

Computer Hardware and Software Education for Teacher's Office of Insan Mulia Early Childhood Education School Tangerang

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Abstract

This community service proposed assistance from competent instructors to educate participants to get to know computer hardware and software, ranging from variations, and models, to supporting components based on the research approach method in the electrical engineering field. The training participants were ECE (Early Childhood Education) teachers of Insan Mulia PAUD School. This CS (Community Service) program aimed to educate the ECE teachers of the school to keep up with the advancement of computer technology. Thus, the contribution of this activity was to improve the quality of skilled labor and align with industry needs. Therefore, a Computer Hardware and Software Education activity was held at the Teacher's Office of Insan Mulia Early Childhood Education School in Tangerang. The Research and Community Service of Universitas Mercu Buana participated in this activity by carrying out the ICT (Information and Communication Technology) theme in the RMP (Research Master Plan), the long-term target is the development of wireless sensors and actuators, to the integration of system implementation. In conclusion, this activity produced new skills for Insan Mulia ECE School teachers in the knowledge of computer hardware and software as well as the installation of required computer devices that have operated very well.

Keywords: *community service, electrical engineering, guest lectures, hardware, software*

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Introduction

Currently, computer technology (Budiyanto & Silalahi, 2023) is very important to use to support educational activities, business, and entertainment. Educational activities that are usually carried out in schools require good computer organization so that important work can be delivered properly to students, teachers, and school staff. ECE (Early Childhood Education) or Indonesia calls this term "PAUD" is the initial gateway to further education. Improving the educational process in preschool educational institutions is the most important requirement to promote moral, spiritual, and intellectual development (Bozorboevna, 2020; Sriyono et al., 2022).

Figure 1 shows the Insan Mulia PAUD School building located at H. Maskur Street No. 49 RT. 02, RW. 02, Pinang, city of Tangerang. Computer facility support is needed to facilitate teaching and learning activities at the school because currently there is no computer equipment to support activities. Thus, a CS (Community Service) program proposed installing computer equipment for Insan Mulia PAUD School so that the activities at the school could run normally and optimally.



Fig. 1. School building of PAUD Insan Mulia Tangerang



Fig. 2. Computer illustration

Figure 2 shows an illustration of a computer as an electronic device that connects one component with another to produce information. In prior conditions, Insan Mulia PAUD School had not been supported by adequate computer equipment so the school could not support various activities in the school optimally. A revitalization was needed to set up computer equipment at Insan Mulia PAUD School to support teaching and learning activities at the school.

The research group of the Electrical Engineering Study Program at Mercu Buana University held community service activities to realize the Three Pillars of Higher Education or also called *Tri Dharma Perguruan Tinggi*. Based on this, the proposed activity was the installation and training of introduction to computer software and hardware. This is a basic course in the electrical engineering study program, namely computer networks where the benefits obtained include: (Medriavin Silalahi et al., 2020; Silalahi et al., 2022)

1. Microcomputer processor is the most important component in processing digital data based on input from the keyboard along with commands from the mouse to lead to certain applications. (Adriansyah et al., 2020; Budiyanto et al., 2021)
2. A computer monitor is the second most important component in displaying the results of digital data processing.
3. The mouse as the third most important component in pointing the arrow to a particular application.
4. Keyboard as the fourth most important component in providing input letters, numbers, symbols, etc. which aims to facilitate the process of typing and other activities when the computer is actively on.

5. Hard drive as the fifth most important component in storing information data.
6. RAM/ROM as the sixth most important component and stores computer registry processes.

Based on the results of the situation analysis above, the formulation of the problems faced by partners include:

1. Computer devices were needed by teachers for the learning process, and adding such facilities at school was required to support the learning process.
2. The school teachers needed training on basic introduction of hardware and software.
3. Knowledge of the components that build a computer as a whole was needed to fully explain the functions and uses of each component.

In order to realize the Tri Dharma of Higher Education (Assingkily & Putri, 2023; Simanjuntak et al., 2022; Sulistiowati & Komari, 2023), the Electrical Engineering Research Group of UMB (Universitas Mercu Buana) along with practitioners from BRIN (Badan Riset dan Inovasi Nasional) proposed the Educational Computer Hardware and Software (Kotturi et al., 2022; Park & Kim, 2022) to support the teacher office of Insan Mulia PAUD School. The rapid development of technology in education requires HR (Human Resources) to have competitive abilities and expertise to improve the quality of the personnel by encouraging and fostering community interest in learning.

The purpose of this community service activity was to improve the performance of the school teachers to support teaching and learning activities for students of PAUD Insan Mulia Tangerang. The targets of this activity were school managers, teachers, and employees of Insan Mulia PAUD School in order to gain self-development and work effectiveness towards digitalization in the school environment. The benefit of this activity is that the participants realize the importance of computers to facilitate work and streamline work time.

Methods

Place and Time

The place where this activity was carried out is located at Insan Mulia PAUD School, which is located at H. Maskur Street No. 49, city of Tangerang. The activity was held on Saturday, 17 June 2023.

Target Audience

Target audiences were teachers and teaching and learning staff for performance improvement at computer education.

Type of Activity

The suitable form of activity was to meet with partners regarding information gathering on their needs and problems, provide lectures related to computer installation, and conduct training on computer devices and their peripherals utilization.

Activity Method

The method applied for the community service activity was the installation and application of required computer hardware and software, and holding presentations/lectures related to current computer technological developments.

Evaluation Design

Based on the problem statement and solution, this community service activity was divided into several steps:

1. Step 1: The opening ceremony of the community service.
2. Step 2: UMB community service team preparing and installing computers.



Fig. 3. Activity on class

3. Step 3: The participants were explained about computer hardware and software as can be seen in Figure 3.

4. Step 4: Question and Answer (Q & A) session and certificate awarding.

The project method was in the form of explanation through training material (tutorial) and educational workshop on introduction of computer hardware and software.

Results and Discussions

The result of the community service activities has gone well, the activities, as well as the delivery of the charter to partners, were carried out on-site by complying with health protocols during the Covid-19 pandemic, as shown in Figure 4.

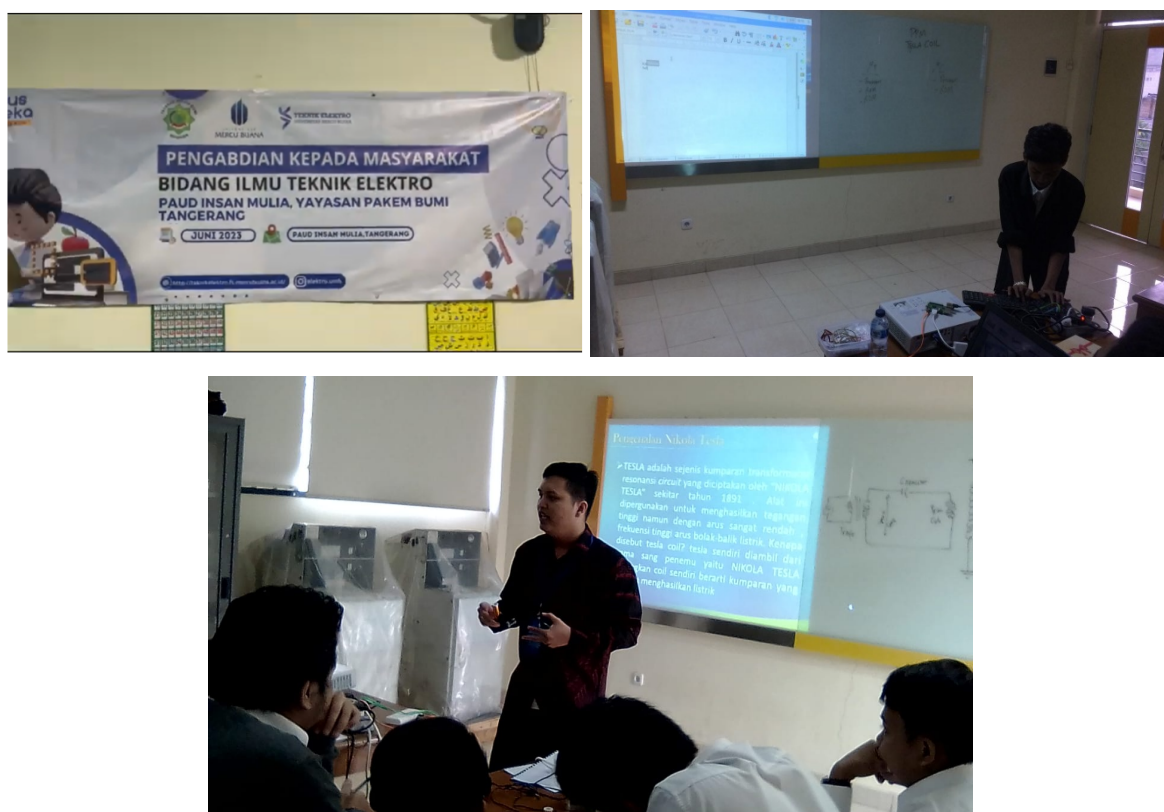


Fig. 3. Community service activities

A total of 15 respondents consisting of teachers and staff of Insan Mulia PAUD School have been surveyed and the result is displayed in Table 1. The following is a list of questionnaire as follows:

1. Q1: Resolve problems faced by the community by utilising relevant academic community.
2. Q2: Utilising appropriate technology.
3. Q3: Useful for the development of science and technology.

4. Q4: Useful as teaching materials or training modules for enrichment of learning resources.
5. Q5: Increases income.
6. Q6: Increase knowledge.
7. Q7: Increase production.
8. Q8: Change behaviour towards a positive direction.
9. Q9: Improve the quality of the environment.
10. Q10: The cooperation carried out with UMB through Community Service activities is beneficial to the community.
11. Q11: Cooperation carried out with UMB through Community Service activities meets the cooperation target.

Based on Table 1, the satisfaction results of community service activities are as follows:

1. 45% of participants stated the questionnaire answer: Strongly Agree.
2. 51% of participants responded to the questionnaire: Agree.
3. 3% of participants stated the questionnaire answer: Less Disagree.
4. 1% of participants stated the questionnaire answer: Disagree.

Table 1. Questionnaire Results

Question	Answer Scoring									
	Strongly Agree (5)		Agree (4)		Less Disagree (3)		Disagree (2)		Strongly Disagree (1)	
	Total Respondent	Calc	Total Respondent	Calc	Total Respondent	Calc	Total Respondent	Calc	Total Respondent	Calc
Q1	5	5 x 5 = 25	10	10 x 4 = 40	0	0 x 3 = 0	0	0 x 2 = 0	0	0 x 2 = 0
Q2	10	10 x 5 = 50	5	5 x 4 = 20	0	0 x 3 = 0	0	0 x 2 = 0	0	0 x 2 = 0
Q3	10	10 x 5 = 50	5	5 x 4 = 20	0	0 x 3 = 0	0	0 x 2 = 0	0	0 x 2 = 0
Q4	4	4 x 5 = 20	11	11 x 4 = 44	0	0 x 3 = 0	0	0 x 2 = 0	0	0 x 2 = 0
Q5	9	9 x 5 = 45	3	3 x 4 = 12	2	2 x 3 = 6	1	1 x 2 = 2	0	0 x 2 = 0
Q6	11	11 x 5 = 55	3	3 x 4 = 12	1	1 x 3 = 3	0	0 x 2 = 0	0	0 x 2 = 0
Q7	7	7 x 5 = 35	6	6 x 4 = 24	2	2 x 3 = 6	0	0 x 2 = 0	0	0 x 2 = 0
Q8	6	6 x 5 = 30	9	9 x 4 = 36	0	0 x 3 = 0	0	0 x 2 = 0	0	0 x 2 = 0
Q9	2	2 x 5 = 10	13	13 x 4 = 52	0	0 x 3 = 0	0	0 x 2 = 0	0	0 x 2 = 0
Q10	6	6 x 5 = 30	9	9 x 4 = 36	0	0 x 3 = 0	0	0 x 2 = 0	0	0 x 2 = 0
Q11	4	4 x 5 = 20	11	11 x 4 = 44	0	0 x 3 = 0	0	0 x 2 = 0	0	0 x 2 = 0
Sum	74	370	85	340	5	15	1	2	0	0
Average	0.45		0.51		0.03		0.01		0	
Percentage	45%		51%		3%		1%		0	

The result of this community service activity:

1. The activity was conducted on-site with limited attendance of the school principal, school teacher representatives, and students as well as UMB Electrical Engineering lecturers.
2. The school principal as well as the chairman of the foundation gave the highest appreciation to UMB Electrical Engineering.
3. UMB Electrical Engineering gave a certificate of appreciation to Insan Mulia PAUD School.
4. From the results of the questionnaire recapitulation, it was discovered that this community service activity was very useful. The participants were very excited about this activity because it developed their knowledge.

Conclusion

The conclusion of this community service activity, overall, from the computer installation process to the delivery of the training material has gone well and smoothly. The school teachers and staff were very active in discussing and receiving new knowledge about computers and really hope that this community service activity will be continued with new materials, especially advice on how to maintain computer devices.

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