



# Collaborative E-Learning for Tangerang Vocational High School

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## A B S T R A C T

*Information technology is no stranger in modern times. The emergence of various learning media has promoted the application of communication and information technology learning media called e-learning in vocational high schools (SMK). E-learning is learning that uses technology. The E-Learning of Tangerang Vocational High School (SMK) uses independent E-Learning learning media. In this research, the methods used are descriptive qualitative and descriptive statistical analysis. The research goal is to develop a collaborative E-Learning learning model for Tangerang Vocational High School (SMK) as a learning model. The sample included 375 students and 22 vocational high schools (SMK) Tangerang.*

## I. INTRODUCTION

The rapid development of technology is of course inevitable. The convenience, speed and convenience brought by technology make its use no longer an option, but a necessity for all parties including ordinary people, private sector organizations, and the public sector. Many innovations related to the use of technology are generated by various parties, one of which is an educational institution [1].

Many educational institutions launch online education technology and the most interesting technology. The development of information and communication technology has had an impact on education. With these developments, learning methods have become more and more advanced, including personal learning methods, learning media, and learning processes. One form of implementing information technology in education is the e-learning model [2].

E-learning involves improving the quality of teaching and creating a flexible, dynamic learning environment that can respond to various personal needs and learning styles. Tangerang Vocational High School (SMK) faces the challenge of significantly increasing the use of collaborative e-learning learning. Virtual learning attempts to imitate classroom teaching under the E-

Learning mode, which is an increasingly prominent form of distance education [3].

Collaborative e-learning is also one of the uses of Internet technology in providing learning, with a wide range of influence. Collaborative e-learning can solve problems in education [4].

## II. LITERATURE REVIEW

### A. E-Learning

E-learning is the use of electronic media, educational technology, and information and communication technology (ICT) in education. The success of e-learning depends on the individual's self-motivation for effective learning. E-learning includes various types of media. There are several benefits of e-learning, such as saving time, money, 24/7 learning, and learning anytime, anywhere. In addition, in asynchronous online learning courses, students can log in freely and complete their homework at the time they want, whether it is early in the morning or late at night. [5].

### B. Collaborative E-Learning

Collaborative learning refers to the teaching and learning of a group of students working together to solve problems, complete tasks, or create products. Collaborative learning proposes ways to deal with people who respect and highlight the abilities and contributions of individual group members. The key elements of

collaborative learning include: active interdependence, full interaction, personal responsibility, social skills and group handling [6].

Collaborative e-learning is usually a subject group and discussion tool to create student groups that can easily collaborate online. By encouraging students to use collaborative e-learning, you can monitor their progress[7].

### C. Vocational high school innovation and quality through ICT and e-learning

Technological change is the main goal of ICT, and the main sector that must be changed and modified is education, especially vocational high schools (SMK). Information and communication technology (ICT) is changing learning. The education sector plays an important role in the social and economic development of any country. Vocational High School (SMK) integrates information and communication technology to facilitate the acquisition and absorption of knowledge and to be consistent with the development of technology [8].

The education process using ICT is divided into: e-learning, blended learning and distance learning. Existing and education-related ICT products, such as teleconferences, emails, audio conferences, TV courses, radio broadcasts, interactive radio consultation, interactive voice response systems, audio tapes and CD ROMs have been used for different purposes of education. [5].

### III. METHODS

The exploratory nature of the research requires a variety of data collection methods: literature reviews, consultation seminars, informal interviews, survey research questionnaires, and focus group discussions to collect data, which can be used as the basis for determining the validity and attractiveness of the results. Research.

#### a. Population and Sample

Sampling is to select a sample of individuals from the desired group. Sampling is the group of interest because there are too many participants in the research project. A good sample is a statistical representation of the population of interest and is large enough to answer the research question [9].

The population of this study is 6,002 students and 375 students from 22 vocational high schools (SMK) Tangerang, so the sample in this study is determined to use random sampling techniques. This random sampling technique gives equal rights to all interviewees in the population and enables them to be selected as research samples. The sampling technique used in this study uses the Slovin formula as follows [10]

$$n = \frac{N}{1 + N(e)^2}$$

Description  
 n = sample  
 N = Total population  
 e = error rate

Based on the above formula, the researcher determines the error rate of 5%, so that the sampling in this study is:

1. Total 22 Principals of Vocational High Schools (SMK) in the Tangerang Area

$$n = \frac{22}{1 + 22(0.05)^2} = 20,85 (21)$$

Estimating using the Slovin formula above, it is known that the number of samples is 20.85 rounded to 21 samples, so in taking a sample the number of schools is 22 respondents with a population of 22 respondents for Vocational High Schools (SMK) Tangerang Region.

2. Total 6002 Vocational High School (SMK) students in the Tangerang area.

$$n = \frac{6002}{1 + 6002(0.05)^2} = 375$$

Estimating using the Slovin formula above, it is known that the number of samples is 375 samples, so in sampling the number of students is 375 respondents with a population of 6002 respondents for Vocational High Schools (SMK) Tangerang Region.

#### b. Method of Collecting Data

Data collection can be done in a variety of settings, from a variety of sources and in a variety of ways. When viewed from settings, data may be collected in natural or other settings/assessments. In terms of data sources, data collection can use primary and secondary sources. Data collection is the process of systematically collecting and measuring information about variables of interest, making it possible to answer research questions, test hypotheses, and evaluate results. Interviews, questionnaires, observations and a combination of the three [11].

#### c. Data Analysis

The questionnaire used in this study was a questionnaire with Likert Scale model. The Likert scale is used to express the attitudes, opinions, and perceptions of a person or group of people about social symptoms. In the Likert Scale, the variables to be measured are translated into indicator variables [10].

The Likert scale has a gradation from very positive to negative [12]. To measure the above variables, a five - level Likert Scale was used as follows:

Table. 1. Likert scale

No	Symbol	Application	Marks
1	SS	Strongly Agree	5
2	S	Agree	4
3	N	Neutral	3
4	TS	Do not agree	2
5	STS	Strongly disagree	1

In a simple tabulation analysis, the data obtained are processed in the form of a presentation, with the following formula:

$$P = \frac{f1}{\sum f1} \times 100\%$$

Where:

P = percentage of respondents who chose a particular category

$F_i$  = number of respondents who chose a particular category

$\sum F_i$  = the number of respondents

d. Validity and Reliability of Research

Validity comes from the word validity, which means the degree of accuracy and precision. Before using the tool to collect data, first test whether the tool works. An instrument can be said to be effective if it can be used to measure what it is supposed to measure. To measure the effectiveness of an instrument, the Pearson/Product Moment[13] formula can be used.

Reliability expresses the understanding that an instrument is reliable enough to be used as a data collection tool, because the instrument is sufficient to test reliability, Cronbach's alpha formula can be used. The following is a decision on the interpretation of reliability values [10].

Table 2. Reliability

Trustworthy	Trustworthy
0.80-1.00	Very good
0.60-0.80	Okay
0.40-0.60	Enough
0.20-0.40	Bad
0.00-0.20	Very bad

e. Research Respondents

This study aims to determine Collaborative E-Learning for Vocational High School Students in Tangerang, Banten Province, the characteristics of respondents in this study::

1. Characteristics of the Type of Work

Table 3.

Characteristics of Respondents by Type of Work

Type of work	Frequency	Hundred
Principal	22	5%
Student	375	95%
Amount	397	100%

Source: Primary Data Processed (2021)

Based on the information in the schedule above, it can be seen that there are 22 principals, 375 students, and 375 students.

2. The characteristics of attending school

Table 4.

Characteristics of Respondents by Type of School in Tangerang Area

Type of work	Frequency	Hundred
Country	4	18%
Foundation	18	82%
Amount	22	100%

Source: Primary Data Processed (2021)

Based on the information in the table above, it can be seen that the respondents who typed in public schools were 4 schools, and the types of private schools were 18 schools.

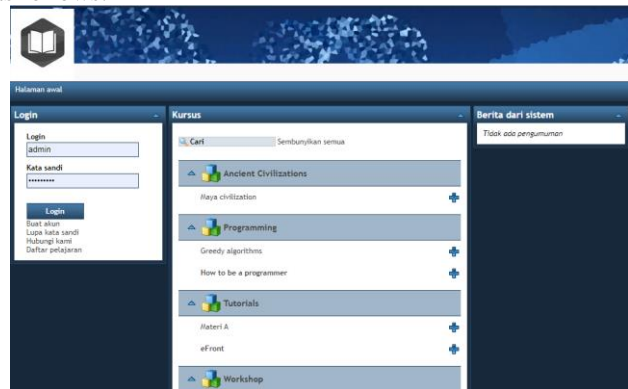
IV. DISCUSSION

As an area adjacent to DKI Jakarta, Tangerang City has advantages and disadvantages. The upside is that the city can carry the first lady's name. Its citizens can enjoy the conveniences of the big city public, whether it is highways, recreational areas and modern commercial centers, or various advanced communication facilities.

The downside, however, is the proximity to the capital, which the local government feels deeply about. Many Tangerang residents living in the border area of Jakarta are reluctant to admit that they live in Tangerang. This is evidenced by the many signs that say "South Jakarta" or "West Jakarta" when in fact they are located in the Tangerang area. Geographically, the city of Tangerang is located at latitude 6° 6 - 6 13 S,. Latitude 106° 36 - 106° - 42° East, with an area of 184.23 square kilometers, including Soekarno Hatta Airport, with an area of 19.69 square kilometers, with the following boundaries: Northern Boundary: Tangerang Regency Southern Boundary: Tangerang Regency Eastern Boundary: DKI Jakarta Western Boundary: Tangerang Long Regent

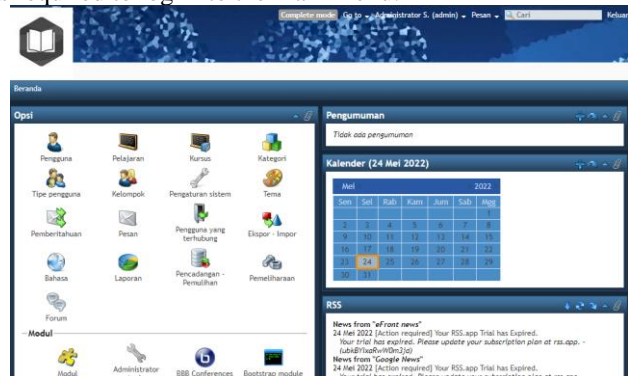
In this study, researchers conducted a discussion to answer the problem based on the results of research on Collaborative E-Learning at SMK Tangerang. Based on the data of respondents from the Tangerang District Vocational High School (SMK) as many as 22 with question items and respondent data as many as 375 question items as many as 10 at the Tangerang District Vocational School on E-Learning Collaboration as a learning model to achieve an effectiveness, willingness, satisfaction, and comfort during learning process.

The E-Learning Collaborative System that has been used by the Principal and Students of SMK Tangerang, is as follows:



Picture. 1. Login menu

Every user of the E-Learning Collaborative application is required to log in to the main menu.



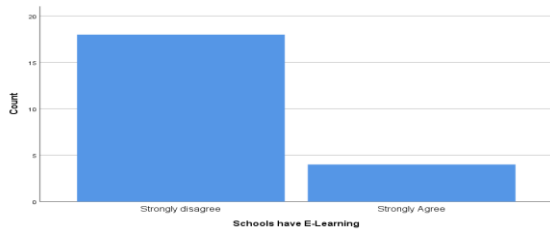
Picture. 2. Login menu

Every user of the E-Learning Collaborative application who has logged in to the main menu, will enter the user profile menu.

Collaborative E-Learning SMK Tangerang, the following picture explains the E-Learning collaboration

at SMK Tangerang, questionnaire questions 1 to 4 for school principals is :

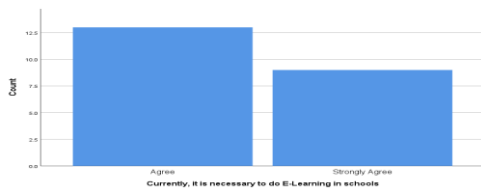
1. Schools have E-Learning



Picture 3. Schools have E-Learning

Based on the results of the analysis of Schools Having E-Learning, it can be seen that as many as 18 Vocational Schools do not yet have E-Learning and 4 Vocational Schools have E-Learning..

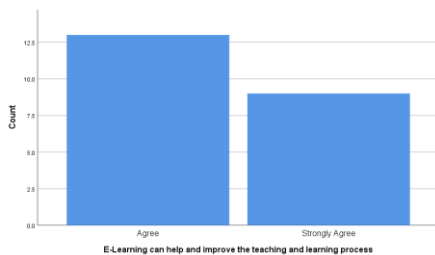
2. Currently, it is necessary to do E-Learning in schools



Picture 4. Currently, it is necessary to do E-Learning in schools

According to the results of the current analysis of the necessity of implementing e-learning in schools, 13 vocational schools indicated that e-learning must be implemented in schools, and 9 vocational schools agreed that e-learning must be implemented in schools. Take place at school..

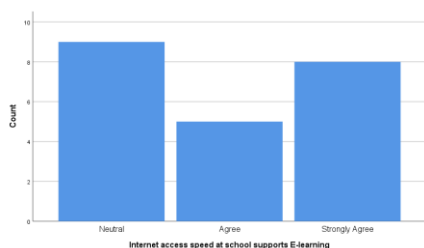
3. E-Learning can help and improve the teaching and learning process



Picture 5. E-Learning can help and improve the teaching and learning process

Those who stated that E-Learning can help and improve the teaching and learning process as many as 13 SMKs stated that they agreed and 9 stated that they strongly agreed.

4. Internet access speed at school supports E-learning

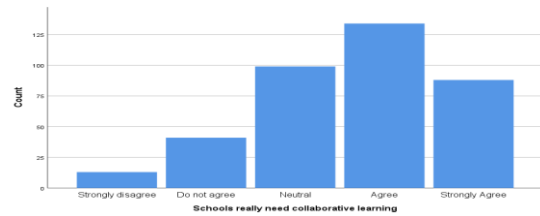


Picture 6. Internet access speed at school supports E-learning

9 SMKs stated neutral, 5 SMKs agreed and 8 SMKs stated Strongly Agree that Internet access speed in schools supports E-learning.

Question items number 5 to 10 questionnaires are asked for students

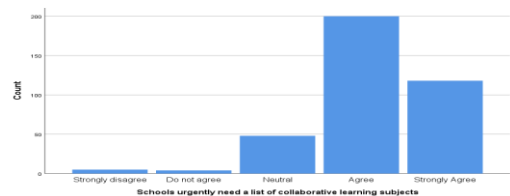
5. Schools really need collaborative learning



Picture 7. Schools really need collaborative learning

Schools do need collaborative learning, with 13 students strongly disagreeing, 41 disagreeing, 99 neutral, 139 agreeing, and 88 strongly agreeing. 85% say schools do need collaborative learning.

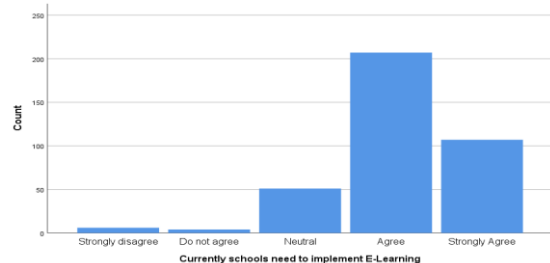
6. Schools urgently need a list of collaborative learning subjects



Picture 8. Schools urgently need a list of collaborative learning subjects

According to the analysis of the list of subjects that schools do need collaborative learning, 5 students disagree at all, 4 students disagree, 48 students are neutral, 200 students agree, 118 students strongly agree, and 97.6% of students say the school really A list of topics is required. collaborative learning.

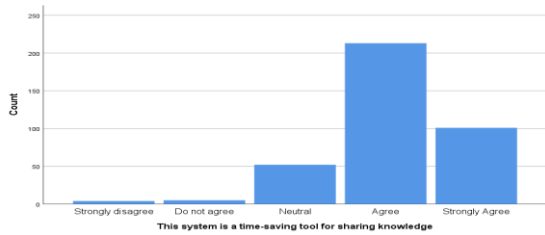
7. Currently schools need to implement E-Learning



Picture 9. Currently schools need to implement E-Learning.

At present, schools need to implement e-learning, and students expressed that 6 people strongly disagree, 4 people disagree, 51 people are neutral, 207 people agree, and 107 people strongly agree. 97.3% indicated that schools need to implement e-learning now.

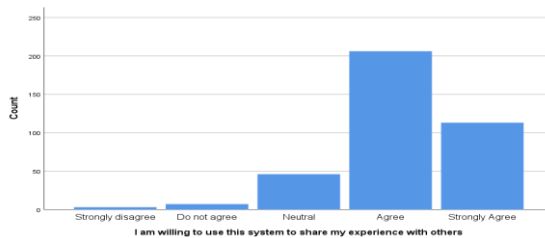
8. This system is a time-saving tool for sharing knowledge



Picture 10. This system is a time-saving tool for sharing knowledge

A total of 4 students completely disagree, 5 students disagree, 52 are neutral, 213 agree, and 101 strongly agree that the system is a time-saving knowledge sharing tool. 97.6% of students believe the system is a time-saving knowledge sharing tool.

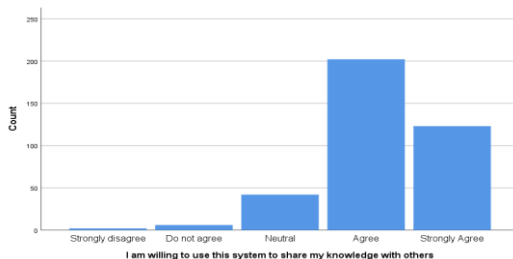
9. I am willing to use this system to share my experience with others



Picture 11. I am willing to use this system to share my experience with others

A total of 3 students strongly disagree, 7 students disagree, 46 students are neutral, 206 students agree and 113 students strongly agree that I am willing to use this system to share my experiences with others. 97.3% stated that students are willing to use this system to share my experiences with others.

10. I am willing to use this system to share my knowledge with others.



Picture 12. I am willing to use this system to share my knowledge with others

A total of 2 students strongly disagree, 6 students disagree, 42 students are neutral, 202 students agree and 123 students strongly agree that other students can use this system to share knowledge with me. 97.9% stated that other Students can use this system to share knowledge with me.

## V. CONCLUSION

This study has successfully answered the research problems which can be concluded as follows:

1. The initial conditions of learning in the Tangerang District Vocational Secondary School (SMK) are still conventional because it is dominated by teachers, and students are less involved in learning.
2. The conceptual model of collaborative learning synergizes and incorporates the various components of Collaborative E-Learning.
3. The implementation of collaborative learning model can strengthen the concept of collaborative learning development, which includes: clarity of learning objectives, learning materials, methods, media, and learning assessment that give students the opportunity to be creative through collaboration between students and teachers. which as a result contributes to the improvement of the system. learning that forms the basis for the development of collaborative learning models.

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