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# A STUDY ON THE USE OF TEACHING METHODS AMONG ELECTRONIC TECHNOLOGY TEACHERS AT THE PENGKALAN CHEPA VOCATIONAL COLLEGE

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## *Abstract*

Teaching methods practiced by teachers play an important role in determining the effectiveness of teaching and student learning. Although this is important, most studies have found that the average teacher or teaching staff still practices conventional teaching methods. Looking at the importance of choosing appropriate teaching methods for the effectiveness of the teaching and learning process, researchers are motivated to review the teaching methods practiced by Electronic Technology instructors at Pengkalan Chepa Vocational College. The main goal of this study is to see the level of use of teaching methods practiced by instructors and also the level of student interest in teaching methods implemented by instructors at Pengkalan Chepa Vocational College. Next, the research findings obtained can be used as a guide to choose appropriate teaching methods to be practiced in learning and facilitation (PdP) for the field of Electronic Technology based on the response from students' interests. The design of this study is in the form of a survey using a questionnaire as a research instrument. Data were analyzed descriptively and reported in the form of percentage and mean. The study subjects involved a total of 33 students and 10 teaching staff in the field of Electronic Technology at Pengkalan Chepa Vocational College. A stratified random sampling technique was used for the student sample and a simple random sampling technique was used for the teaching staff sample. The findings of the study show that the use of teaching methods among teaching staff is still at a conventional and moderate level, while the level of interest in teaching methods using technology among students is high. It is recommended that the Technical and Vocational Training Education Division (BPLTV) can provide training on 21st century pedagogy to teaching staff as well as provide complete ICT infrastructure in each Vocational College so that teaching methods among teaching staff can be improved, more interesting and student-centred.

**Keywords :** *Teaching Method; Electronic; Conventional; TVET*

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## I. INTRODUCTION

Teachers play an important role in improving student knowledge. Among the teachers' initiatives to improve student understanding is diversifying teaching techniques. Technical and Vocational Education and Training (TVET) has become one of the important educational development strategies in developing countries and developed countries, this is because TVET has become the primary education option in several developed countries. high-income countries such as France, Finland, Germany, Australia,

South Korea, and Singapore (International Monetary Fund, IMF, 2009; United Nations, 2019). These developed countries have a higher percentage of skilled workers than developing countries such as Malaysia, Indonesia, Turkey, Iran, Egypt, Bangladesh, Pakistan and Nigeria (United Nations, 2019). To ensure this target is achieved, TVET institutions are the most important platform to produce students who have different basic knowledge and skills to become quality skilled workers when entering the world of work in the industry (Lauglo, and Lillis,

1988). This is because highly skilled and knowledgeable human resources play an important role in increasing the ability of an organization to be competitive in the market (Cania, 2014). For this reason, the strengthening of TVET in producing graduates who meet the needs of the industry is increasingly needed (Ayonmike, Okwelle, & Okeke, 2015).

Educators are individuals who are entrusted to ensure that the knowledge and skills they want to convey to students are achieved. According to Sarebah, Yusop and Ahmad Esa (2011), teachers' teaching methods play an important role in producing well-trained and skilled students. Therefore, the knowledge and skills of teachers in managing teaching and learning activities can be improved through the application of various types of teaching and learning methods (Lucas, Spencer & Claxton, 2012; Lucas, 2014). While teachers who do not understand the learning problem, cannot adjust teaching methods, approaches and methods to help students build understanding and learned skills will cause teaching and learning to be less effective (Yadav, Lundeberg & Bunting, 2011; Prince & Felder, 2006). Previous studies have shown that the level of use of teacher-centred teaching methods is still high, such as a study conducted by Nor Aishah and Yap Poh Moi (2002) found the level of knowledge of Commerce teachers' teaching methods related to certain topics in the subject syllabus. While the study of Azizi Yahaya and Syazwani (2008) found that the demonstration method is the most dominant teaching method practiced by Technical High School teachers in Negeri Sembilan. Next, a study conducted by Asmita (2013) also confirmed that most educators still practice teacher-centered learning.

There are several factors that contribute to the increase in the use of conventional teaching methods, among them is that the knowledge of teaching staff is still not related to the latest technological developments (Jailani, Siti, Faizal, Maizam, Syahril, Marina, Lee, Tee, Sumarwati, Dedy Irfan, & Junita, 2017), there are teachers who still find it difficult to choose appropriate technology-assisted teaching methods (Jailani et al, 2017), and there are still many teachers who do not have in-depth

knowledge of computers, especially in the use of applications contained in new technologies (Asan, 2003), even innovation in teaching and learning as recommended by the Ministry of Education and Culture is still difficult to implement in schools and there are still a few teachers who face problems on how to implement it (Yahya & Lailanita, 2012). Therefore, teaching staff should use new technology to create a conducive learning environment in improving students' knowledge and skills. Teachers' knowledge that is not in line with the latest technological developments will make teachers less likely to encourage students to use technology during the teaching and learning process (Rohaana, 2009). However, before the implementation of teaching using technology, an institution needs to have a complete ICT infrastructure because the availability of ICT infrastructure in the institution is considered a prerequisite for the efficient use of ICT as a pedagogical tool (Hashim & Abu Bakar, 2017).

Although many previous studies related to the level of use of teaching methods have been done, however, discussions on pedagogy for teaching skills are still lacking (Sarebah, Yusop & Ahmad Esa, 2011). In fact, most of them only focus on the academic stream and relatively less research is done on the vocational stream such as in the Vocational College (KV), especially in the field of Electronic Technology. In addition, research on teaching methods that students are interested in is also less done by previous researchers. Therefore, the main purpose of this study is to see the level of use of teaching methods practiced by teaching staff at vocational colleges and the level of student interest in teaching methods nowadays. Next, the research findings obtained can be used as a guide to choose appropriate teaching methods to be practiced in learning and facilitation (PdP) for the field of Electronic Technology. At the same time, the relevant parties can improve the weaknesses in the teaching methods of the teaching staff so that the teaching methods of the teaching staff can be further improved.

## II. LITERATURE REVIEW

The focus of the literature review on the theory and practice given above secondary sources consisting of written materials such as textbooks, magazines, working papers, academic studies, seminar reports and presentations, theses and related academic journals.

Education world is known various methods of learning, without a learning method, learning will not be effective. Therefore, in order that the learning process goes well, we need effective learning methods. Every teacher must have own method in presenting material to students, but all students cannot receive the teacher's methods. Therefore teachers must master the methods of teaching (Sudjana, 2010).

The appropriate model of teaching and learning environment that will create fun learning environment and it will indirectly improve student's achievement. This case is also supported by the results of previous studies, the following the quote of previous elections. Made Wena (2011), in his book suggests, in an attempt to understand the learning, we must first understand the variables of learning. According to Reigeluth and Merrill (in Degeng, 1989) learning variables can be classified into three, namely learning condition, strategies (methods), and the results (outcomes) of learning.

Student's learning achievement is the result of the student's hard work through a variety of activities that occur in the process of teaching and learning.

And this case can not be created if the teacher's teaching methods and learning in class are not in accordance with the characteristics of students. A good achievement is an accomplishment that is gotten by hard work, seriously and diligently, so that satisfactory achievement of students will be obtained (Zuldafrial, 2011).

## III. RESEARCH METHODOLOGY

The design of this study is a survey. This study was conducted using a questionnaire as a research instrument and the data was analyzed descriptively. Data analysis was processed using *Statistical Packages for Social Sciences Version 25.0* (SPSS) software and the results of the study were reported in the form of percentages and mean.

### a. Study Sampling

The study population consisted of Electronics Teachers and Electronics Technology students. The subject of the study involved a total of 33 students consisting of students of Electronic Technology

semester four and 2 SVM (Malaysian Vocational Certificate) and a total of 10 teaching staff in the field of Electronic Technology. Simple random sampling is chosen over the student sample because this type of sample is very suitable for use in research. Based on the enrollment of the total number of Electronic Technology students in semester four, year three and year two of SVM at Pengkalan Chepa Vocational College in 2023 is a total of 33 students. Meanwhile, the sampling method used on the sample of teaching staff is to use simple random sampling. Simple random sampling is chosen over a sample of teaching staff because this sampling method is more fair to the population (Ghazali & Sufean, 2018).

### b. Study Instrument

The instrument used in this study consists of two sets of questionnaires for students and teachers of Electronic Technology. The content of the items for these two questionnaires is the same except for the questionnaire for students which contains the addition of the construct of student interest level. This instrument was adapted from a previous researcher, namely Norhapizah (2016). However, the likert scale used is based on the adaptation of studies from Ghazali, Rahimi, Parilah, Arsyad and Haslina (2012) as shown in Table 1 and Table 2.

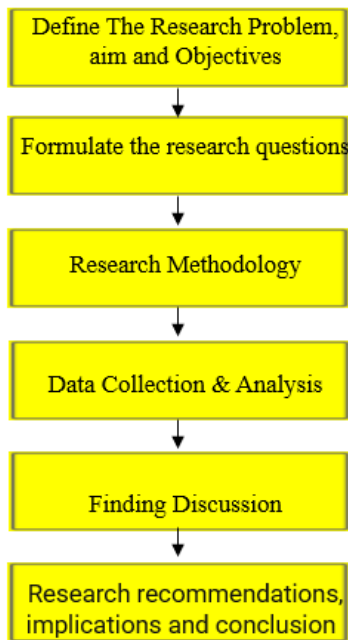
Table 1: Five-Point Likert Scale (Frequency Level) for students and teachers.

Likert	Classification
1	Never
2	Rarely
3	Sometimes
4	Often
5	Very Often

Table 2: Five-Point Likert Scale (Interest Level) for students.

Likert	Classification
1	Very disinterested
2	Not interested
3	Lack of interest
4	Interest
5	Very interested

#### IV. FLOW CHART OF RESEARCH PROCESS



#### V. DATA ANALYSIS

Data were analyzed using descriptive analysis. According to Uma Sekaran (2003), descriptive statistics can be used to explain a phenomenon that is happening. Therefore, the researcher has used Statistical Packages for Social Sciences Version 25.0 (SPSS) software to identify the frequency and level of use of teaching materials for the PPPE Course. The results of the study are reported in the form of percentages and mean. For this purpose, the mean interpretation used is as in Table 3 based on a study from Wiersma (2000).

Table 3 : Interpretation of Min. Range Values

Mean Score	Level
1.00 until 2.33	Low
2.34 until 3.67	Medium
3.68 until 5.00	High

#### VI. FINDINGS

The results of this study consist of the findings of students' and instructors' perceptions of the use of teaching methods used in the PPPE Course. In addition, the results of the use of teaching methods that students are interested in for this

course are also obtained. Table 4 shows the mean score and frequency percentage for the 17 types of teaching methods teaching staff for the PPPE Course based on student perception. Apart from that, the level of implementation (High, Medium or Low) for teaching methods by PPPE Course instructors. The results show that the storytelling and question-and-answer methods have the highest level of use, which respectively have a mean score of 4.06 and a mean of 3.75. If seen from the percentage of frequency of use of this teaching method, it is as much as 76.1% for the storytelling method and 65% for the question and answer method. While the other eight teaching methods are at a moderate level of use, namely workshop methods (mean 3.53), presentations (mean 3.36), discussions (mean 3.31), demonstrations (mean 3.23), lectures (mean 3.12), scientific visits (mean 2.72), problem solving (mean 2.61) and simulation (mean 2.40). The percentage of frequency of use for these eight methods is between 20.6% to 59.7%. In addition, seven other teaching methods are at a low level of use, namely game methods (mean 2.29), tutorials (mean 2.09), face-to-face and online teaching (Blended Learning) (mean 2.02), websites (mean 1.95), research case (mean 1.42), seminar (mean 1.34) and research (mean 1.00). The percentage of frequency of use for these methods is between 0.0% to 7.3%. Overall, based on the students' perception, it was found that PPPE Course

instructors still practice conventional teaching methods in implementing the PPPE Course PdP.

Table 4: Teaching Methods of PPPE Course Instructors (students) (N=33)

Bil	Item	Score (%)					Mean	Level
		1	2	3	4	5		
1	Storytelling	3.3	10.0	10.6	29.2	46.9	4.06	High
2	Questions and answers	9.4	14.2	11.4	21.9	43.1	3.75	High
3	Workshop	7.2	15.0	18.1	37.5	22.2	3.53	Medium
4	Presentation	9.4	22.2	10.8	38.3	19.2	3.36	Medium
5	Discussion	8.1	25.0	14.4	32.8	19.7	3.31	Medium
6	Demonstration	13.1	24.2	13.3	25.3	24.2	3.23	Medium
7	Lectures	18.3	20.0	15.6	23.9	22.2	3.12	Medium
8	Scientific visit	30.0	24.2	7.2	21.1	17.5	2.72	Medium
9	Problem solving	16.7	26.9	35.8	20.3	0.3	2.61	Medium
10	Simulation	32.2	32.5	10.0	13.6	11.7	2.40	Medium
11	Game	16.7	44.4	31.7	7.2	0.0	2.29	Low
12	Tutorial	26.1	428	269	4.2	0.0	2.09	Low
13	Blended Learning	30.6	43.9	18.9	6.4	0.3	2.02	Low
14	Web	33.3	47.2	12.2	5.6	1.7	1.95	Low
15	Case Study	65.3	27.8	6.4	6	0.0	1.42	Low
16	Seminar	70.6	25.8	0.5	0.8	0.3	1.34	Low
17	Research	100	0.0	0.0	0.0	0.0	1.00	Low

Website (Web)  
Note. \* 1: Never 2: Rarely 3: Sometimes 4: Often 5: Very Often

Table 5 also shows the frequency and level of use of teaching methods by PPPE Course instructors based on the perception of instructors displayed in the form of percentages and mean scores. Workshop methods (mean 4.17), demonstrations (mean 4.16), questions and answers (mean 4.07), tutorials (mean 4.01), discussions (mean 3.99), and lectures (mean 3.86) are teaching methods that have a high level of use in the Course PPP. The percentage of frequency of use for all these teaching methods is between 73.6% to 86.8%. While teaching methods that are at a moderate level of use consist of storytelling (mean 3.62), presentation (mean 3.54), simulation (mean 3.38), scientific visits (mean 2.72) and problem solving (mean 2.47). The percentage of frequency of use for these teaching methods is between 1.9% to 61.3%. Next, six other teaching methods are at the lowest level of frequency of use, namely game methods (min 2.19), websites (min 2.05), face-to-face and online teaching (min 1.90), seminars (min 1.37), case studies (min 1.28). and research (mean 1.02). If observed as a whole, it was found that PPPE Course instructors still practice instructor-centered teaching methods. The result of this finding is almost equal to the findings obtained from the student respondents.

Table 5: Teaching methods of PPPE Course instructors (instructors) (N=10)

Bil	Item	Score (%)					Mean	Level
		1	2	3	4	5		
1	Workshop	0.0	0.0	6.6	69.8	23.6	4.17	High
2	Demonstration	1.9	0.9	10.4	52.8	34.0	4.16	High
3	Question and answer	0.0	2.8	16.0	52.8	28.3	4.07	High
4	Tutorial	0.9	2.8	16.0	54.7	25.5	4.01	High
5	Discussion	0.0	0.9	18.9	60.4	19.8	3.99	High
6	Storytelling	5.7	6.6	14.2	43.4	30.2	3.86	High
7	Presentation	2.8	11.3	24.5	43.4	17.9	3.62	Medium
8	Simulation	5.7	4.7	30.2	49.1	10.4	3.54	Medium
9	Problem solving	3.8	9.4	43.4	32.1	11.3	3.38	Medium
10	Scientific Visit	10.4	31.1	36.8	19.8	1.9	2.72	Medium
11	Problem Solving	1.9	50.9	45.3	1.9	0.0	2.47	Medium
12	Game	9.4	62.3	28.3	0.0	0.0	2.19	Low
13	Web	33.0	37.7	22.6	4.7	1.9	2.05	Low
14	Blended Learning	41.5	33.0	19.8	5.7	0.0	1.90	Low
15	Seminar	63.2	36.8	0.0	0.0	0.0	1.37	Low
16	Case Study	71.7	28.3	0.0	0.0	0.0	1.28	Low
17	Research	98.2	1.9	0.0	0.0	0.0	1.02	Low

Table 6 shows the level of students' interest in the teaching methods of PPPE Course instructors based on the percentage and mean score. Findings show that respondents have a high level of interest in face-to-face and online blended learning

(Blended Learning), websites, and workshops, which respectively have a mean score of 3.73, 3.71 and 3.68. In terms of the percentage of respondents' interest in the use of these methods, it was found that the combined face-to-face and online teaching method has a percentage of interest of 66.7%, the method of using a website of 68.1% and the workshop method of 66.4%. In addition, teaching methods in the form of games (min 3.51), scientific visits (min 3.45), storytelling (min 3.32), discussions (min 3.31), questions and answers (min 3.15), demonstrations (min 3.11), presentations (min 3.03), simulation (mean 2.76), problem solving (mean 2.68), lectures (mean 2.54), and case studies (mean 2.42) were at a moderate level of interest among respondents. The percentage of respondents' interest in these methods is between 18.9% to 61.7%. Meanwhile, tutorial teaching methods (mean 2.31), seminars (mean 2.09) and research (mean 1.84) were at a low level of interest and each only had interest percentages of 17.2%, 13.6% and 5.3%. Therefore, the results of this finding show that respondents are more interested in technology-based teaching by maintaining workshop activities as a necessary teaching method for the PPPE Course.

Table 6: PPPE Course teaching methods that students (students) are interested in (N=33)

Bil	Item	Score (%)					Mean	Level
		1	2	3	4	5		
1	Blended Learning	4.4	15.3	13.6	36.1	3.73	3.73	High
2	Web	5.6	12.5	13.9	41.4	26.7	3.71	High
3	Workshop	6.4	11.7	15.6	40.8	25.6	3.68	High
4	Game	8.3	15.3	15.3	39.2	21.9	3.51	High
5	Scientific Visit	13.6	16.7	11.4	27.8	30.6	3.45	High
6	Storytelling	18.1	15.8	14.7	19.2	32.2	3.32	High
7	Discussion	9.2	21.7	18.6	30.0	20.6	3.31	Medium
8	Question and answer	16.7	24.4	13.1	19.2	26.6	3.15	Medium
9	Demonstration	21.4	18.1	10.8	28.1	21.7	3.11	Medium
10	Presentation	16.4	25.0	14.4	27.5	16.7	3.03	Medium
11	Simulation	26.7	22.8	14.2	21.1	15.3	2.76	Medium
12	Problem Solving	22.2	24.7	23.1	22.8	7.2	2.68	Medium
13	Lectures	34.2	24.2	10.6	15.8	15.3	2.54	Medium
14	Case Study	23.9	31.9	25.3	16.1	2.8	2.42	Medium
15	Tutorial	28.1	32.8	21.9	15.0	2.2	2.31	Low
16	Seminar	36.7	33.3	16.4	11.1	2.5	2.09	Low
17	Research	44.2	33.6	16.9	5.0	0.3	1.84	Low

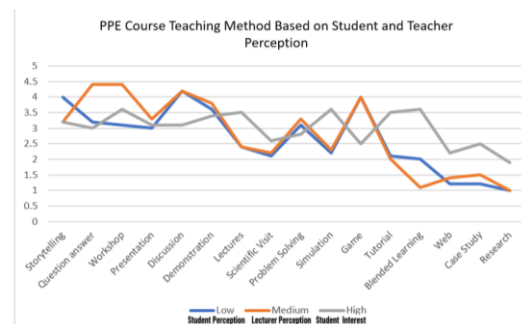


Figure 1: Level of Use of Teaching Methods in PPPE Courses

## VII. DISCUSSION

The findings from the students' perception show that the storytelling and question-and-answer methods have a high level of use in PdP PPPE Courses. While based on the perception of teaching staff, workshop methods, demonstrations, questions and answers, tutorials, discussions and lectures are the most frequently used teaching methods and have a high level of use in PdP. The results of this finding show that the teaching methods practiced by the teaching staff are still centered on the teaching staff. The high frequency of use of these teaching methods may be due to the lack of skills, training and technical support among teachers in the use of technology. This opinion is the same as the study conducted by Schoepp (2005) which shows that teachers do not have the skills and lack confidence in using new technology in the teaching and learning process. However, the findings show that the variety of teaching methods practiced by teachers is still being practiced. Even according to Kamarul Azmi, Ab. Halim and Mohd Izham (2011) and Jailani et al (2017), one of the characteristics of effective teaching is diversity in teaching and learning methods in the classroom. This is because diversity in teaching methods aims to provide meaningful teaching and learning experiences to students and can stimulate students to participate actively in the learning process in the classroom.

However, the results of this study are slightly different from the findings of the teaching methods that students are interested in, in which blended learning, websites and workshops have a high average mean compared to other teaching methods. This shows that teaching methods that are student-centered and based on ICT (Information and Communications Technology) are more interesting to students. Therefore, teaching staff need to improve their skills in the use of ICT in the learning process and facilitation in the lecture room in line with today's digital age. In addition, students are also very interested in practical teaching methods or workshops that require hands-on learning, and this method is also often used by instructors since this course requires students to apply their knowledge to practical skills. This is because according to Azlita, Azlini, Julinawati, and Rezal (2010), 'hand-on' based learning is also important to enable students to apply the theoretical skills learned to a practical form.

Meanwhile, based on the perception of students and teaching staff, the use of teaching methods such as presentations, scientific visits, problem solving and simulations has a moderate level of use. Similarly, the method of workshops, discussions, demonstrations and lectures also has a moderate level of use based on students' perceptions. The findings of this study are also almost equivalent to the findings of teaching methods that students are interested in, this includes methods of games, storytelling, questions and answers and case studies are at a moderate level of interest among students. While teaching methods such as games, tutorials, face-to-face and online combined teaching, websites, case studies, seminars, and research show a low level of use based on the findings of the study from the perception of students and teaching staff. However, the findings on the level of student interest are only in the teaching methods of tutorials, seminars and research which are at a low level. Students are less interested in seminar and research methods is likely due to the lack of exposure to these methods from the teaching staff. Based on the findings of the study of the level of use of teaching methods among teaching staff, it was found that seminar and research methods were at a low level.

Overall, based on the findings of this study, there is a significant difference between the teaching methods practiced by the teaching staff and the teaching methods that students are interested in in the field of Electronic Technology, especially for the use of technology in teaching and learning. Although teachers practice various teaching methods in their PdP, the teaching methods are still incomplete without the use of technology. This is because teaching and learning in the TVET program cannot be limited to a traditional classroom atmosphere, especially in the teaching of electricity and electronics, but must adopt the dynamism of technology that can be accepted to be productive in the teaching process through the use of ICT (Chukwuedo & Omofonmwan, 2013). In fact, according to Bartle (2015), the process of imparting knowledge through teaching and learning activities will be more easily accepted by students if supported by appropriate new technology. Hasselbring and Glaser (2000) also stated the same point where the use of various new technology applications will be able to expand the learning environment outside the classroom and allow students to explore more

deeply about the information being studied. Therefore, Electronic Technology teachers need to immediately improve their skills in the use of technology in order to keep up with the current flow in 21st century education and be able to provide an interesting teaching effect to students.

As the findings of this study show the high level of use of teaching methods in PdP PPPE Courses are more teacher-centered, it is suggested that teachers especially in the field of electronic technology change their teaching methods towards 21st century learning (PAK21). This is because the findings of the study on student interest show that ICT-based learning methods attract more student interest in PdP. In order to realize this proposal, the Technical and Vocational Training Education Division (BPLTV) in collaboration with the Malaysian Ministry of Education (KPM) needs to play an important role by providing or providing courses, training or workshops on PAK21 pedagogy to teaching staff as well as providing a complete ICT infrastructure in each College Vocational, Ministry of Education Malaysia. However, there are obstacles that will be faced by these two parties, namely in providing ICT infrastructure, especially internet facilities in every Vocational College throughout Malaysia. However, this obstacle can be overcome if more computer labs are created in the Vocational College and provide a special room that allows students to access the internet easily for learning purposes. In addition, every Vocational College administrator also needs to play a role in this. For example obtaining funds from various agencies to provide ICT infrastructure facilities for the convenience of students and teaching staff. Since, all business nowadays is heavily dependent on ICT. In fact, teaching staff also need to have an attitude of wanting to learn and have their own initiative to learn more about teaching methods that use ICT without having to wait for instructions from superiors.

Conclusions from this study so that teachers can implement teaching and learning by using more effective teaching methods. This study can also give awareness to the teaching staff on the need for technology use skills in teaching and learning, because the findings of the study still show that the teaching staff of Electronic Technology at Pengkalan Chepa Vocational College practice teacher-centred teaching methods. However, the findings of the study on the level of student interest found that students are more interested in

teaching methods that have the concept of using ICT-based technology. Therefore, PAK21 pedagogical courses and workshops as well as providing complete ICT infrastructure facilities are two things that can be seen to help improve the teaching methods of Vocational College instructors, especially in the field of Electronic Technology. In addition, future studies that focus on other areas of skills are expected to increase the number of studies on teaching methods, and further diversify the findings for reference by researchers in the future.

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