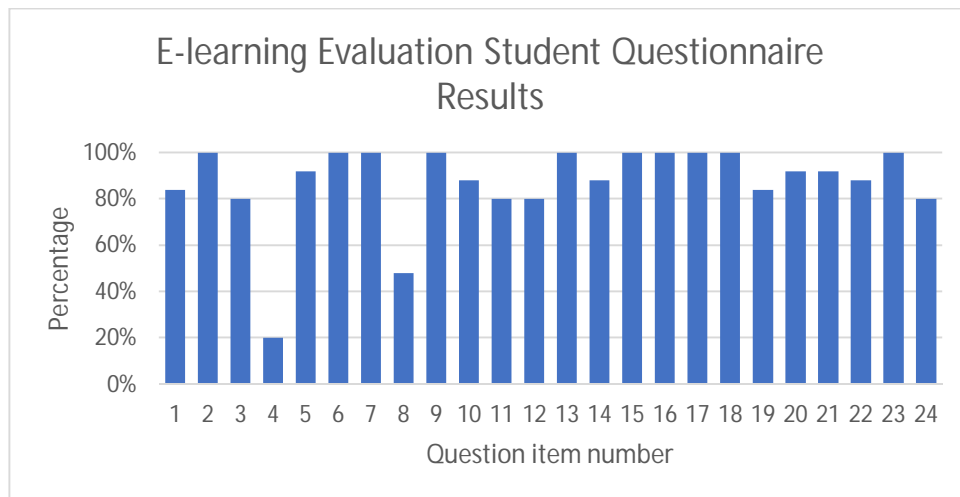


Figure 1. Student Questionnaire Results Against E-learning Implementation

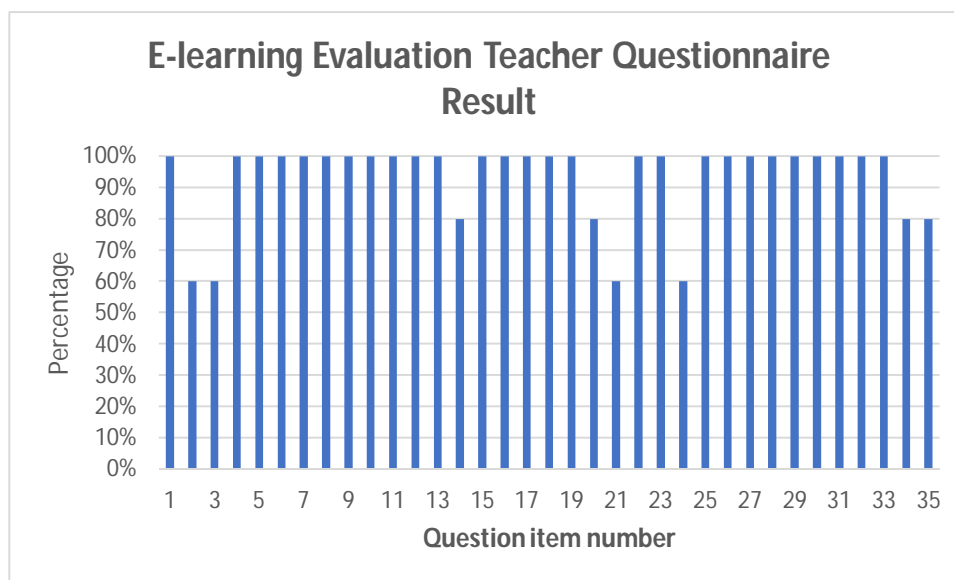


Figure 2. Teacher Questionnaire Results Against E-learning Implementation

Interviews with teachers were also conducted aiming to obtain more detailed information on the implementation of e-learning in State vocational schools in Jakarta. Interviews were conducted with 5 teachers of Jakarta State Vocational Schools who implemented e-learning. Questions asked about the implementation of e-learning with indicators such as the level of use of e-learning, e-learning implementation planning by school management, independence in learning with e-learning, parent involvement in e-learning implementation. The results of interviews of 5 teachers in Jakarta State Vocational Schools who implement e-learning are as follows:

- i. The initial process of running e-learning starts from preparing the e-learning application itself.
- ii. The role of school management by supporting facilities and flexibility in using e-learning in the teaching and learning process.
- iii. Response parents / guardians of students to the implementation of e-learning for those who know their children learn by e-learning responds positively and some do not know their children learn to use e-learning both at school and outside of school.
- iv. The development of e-learning starts from preparing materials in the form of text, images, or videos. After that, make questions students can do online and make questions and answers whose purpose if there are materials that students want to ask.
- v. The use of e-learning is not fully carried out in the KBM process, some material is taught by direct practice or face to face. But for material in the form of power points or text uploaded on e-learning.

4. Discussion

Constraints when implementing e-learning such as lack of time in making material especially video material because it requires creativity and ideas to make it interesting, some online e-learning applications that can be used free of charge will have limited features. Lack of/no technicians who focus on the server or internet network at the school so that if there are obstacles then the teacher resolves it himself.

The level of use of e-learning in State vocational schools in Jakarta can be seen from the results of student questionnaires on the e-learning user indicator getting results in the appropriate category which shows that students use e-learning with computers and smartphones. This is in accordance with instructional design standards for distance learning in the rubric of sample assumptions that exist that students make maximum use of technology. The use of computers has become a minimum standard in implementing e-learning while for the use of smartphones by looking at the many frequency of student activities that are very close to smartphones, making e-learning can be accessed easily and simply. Students use e-learning to read

material and work on practice questions and school exam questions as evaluations of student learning. Thus the level of use of Jakarta Vocational School students for e-learning implementation is included in both categories of existing standards.

The results of interviews with teachers on indicators of the level of use of e-learning get information that the use of e-learning is not fully carried out in the process of learning and teaching activities, some material is taught by practice directly or face to face but for material in the form of power points or text uploaded on learning and practice questions and school exam questions. Therefore the implementation of e-learning learning in Jakarta State Vocational Schools is included in the mixed category between e-learning face to face or in other words, blended learning.

Training or direction indicators for students using e-learning in Jakarta State Vocational Schools get results in the appropriate category. Students get directions in the form of how to register e-learning, get learning material, work on questions, and use question and answer forums on e-learning as an interaction between the teacher and students in e-learning that is used. However, few students get e-learning training from outside the school or the education department in terms of using e-learning as a learning medium that can be used to gain new knowledge with teachers as facilitators. Thus Jakarta State Vocational School students only get direction and training from teachers to implement e-learning and only a few students get additional training related to e-learning from outside the school that serves to update the latest knowledge in implementing e-learning for learning.

Knowledge for learning with existing material on e-learning as well as features in e-learning based on the results of the questionnaire on indicators of knowledge in using e-learning get the appropriate category. This is because Jakarta State Vocational School students are already accustomed to using computer technology equipment so that it is easy to learn from the material available in e-learning. In addition there are other factors, namely the existence of a question and answer forum for students to ask the teacher related material that is not yet understood by students, therefore the task of the teacher here as a facilitator in answering student questions either by sentences, pictures, or videos.

Based on the results of student questionnaires on the indicators of the response of students of State vocational schools in Jakarta to the implementation of e-learning get the appropriate category at the level of student preference for learning with e-learning. E-learning implementation will not be maximized if students do not like or like using e-learning, according to (Sinambela, 2006, p.78) learning is said to be effective, one of which is if the student's response to learning is positive. therefore teachers who implement e-learning should use interesting material so that students have an interest or motivation to learn to use e-learning. However, learning to use e-learning is not boring getting results with inappropriate categories. In the field, it is found that 62% of the sample of Jakarta Vocational School students in this study said that the material provided in e-learning is boring because it does not vary and is limited using paragraphs such as those contained in books in this case included in the category of inadequate appropriate when compared with instructional design standards for distance learning in the Resource sample rubric which indicates resources or material tends to be limited.

In the aspect of user satisfaction there are indicators including indicators of perceived usefulness (usefulness) or the benefits of e-learning to get learning material and ask teachers through question and answer forums that make e-learning an effective learning model. The results of student and teacher questionnaires on the indicator of perceived usefulness (usefulness) get the appropriate category. This is consistent with the theories of Wotruba and Wright in (Miarso, 2004, p.26) one indicator that can be used to determine effectiveness in the process of effective technology learning.

Based on the e-learning application display indicators get student questionnaire results with the appropriate category. response to the appearance of a positive application on the implementation of e-learning increases the motivation and interest of students and teachers in using e-learning. Display questions on e-learning applications in Jakarta State Vocational Schools can be seen in Figure 3.

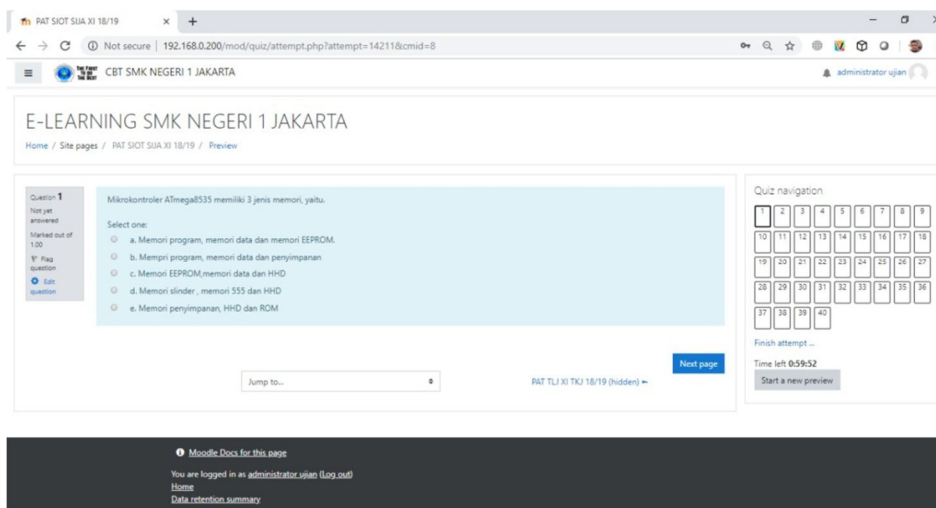


Figure 3. User Interface E-learning for Exam Jakarta State Vocational High School 1

Based on the results of interviews and discussions of the evaluation of the implementation of e-learning to the human component above, it can be concluded that not all teachers can implement e-learning, only a few teachers have the expertise to make video-shaped material that can attract students, lack of time in making material let alone material in the form of video because it requires creativity and ideas to make it interesting, teachers need to get training to maximize e-learning both from the material to the features in e-learning, students like and adapt quickly in the implementation of e-learning, some students feel bored with material that is only in the form of reading or text books.

Discrepancies in the implementation of e-learning in State vocational schools in Jakarta are then analyzed again and summarized based on the components that exist in the evaluation model of human, organization, and technology Fit. In the human component there is a mismatch in only a few of the number of students who receive continuing training at State vocational schools in Jakarta to make full use of e-learning, so students use e-learning only because there is a task from the teacher and less initiative to open the material that has been given. This is correlated with the results of the interview by the administration in Jakarta State Vocational Schools which do not have the budget to conduct special training related to e-learning for both teachers and students. The results of the study found only a few teachers who received training from the ethnic education department in the vocational sector both in Jakarta and from the Ministry of Education and Culture of the Republic of Indonesia. This is not in accordance with the demands for the sake of facing the 4.0 revolution in the rapidly growing digital era. Therefore, training is needed for both teachers and students to maximize the implementation of e-learning in schools and outside of school by allocating budget funds for e-learning training.

The material provided in the implementation of e-learning in Jakarta State Vocational Schools is limited in the scope of general subject matter and few for subject matter areas of expertise. In further interviews conducted with teachers of state vocational high school in Jakarta, information was obtained that the teacher claimed difficulty in making material due to lack of time and lack of examples to make material, especially subjects in the field of expertise. Input submitted from the results of interviews with teachers in response to this is the need for sample material for the minimum area of expertise at the ministry level. This is intended to facilitate the teacher in making and developing materials, especially in subject areas of expertise. Referring to the results of the follow-up interview the researchers looked for e-learning websites managed by the Ministry of Education and Culture which are Learning Centers which can be seen in Figure 4.



Figure 4. E-learning website Rumah Belajar

Home learning e-learning site contains features including the main features and supporting features. The main features are learning resources, electronic school books, question banks, virtual laboratories, cultural maps, spacecraft, sustainable professional development, and virtual classes. Learning resources feature there are several learning resources with many formats such as text, images, audio, and video. In vocational special learning resources found 72 content learning resources from 9 areas of expertise including technology and engineering, information and communication technology, energy and mining, health and social work, agribusiness and agrotechnology, maritime affairs, business and management, tourism, as well as arts and creative industries.

Data from the distribution of e-learning learning materials for learning houses managed by the Ministry of Education and Culture shows that there is not even distribution of material in all areas of expertise in vocational schools and is still insufficient to meet the needs of teachers or students in utilizing e-learning. Supporting features on e-learning learning houses are learning resources of community works, teacher works, as well as language and literary works. Therefore both teachers, communities, and academics can help play a role in contributing the work of learning resources that have been made into e-learning home learning. Therefore from the results of the analysis of researchers regarding the lack of learning materials for e-learning, especially in the subject matter areas of expertise in vocational schools need to be reproduced with the container / place in e-learning learning houses and filled by teachers, communities, and support from the Ministry of Education and Culture which can be useful to fill the void of learning resources in the field of expertise in vocational schools, especially for public vocational schools in Jakarta so that the implementation of e-learning is maximized with many and interesting learning resources.

Continuation of the results of the analysis related to learning resources available on the home learning e-learning site. Researchers conducted further interviews related to the knowledge of Jakarta State Vocational School teachers on e-learning sites of learning houses managed by the Ministry of Education and Culture and obtained information that 3 out of 5 State Vocational School teachers in Jakarta were not aware of the existence of e-learning sites of learning houses. According to the results of the researchers' analysis this happened due to the lack of socialization to teachers both from the school organization and the education office. Therefore the need for comprehensive socialization and activeness of teachers in finding information related to the implementation of e-learning.

5. Conclusion

The results of the evaluation study on the implementation of e-learning using the HOT Fit evaluation model at State vocational schools in Jakarta are on the evaluation of the human component with the aspect of system use getting a quite appropriate category and the user satisfaction aspect getting the appropriate category but with some constraints such as the lack of material available for subjects vocational and inability of some teachers to create interesting learning resources for e-learning implementation.

6. Recommendation

From the results of the discussion related to the non-conformance to the implementation of e-learning in Jakarta State Vocational Schools, the need for solutions generated based on theories, standards, regulations, inputs and research results related to the implementation of e-learning in State Vocational Schools in Jakarta will be become a recommendation for teachers, school management, and ethnic groups in the State Vocational School in Jakarta. These solutions include:

- i. Holding an even training for all Jakarta Vocational School teachers to implement e-learning in schools
- ii. Teachers need to have expertise in making or finding interesting material, especially in subject areas of expertise for students so that learning resources are not limited and increase student motivation in learning.
- iii. Conducting a comprehensive socialization of e-learning managed by the RI Ministry of Education and Culture so that it can be used by teachers as a place for e-learning for students.

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