The effect of information and communication technology with learning activities towards student performance

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Abstract. This research was aimed to know the effect of Communication Information Technology (CIT) and learning activities towards student performance in metal connecting technique lesson in Vocational High School 1 of Seyegan. This was descriptive research by using a quantitative approach. The research results showed that CIT and learning activities affected student performance. This result was concluded: (1) a positive effect of CIT towards student performance with determination coefficient of 32.7%; (2) a positive effect of learning activities towards student performance with determination coefficient of 8.7%; (3) there was a positive effect of CIT and learning activities jointly towards student performance in metal connecting lesson with determination coefficient of 10.9%.

1. Introduction
Education is a major factor in forming a normative human personality. Education makes a person can develop well and think realistically. Students in obtaining learning resources are not only centered in the school (formal) but also outside the school (non-formal).

Education based on the regulation of the Republic of Indonesia number 20 of 2003 concerning National Education System clause one explained that education is a conscious and planned effort to create an atmosphere of learning and learning process so that students actively develop their potential to have religious-spiritual strength, self-control, personality, intelligence, noble character, and skills needed by himself, society, nation, and country [1].

The purpose of the Vocational High School is to prepare students in accordance with certain areas of expertise to: enter the workforce and be able to develop a professional attitude within the scope of their expertise; able to choose a career, able to be competent and able to develop themselves within the scope of expertise chosen and occupied; to be a mid-level workforce to fill the needs of business and industry. The stated objectives can be used as a reference for vocational students so that the industrial world can easily absorb vocational graduates as human resources easily [2]. Education does not only function as a supplier of labor but is demanded to produce graduates who are really needed by the community and the world of work [3].

In education, a child will be educated and guided to achieve a goal. A child will gain knowledge from a teacher and develop it by itself. Education is not only obtained from a teacher directly but also through various existing technologies. The role of technology is very large for human life. The use of the internet for education is increasingly widespread, especially in developed countries, which is a fact that shows that with this media it is possible to hold a more effective learning process. This happens
because with the characteristics of the internet that is quite typical, so it is expected to be used as a source of learning as other sources have been used before such as radio, television [4].

In essence, technology is the application of organized knowledge or other knowledge to practical tasks. The existence of technology must be interpreted as an effort to increase effectiveness and efficiency. Technology cannot be separated from problems, because the technology was born and developed to solve problems faced by humans. As an educational technology product, it is easy to understand because it is more concrete, such as television, projectors, OHP, equipment in the lab or machines in the workshop [5].

The learning process is a process in which there are interactive activities between the teacher and students and reciprocal communication that takes place in educational situations to achieve learning goals. In the learning process, teachers, and students are two components that cannot be separated. Between the two components, there must be a mutually supporting interaction so that student learning outcomes can be achieved optimally [6].

The success of learning carried out on an educational activity is how a person can learn by identifying, developing and using all kinds of learning resources. The 2013 curriculum requires teachers to know the scientific learning model, which is learning that invites students to learn actively and not be centered by the teacher. The teacher is also no longer the sole reference of all knowledge but rather as a facilitator or consultant. Therefore, the use of information and communication technology here is very important to support student performance.

Performance is the result or overall level of success of a person during a certain period in carrying out the task compared to various possibilities, such as work standards, targets or targets or predetermined criteria that have been agreed upon together [7]. From observations made in the field, there are still students who are less able to use and utilize Communication Information Technology (CIT) effectively so that learning can run well and smoothly. This can have an adverse effect on students in their academics and practice.

Problems that occur in Seyegan State Vocational High School, especially in the area of Metal Fabrication Engineering expertise are in learning the practice of metal joining. The low interaction between teachers and students is one-factor decreasing student performance. In addition, the learning process is not going well. The absence of teacher assistance causes the practice job cannot be completed with the time specified. This results in less than maximum student work. The teacher gives only a few directions about the work to be done. In this condition, the use of ICT as a learning resource is prioritized to maximize student performance again. Thus, the purpose of this research is to find out how much influence CIT and learning activities have on student performance.

2. Methods
This study uses ex post facto method with a quantitative approach. The purpose of this study is to look for the influence of the independent variables, namely the variable influence of the development of information and communication technology on learning activities and student performance.

The place of research was conducted at SMKN 1 of Seyegan. The research subjects were 32 students of class XII Metal Fabrication Engineering. The sample of this study was determined by a random sampling technique. Data collection techniques carried out in the form of a questionnaire with four alternative answers. The questionnaire was used to collect data from the variable information communication technology (X1), learning activities (X2), and student performance (Y). Data analysis techniques used are data description, analysis prerequisite tests, and hypothesis testing. The analysis prerequisite test used is the linearity test and multicollinearity test. The hypothesis test used is a minor hypothesis test and a major hypothesis test.
3. Results and Discussion

3.1 Information and Communication Technology

Based on the research data that has been processed, it is known that the mean value (M) = 67.43; Median (Me) = 66.5; Mode (Mo) = 65; Standard deviation (SD) = 5.48; the maximum value (max) = 77; and the minimum value (min) = 54.

| Interval | Frequency | Percentage (%) |
|----------|-----------|----------------|
| 54 – 59  | 1         | 3.1            |
| 60 – 65  | 13        | 40.6           |
| 66 – 71  | 10        | 31.2           |
| 72 – 77  | 8         | 25             |

Table 1. The frequency distribution of information and communication technology.

Based on table 1, the highest frequency distribution of CIT variables is in class interval number 2 which has a range of 60-65 with a total of 13 students.

![Graph of distribution of ICT scores](image)

Figure 1. Graphic trend of Communication Information Technology (CIT)

Based on Figure 1 above, it can be shown that the spread of data scores of the variable influence of CIT as a whole shows that as many as 7 students (21.9%) fall into the very high category, 6 students (18.7%) fall into the high category, 14 students (43.7%) included in the medium category, 4 students (12.5%) were in the low category, and 1 student (3.1%) was in the very low category.

The results obtained on average from the influence of information technology communication variables of 67.43 and the ideal normal curve criteria located at intervals of $63.6 < X \leq 67.4$. Based on these results, the influence of the development of information communication technology in the medium category. This can be shown in the statement of students that students have an understanding of the importance of the development of excellent CIT.

3.2 Learning Activities

Based on the research data that is processed, it is known that the mean value (M) = 67.31; Median (Me) = 67.00; Mode (Mo) = 71.00; Standard deviation (SD) = 4.23; the maximum value (max) = 75; and the minimum value (min) = 59.
Table 2. The frequency distribution of learning activities.

| Interval | Frequency | Percentage (%) |
|----------|-----------|----------------|
| 59-62    | 6         | 18.7           |
| 63-66    | 9         | 28.1           |
| 67-70    | 7         | 21.9           |
| 71-75    | 10        | 31.2           |
| Sum      | 32        | 100            |

Based on table 2, the highest frequency distribution of learning activities is in the class interval number 4 which has a range of 71-75 with a total of 10 students.

![Figure 2. Graphic trend of learning activities](image)

Based on Figure 2 above, it can be shown that the spread of the overall learning variable data score shows that as many as 3 students (9.3%) are included in the very high category, 8 students (25%) are included in the high category, 9 students (28.1%) included in the medium category, 10 students (31.2%) were in the low category, and 2 students (6.2%) were in the very low category.

The results obtained on average from the variable learning activities amounted to 67.31 and the ideal normal curve criteria located at intervals of 65.7 < X ≤ 68.3. Based on these results the effect of learning activities in the medium category. This can be shown in the statement of students that students have an understanding of the importance of the teacher’s role in a good learning process. As for the interaction between the teacher and students, it needs to be improved in order to create an effective and efficient learning process.

3.3 Student Performance
Based on the research data that is processed, it is known that the mean value (M) = 50.53; Median (Me) = 50.00; Mode (Mo) = 51.00; Standard deviation (SD) = 4.81; the maximum value (max) = 59; and minimum value (min) = 38.

Table 3. The frequency distribution of student performance.

| Interval | Frequency | Percentage (%) |
|----------|-----------|----------------|
| 38-42    | 1         | 3.1            |
| 43-47    | 8         | 25.0           |
| 48-52    | 13        | 40.6           |
| 53-59    | 10        | 31.2           |
| Sum      | 32        | 100            |
Based on table 3, the highest frequency distribution of student performance variables is in class interval number 3 which has a range of 48-52 with a total of 13 students.

![Figure 3. Graphic Trend of student performance.]

Based on Figure 3 it can be shown that the spread of the score data on overall student performance variables shows that as many as 9 students (28.2%) are included in the very high category, 7 students (21.8%) are included in the high category, 10 students (31.2%) included in the medium category, 5 students (15.6%) were in the low category, and 1 student (3.1%) was in the very low category. The results obtained an average of student performance variables of 50.53 and the ideal normal curve criteria that are located at intervals $50.25 < X \leq 53.75$. Based on these results the performance of students in the high category. This can be shown in the statement of students that students have a good understanding in terms of the application of each individual prayer.

3.4 Effect of Communication Information Technology (CIT) on Student Performance

The data processing showed that the influence of the development of CIT with a sample size of 32 students there were 7 students (21.9%) included in the very high category, 6 students (18.7%) included in the high category, 14 students (43.7%) included in the medium category, 4 students (12.5%) included in the low category and 1 student (3.1%) included in the very low category.

Hypothesis testing is seen based on the value of $t_{\text{test}}$ that serves to determine whether the variable influence of the development of CIT has an effect on student performance by comparing the $t_{\text{count}} > t_{\text{table}}$ that is equal to 1.854 > 1.69726 and the significance level $\alpha$ of the variable influencing the development of CIT < significance level of 5% that is equal to 0.000 < 0.005. Based on these calculations it can be seen that $H_a$ is accepted and $H_0$ is rejected, which means there is a positive influence on the development of CIT on student performance.

3.5 Effect of Learning Activities on Student Performance

According to the results of data processing, it shows that the influence of learning activities with a total population of 32 students there are 3 students (9.3%) included in the very high category, 8 students (25%) included in the high category, 9 students (28.1%) included in the medium category, 10 students (31.2%) were in the low category and 2 students (6.2%) were in the very low category.

Hypothesis testing is seen based on the value of $t_{\text{test}}$ which serves to determine whether the variable effect of learning activities affect student performance by comparing the $t_{\text{count}} > t_{\text{table}}$ that is equal to 2.422 > 1.69726 and the significance level $\alpha$ of the variable influencing learning activities < significance level of 5% that is equal to 0.000 < 0.005. Based on these calculations it can be seen that $H_a$ is accepted and $H_0$ is rejected, which means there is a positive influence of the effect of learning activities on student performance.
3.6. The Influence of Information and Communication Technology and Learning Activities on Student Performance

Based on the results obtained indicate that the variable influence of the development of CIT and learning activities jointly affect student performance. This can be seen based on the value of the coefficient of determination \((R^2)\) of 0.109, the magnitude of \(F_{\text{count}} > F_{\text{table}}\) is 10.786 > 3.33 and sig. = 0,000 <0.05 so that it can be seen from the calculation that Ha is accepted and Ho is rejected. The results of data processing proved that there is a positive influence between the influence of the development of CIT and learning activities together on student performance.

4. Conclusion

Based on the results and discussion of the influence of information technology communication and learning activities on student performance in metal connection engineering subjects, it can be concluded that the average obtained from the CIT variable is 67.43. Obtained an average of learning activity variables of 67.31. Obtained an average of student performance variables of 50.53. Because \(F_{\text{count}} > F_{\text{table}}\) is 10.786 > 3.33 and sig. = 0,000 < 0.05, which indicates a significant analysis result.

Based on these results, it can be concluded that the Ha major hypothesis is accepted which means there is a positive and significant relationship between the influence of the development of CIT and learning activities together on student performance.

Based on this research teachers are expected to provide complete learning material so that an effective and efficient learning process is created. It is also hoped that further researchers who have an interest in a similar field with this research will be better if further research is conducted on the impact of ICTs in the learning process, creating effective and efficient learning processes in every obligation when practicing in the workshop because of the low yields in this research, is expected to be able to conduct further research.

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