

Application of Direct Instruction Learning Model to Improve Learning Outcomes of Electrical Power Installation

Johanis Renjaan¹, Kristianto Sagat², Micartur Atnangar^{3*}, and Harricoon Angmalisang⁴

^{1,2} SMK Siwa Lima St Yosep Langgur, Maluku Provinve

^{3,4} Electrical Engineering Education, Faculty of Engineering, Manado State University

*Corresponding author, e-mail: atnangarmcarthur@gmail.com¹

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Abstract– This research is classroom action research that aims to analyze the application of the direct instruction learning model to improve the learning outcomes of Electrical Power Installation students of class XI SMK Siwa Lima St Yosep Langgur. This research was carried out in two cycles: planning, implementation, observation, and reflection stages. Data collection was done using tests and observations. Based on the research data analysis, the average value of students in the first cycle was 71.31, with a completeness percentage of 47.36%. In the second cycle, the students' average score was 83.15, with a completeness percentage of 84.21%. From the results of this study, the conclusion that can be drawn is that the application of the direct instruction learning model can improve the learning outcomes of Electrical Power Installation students of class XI SMK Siwa Lima St Yosep Langgur.

Keywords: learning outcomes, direct instruction learning model

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I. INTRODUCTION

Education in the modern era is ideally able to accommodate the dynamics of community development. Education is not only the process of preparing students to live in society, but education is also part of the life process of the students themselves. Vocational education is designed to equip students with skills, namely mastering standard abilities or so-called competencies. The purpose of education implies the realization of a human being whose character formulation is comprehensive both from the cognitive, affective, psychomotor, and intellectual and spiritual aspects. It is necessary to implement a tiered and continuous learning process to achieve this goal.

Gradual and continuous learning will lead to an effective learning process. The effectiveness of learning can be increased by creating student learning desires. Students' desire to learn can arise because of a deep interest in an object, may be caused by the need for a certain knowledge or skill, or can grow from encouragement or motivation from other people (Suprijanto, 2009).

In the world of education, the teacher is an educator, mentor, trainer, and curriculum developer who can create conducive learning conditions and atmosphere, namely a fun, interesting learning atmosphere that gives a sense of security and provides

space for students to think actively, be creative, and be innovative in exploring. Furthermore, elaborate on its capabilities (Bungangu et al., 2022).

The teaching and learning process in Vocational High Schools (SMK) aims to guide and produce skilled and superior students according to their fields of expertise and ready to enter the world of work. However, until now, there are still many problems that need to be answered, including low student learning outcomes, lack of interest and motivation of students to learn, and lack of learning resources/media and learning models needed (Hussey & Smith, 2008).

Thus the implementation of the learning process has not been carried out effectively and efficiently, so the learning outcomes achieved by students are still far from what is expected. This is because of the use of learning methods that are not appropriate, so the learning process is less effective; as a result, students experience boredom and tend to be passive when teaching and learning activities take place, which in turn can affect student learning outcomes (Mokalu et al., 2022).

The teaching and learning process in Vocational High Schools (SMK) aims to guide and produce skilled and superior students according to their fields of expertise and ready to enter the world of work. However, until now, there are still many problems that need to be answered including low

student learning outcomes, lack of interest and motivation of students to learn, lack of learning resources/ media, and required learning models (Putra et al., 2021). The rapid development of science and technology demands quality human resources in various fields, not least in education in Vocational High Schools (SMK). In general, Vocational High School is one of the educational institutions responsible for creating student outputs so that they have skills and expertise in certain fields. To create vocational outputs with skills and expertise in their fields, it is necessary to have a solid education. In this case, the role of educators is very influential in the development of students.

In the learning process, especially in the subject of Electrical Power Installation, the same thing happened. So it would be better if the teacher used a varied learning model that was deemed able to increase students' enthusiasm for participating in the teaching and learning process. With cooperative learning as much as possible, student participation in acquiring knowledge is necessary. The teaching method to be applied must pay attention to the target or subject of the action actor. The subjects of this research are students of SMK (Vocational High School) who are included in the category of teenagers. Students in the youth category tend to be independent, wanting everything to be free (Arikunto, 2019).

The low learning outcomes of these students are their lack of attention in the teaching and learning process because students still do not understand learning materials that are difficult to understand (Sermatan et al., 2021). The learning activities used by the lecture method are not appropriate for the material. At the same time, teaching methods are ways to achieve teaching goals. The achievement of these goals can be seen in the behavior change. For that, we need the right method in learning activities; to change the atmosphere of learning activities from passive students to more active, a teacher must create a spirit of individual learning because each child has differences in experience, abilities, and personal characteristics. With the spirit of learning, it is hoped that freedom and habits can arise in students to develop their thinking skills with full initiative and be creative in their work.

To overcome these problems, the teacher must be wise in determining teaching models that can increase student activity so that students are more active, effective, and independent in learning, and create classroom conditions with different and fun teaching models so that the teaching and learning process can take place following the goals set expected. One of the teaching models that can be used to overcome these problems is Direct Learning (Jacobs & Michaels, 2007).

II. METHOD

This research was carried out on class XI students of SMK Siwa Lima St. Yosep Langgur, SMK Siwa Lima St. Yosep Langgur, having his address at Jalan Jendral Sudirman SK-II/47, Langgur Village, Kab. Southeast Maluku, Maluku Province. This research was conducted in the even semester of the 2019/2020 academic year. The research was carried out from January to March 2020; the research time was adjusted to the time of implementation in the field.

This research uses Classroom Action Research (CAR). What is meant by the term CAR is a form of self-reflection carried out by the participants (teachers, students, or principals) in social situations (including education) to improve rationality and truth (Newsome et al., 1988). For this reason, with this Classroom Action Research, the researcher intends to find out whether using the Direct Instruction Learning Model (Direct Learning) so that student learning outcomes will increase (Snowman et al., 2008). The stages in the research process are shown in Figure 1.

A. Planning Stage

This stage includes activities to prepare learning tools and stimulate learning scenarios.

B. Action Implementation Stage

This action is at the implementation stage, as stated in the lesson plan.

C. Observation Phase

At this stage, the teacher makes observations or observations of the actions taken. During the learning process, the researcher observed it to be taken into consideration at the next stage.

D. Reflection Stage

Reflection is when the teacher concludes all activities that have been carried out in the learning process by explaining the success or failure that occurred through observation sheets or student activity sheets and student test results. The class action process activities have been completed if it has met expectations or according to plan. If the teacher (implementer) does not feel it is enough, they can proceed to the second cycle; the methods and stages are the same as the previous cycle. An important aspect of the Reflection activity is to evaluate the success and achievement of the objectives of the action (Tildjuir et al., 2021).

The research subjects were students of class XI SMK Siwa Lima St Yosep Langgur in the even semester of the 2019/2020 academic year in 1 class totaling 19 students consisting of 19 boys. The type

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of data collected is nominal data, namely regarding applying the Direct Instruction Learning model and the value of learning outcomes for class XI students of SMK Siwa Lima St Yosep Langgur for Electrical Power Installation subjects.

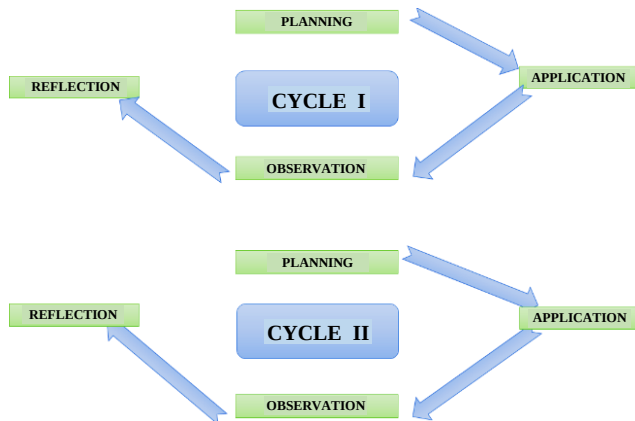


Figure 1. Classroom Action Research Design

This study's data collection techniques are intended to obtain relevant, valid, and reliable data. To obtain this data is collected through the following methods/techniques:

1. Test

The test was used to obtain student learning outcomes through pretest and posttest about student knowledge in learning Electric Power Installation.

2. Observation

Observation is used to observe the implementation and development of learning. Observation techniques were carried out to obtain data about student activity, student responses, and obstacles in the teaching and learning process. The implementation is conducted by conducting direct observations during teaching and learning activities using the Direct Instruction learning model in Electrical Power Installation subjects at XI SMK Siwa Lima St Yosep Langgur.

The data collection tools used by researchers in Classroom Action Research are as follows:

1. Tests/Exams : As a data, collection instrument to measure the knowledge and activity of students through questions in the form of questions and exercises.
2. Observation : Use the Observation sheet to measure students' learning motivation in the teaching and learning process of Electrical Power Installation.

The data collected in each activity from the CAR cycle implementation were analyzed descriptively using the percentage technique to see

trends that occur in learning activities. Before the research data was analyzed, quantitative data tabulation was carried out based on the results of the actions carried out in each cycle. The actions in each cycle were compared with the results of the initial test to determine the percentage increase in learning outcomes in the Electrical Power Installation lesson in class XI SMK Siwa Lima St Yosep Langgur using the Direct Instruction learning model.

To facilitate the analysis of data obtained by students about learning outcomes through pretest and posttest, in this classroom action research, the researcher uses Formula 1.

$$P = \frac{F}{N} \times 100\% \quad (1)$$

Where it is known:

P = Learning outcomes

F = Frequency of Correct Student Answers

N = Number of Sample Respondents

III. RESULTS

The results of this classroom action research can be described in the learning cycle stages carried out in the classroom. This research was carried out in two cycles consisting of two meetings per cycle.

A. Cycle I

Using the Direct Instruction method in the first cycle, the implementation of learning includes planning for the first cycle, process, implementation, and reflection.

1. Planning

- ✓ Researchers conducted curriculum analysis to determine the basic competency standards to be achieved and given to students using the Direct Instruction learning method.
- ✓ Develop a lesson plan (RPP) cycle I for two meetings.
- ✓ Prepare learning media in the form of Circuit Boards and worksheets (LKS).
- ✓ Prepare student observation sheets and teacher observation sheets in cycle I.
- ✓ Develop evaluation questions and answer keys for the cycle I.

2. Application

- ✓ Implement the teaching and learning process following the lesson plan (RPP) made.
- ✓ Provide worksheets (LKS) for each student to work on.
- ✓ We assess students based on the assessment criteria: students' attention to the subject matter, student activity in the learning process, and students' absorption of the subject matter.
- ✓ We are conducting a cycle I evaluation.

3. Reflection

The learning outcomes between researchers and collaborators in the first cycle stated that the planning was good, but the implementation of learning was considered lacking. This is due to several aspects observed, including:

1. The absorption of some students in the subject matter is still lacking.
2. In learning, some students look less active and less severe.
3. Some groups have not been able to complete the worksheets given on time.

However, the successes that occurred in the first cycle included:

1. Students begin to show interest in the lesson and appear enthusiastic about learning.
2. Creating a relaxed and fun learning atmosphere.

After the researchers saw and analyzed the weaknesses and successes in cycle I, the actions that the researchers took to overcome these weaknesses were as follows:

1. The teacher approaches students and motivates students more so that they can improve their grades.
2. The teacher organizes time better by compiling material and worksheet (LKS) practice questions more concisely and also helps explain to students who do not understand the material. The teacher gives directions to students to pay more attention to the students given by the teacher.
3. The teacher gives recognition and awards to students who can complete assignments properly and correctly.

Researchers conducted tests to evaluate the learning outcomes that have been achieved by students in cycle I, which can be seen in Table 1. If described in the form of percentages, the list of Student Learning Outcomes in Cycle I can be seen in the conditions of complete learning as in Table 2.

Table 1. Student Learning Outcomes in Cycle I

No	Students	Grade		Learning Completeness		
		Number of Questions	Correct	Conversion	Complete	Not Complete
1	APJ	20	11	55		✓
2	BP	20	18	90	✓	
3	BF	20	8	40		✓
4	CDI	20	18	90	✓	
5	GA	20	13	65		✓
6	HK	20	15	75	✓	
7	SR	20	14	70		✓
8	HJR	20	14	70		✓
9	RN	20	16	80	✓	
10	RB	20	14	70		✓
11	JK	20	13	65		✓
12	PSO	20	16	80	✓	
13	WM	20	10	50		✓
14	JJO	20	17	85	✓	
15	MF	20	16	80	✓	
16	JDT	20	15	75	✓	
17	KR	20	19	95	✓	
18	KT	20	12	60		✓
19	TFL	20	12	60		✓
Total				1,355	9	10
Average				71.31		

Table 2. Percentage of Learning Completeness of Class XI Students of SMK Siwa Lima St. Joseph Langgur in Cycle I

No	Student Learning Outcomes	Total	Percentage
1.	Complete	9 students	47.36%
2	Not Complete	10 students	52.64%
Total		19 students	100.00%

For more details can be seen in Figure 2.

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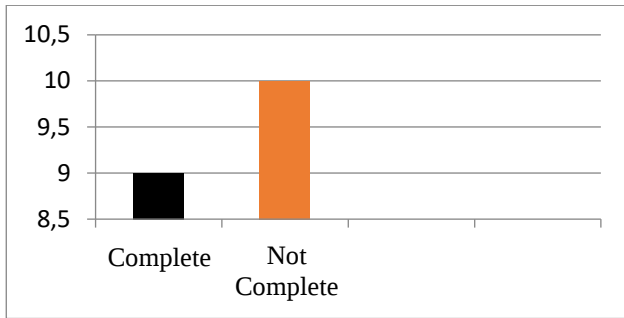


Figure 2. Bar Diagram of Cycle I Learning Outcomes

Electrical Power Installation Subject Class XI SMK Siwa Lima St Yosep Langgur in Cycle I. Based on the table and diagram above, it is known that the average score of students reaches 71.31, with a learning mastery percentage of 47.36%. However, student learning outcomes have not been as expected because the percentage of student learning mastery has not reached the expected KKM standard, which is at least 80% must reach KKM 75. Meanwhile, the percentage of students who complete or reach KKM only reaches 47.36%. Therefore, the next cycle is needed to improve student learning outcomes.

B. Cycle II

1. Planning

The Direct Instruction learning method will be applied more optimally in this second cycle. The learning process is more emphasized by the teacher actively in learning activities. The main thing that is expected is how a teacher can become a good center and can be relied on by students to achieve mastery of learning in improve learning outcomes. Researchers pay attention to and improve the shortcomings that exist in cycle I. planning in cycle II, namely:

- ✓ Develop a lesson plan (RPP) cycle II for two meetings.
- ✓ Prepare learning media in the form of Circuit Boards and LKS.
- ✓ Make student and teacher observation sheets to monitor learning progress in cycle II.
- ✓ Prepare evaluation questions for the second cycle test and answer keys.

2. Application

In the cycle II implementation, the teacher appropriately and correctly explains the existing subject matter, organize learning time well, and shortens the material and worksheets that students will do. The teacher directs students to achieve the existing learning objectives following the expected success standards. The teacher approaches all

students and motivates students more, especially students who have not yet completed their studies.

3. Reflection

The reflection of the action in cycle II shows that the learning process has run quite smoothly. Implementing learning by applying the Direct Instruction method gives better results (Sundawan, M, 2016). The students seemed more active in this second cycle than in the first cycle. The students were able to do the assignments given by the teacher. Each student has also completed the LKS correctly and on time. When the teacher gives individual questions, almost all students can answer the questions correctly.

The researcher concluded that learning was following the planned scenario using the Direct Instruction learning method, making the learning process more active and engaging with a relaxed and fun learning atmosphere.

Student results were obtained by giving the second cycle evaluation questions, as shown in Table 3.

Table 3. Learning Outcomes Cycle II

No	Student's name	Grade			Learning Completeness	
		Number of Questions	Correct	Conversion	Complete	Not Complete
1	APJ	20	11	70		✓
2	BP	20	18	100	✓	
3	BF	20	8	60		✓
4	CDI	20	18	100	✓	
5	GA	20	13	80	✓	
6	HK	20	15	80	✓	
7	SR	20	14	90	✓	
8	HJR	20	14	85	✓	
9	RN	20	16	85	✓	
10	RB	20	14	80	✓	
11	JK	20	13	75	✓	
12	PSO	20	16	80	✓	
13	WM	20	10	60		✓
14	JJO	20	17	100	✓	
15	MF	20	16	90	✓	
16	JDT	20	15	90	✓	
17	KR	20	19	100	✓	
18	KT	20	12	75	✓	
19	TFL	20	12	80	✓	
Total				1,580	16	3
Average				83.15		

Furthermore, if it is described in a percentage table, the condition of student learning completeness can be seen in Table 4.

Table 4. Percentage of Learning Completeness of Class XI Students of SMK Siwa Lima St. Joseph Langgur in Cycle II

No	Student Learning Outcomes	Total	Percentage
1.	Complete	16 students	84.22%
2	Not Complete	3 students	15.78%
	Total	19 students	100.00%

From the table on the percentage of students' learning completeness above, it can be seen that there was a significant increase in learning outcomes, with the number of students who completed reaching 16 people (84.22%) and the number of students who had not finished as many as three people (15.78%). For more details, the increase in student learning outcomes can be seen in Figure 3.

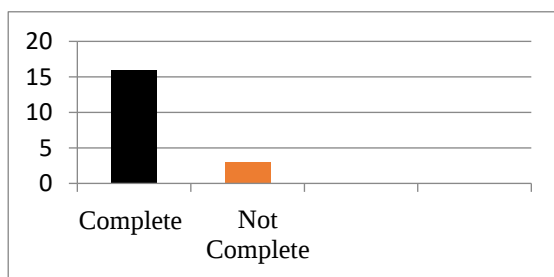


Figure 3. Bar Diagram of Cycle II Learning Outcomes

Electrical Power Installation Subject Class XI SMK Siwa Lima St. Joseph Langgur In Cycle II. Based on Table 3 and Figure 3, student learning outcomes increased significantly by obtaining an average score of 83.15 with a learning completeness percentage of 84.22%. This has shown that the learning outcomes have met the learning completeness standard, at least 80%. Thus, because the learning outcomes have reached the expected standard of success, this research can have been successful.

IV. DISCUSSION

Classroom action research on improving student learning outcomes of class XI SMK Siwa Lima St Yosep Langgur in Electrical Power Installation by establishing the Direct Instruction learning method is carried out in two cycles. Each cycle consisted of two meetings carried out according to the research procedure—starting from the stages of

planning, implementation, observation, and reflection. Before conducting the first cycle, the researcher conducted an initial survey to find out the problems and conditions in the field. Based on this initial survey, the researchers found that the quality of the process and learning outcomes of Electrical Power Installation were still relatively low. Student learning outcomes in the initial conditions before the action is taken through the pre-test..

To improve student learning outcomes, the researchers made improvements to teaching methods using the Direct Instruction learning method. With the implementation of the Direct Instruction learning method, the overall research results show an increase. In the first cycle of research, the average score of students was 71.31, with a learning completeness percentage of 47.36%. Nevertheless, learning outcomes have not been declared complete or successful because they have not achieved the expected completeness, namely, at least 80% of students who meet the minimum completeness criteria (KKM) 75 individually.

The following research was continued to the second cycle by correcting the deficiencies in the first cycle based on the reflections made in the first cycle. As the teaching teacher, the researcher tried to divide the time as efficiently as possible in learning and help students who did not understand the material. Not to forget, the researcher, as the teacher, approached the students to monitor each student's learning progress and motivate students more. In the second learning cycle, student learning outcomes have increased and show better results than in the first learning cycle (Singer & Moscovici, 2008).

Learning outcomes in the second cycle obtained an average value of 83.15 students, with the percentage of learning completeness reaching 84.22%. Furthermore, it has increased from the average value of students in the first cycle, 71.31. This increase occurred due to students' understanding of the subject matter (Tedick, 1990). In the first cycle, some students did not correctly understand the material being taught and were not active enough in the learning process. This increase in learning outcomes is also because teachers are more competent in their duties and have enthusiasm and motivation to improve student learning outcomes (Jennings & Greenberg, 2009). Thus, learning in cycle II can be complete because it has reached a minimum percentage of completeness of 80%. As many as 16 students have reached KKM 75 with a completeness percentage of 84.22%.

For more details, the improvement of learning outcomes in classroom action research is summarized in Figure 4.

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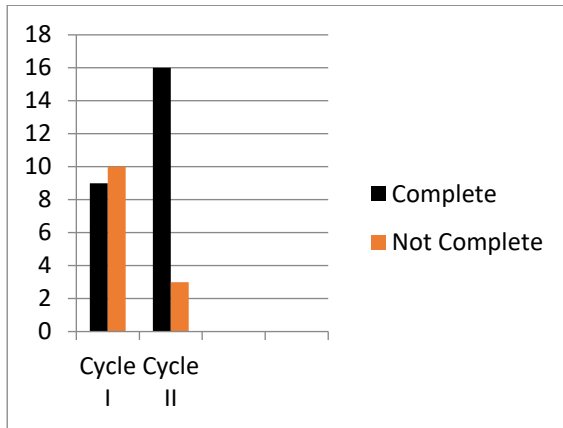


Figure 4. Bar Diagram of Learning Outcomes Cycle I and Cycle II

V. CONCLUSION

Based on the data from this classroom action research, it can be concluded that: applying the Direct Instruction Learning method to the subject of Electrical Power Installation can improve student learning outcomes. The increase in student learning outcomes is as follows: In the first cycle, the average value of students is 71.31, with a completeness percentage of 47.36%. Furthermore, in the second cycle, the average value rose to 83.15 with a completeness percentage of 84.22%.

Based on the classroom action research conducted, the researcher wants to provide suggestions that might be input so that the application of the Direct Instruction Learning method can run optimally and can improve student learning outcomes, as follows: (i) must choose a teacher who is competent and can be responsible for guiding students. Students, in order to achieve the expected completeness of learning; and (ii) teachers need to carefully prepare teaching materials and learning media that support the learning process.

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