Indonesian Journal of Technical and Vocational Education Training
E-ISSN : 3063-0584

Indonesian Journal of Technical and Vocational Education Training
Volume 1 (2) 27 – 35 December 2024
ISSN: 3063-0584
The article is published with Open Access at: https://journal.mgedukasia.or.id/index.php/ijtvet

The Influence of Explicit Instructional Learning Model on Learning Outcomes of Basic Subjects of DPIB Design of Student Information Modeling and Buildings of State Vocational High School 1 Percut Sei Tuan

Hafni Aprilia Sihite ✉, Universitas Negeri Medan, Indonesia
Nono Sebayang, Universitas Negeri Medan, Indonesia
Zhili Izzadati, Universitas Negeri Medan, Indonesia
Liana Atika, Universitas Negeri Medan, Indonesia
Cut Meuthia Rani, Universitas Negeri Medan, Indonesia

✉ *hafnis04@mhs.unimed.ac.id*

Abstract: This research aims to determine the influence of the Explicit Instruction learning model on learning outcomes of the basics of DPIB students in class x Design Modeling and Building Information in state vocational school 1 Percut Sei Tuan. This research method is a True Experimental Design with a Pretest-posttest Control Group Design. In this design, there are two groups selected at random, then given a pretest to find out whether there are differences between the experimental group and the control group in the initial situation, then a comparison of the posttest learning results of the two sample classes will be seen. Based on the research results, the use of the Explicit Instruction type cooperative learning model has a better impact on learning outcomes in the basics of DPIB cognitive in the material drawing plane shapes. This is proven by research results which show that the average cognitive and skills domain learning outcomes of students taught using the Explicit Instruction type cooperative learning model is 81.07 higher than the average learning outcomes of students treated with the Discovery Learning model, which is 67.37. This is also reflected in the research data, the t test results show at value of 1.88 compared to the t table value of 1.672 (t value > t table). Based on these differences, both theoretically and proven by statistical analysis carried out in this research, it can be concluded that the Explicit Instruction type cooperative learning model has a significantly different influence on student learning outcomes in the basics of DPIB cognitive in the drawing material. Form of field for class x students of the DPIB skills program at SMK Negeri 1 Percut Sei Tuan.

Keywords: Basic fundamental of DPIB, explicit instruction, technical drawing.

Received September 17, 2024; **Accepted** December 9, 2024; **Published** December 31, 2024

Citation: Sihite, H. A., Sebayang, N., Izzadati, Z., Atika, L., & Rani, C. M. (2024). The Influence of Explicit Instructional Learning Model on Learning Outcomes of Basic Subjects of DPIB Design of Student Information Modeling and Buildings of State Vocational High School 1 Percut Sei Tuan. *Indonesian Journal of Technical and Vocational Education Training*. 1(2). 27–35.

INTRODUCTION

According to Government Regulation of the Republic of Indonesia No. 29 of 1990, Chapter III Article 4 Paragraph 1, SMK is a type of secondary education that prepares students to enter the workforce with various expertise programs according to market needs. Education in SMK prioritizes the development of students' abilities in certain jobs (Chapter I Article 1 Paragraph 3) and prepares students for the world of work and develops professional attitudes (Chapter II Article 3 Paragraph 2).

Although the learning facilities are adequate, the Discovery Learning learning model used by teachers is less effective because students have difficulty understanding the steps of technical drawing without direct guidance from the teacher. Observations show that the lack of active interaction between teachers and students affects learning outcomes. The researcher proposes a more structured Explicit Instruction learning model that involves direct guidance from teachers, which is expected to improve student learning outcomes.

This study aims to see the different effects of learning outcomes in Technical Drawing taught with the Explicit Instruction learning model compared to the Discovery Learning learning model on class X students of Building Modeling and Information Design at SMK Negeri 1 Percut Sei Tuan in the even semester of 2023/2024. Explicit Instruction is a teaching method in which teachers directly transform the subject matter to students. By using the Explicit Instruction model, students will be interested when the teacher first delivers the subject matter, which can help increase their level of engagement in the classroom. The Explicit Instruction learning model is specifically designed to support students' learning process related to well-structured procedural knowledge, which can be taught gradually. The direct approach in the Explicit Instruction learning model aims for students to be able to understand and master knowledge thoroughly and actively during the learning process.

The Explicit Instruction learning model provides step-by-step guidance specifically designed to help students understand procedural and declarative knowledge. The advantages of the Explicit Instruction model according to Huda (2013: 187) include, namely (Setyorini 2019) 1) Teachers can control the content of the material and the sequence of information received by students so that teachers can maintain focus on what students must achieve; 2) Can be applied effectively in large and small classes; 3) Can be used to emphasize important points or difficulties that students may face so that these things can be expressed; 4) Can be an effective way to teach highly structured factual information and knowledge; 5) Is the most effective way to teach explicit concepts and skills to low-achieving students; 6) Can be a way to convey a lot of information in a relatively short time and can be accessed equally by all students; 7) Allows teachers to convey personal interest in the subject (through enthusiastic presentations) which can stimulate student interest and enthusiasm (Satriani 2020).

The disadvantages of the Explicit Instruction model according to Huda (2013: 188) include, namely 1) Relying too much on students' ability to assimilate information through listening, observing, and taking notes, while not all students have the skills in these things, so teachers still have to teach them to students; 2) Difficulty in overcoming differences in ability, prior knowledge, level of learning and understanding, learning style, or student interests; 3) Difficulty for students to develop good social and interpersonal skills; 4) The success of this strategy depends solely on the assessment and enthusiasm of the teacher in the classroom (Satriani 2020).

The stages or syntax of the Explicit Instruction model according to Huda, Miftahul, (2013: 187-189) are as follows: (1) Orientation, (2) Presentation, (3) Structured practice, (4) Guided practice and (5) Independent practice.

Table 1. *Cooperative Learning Steps of Explicit Instruction Type*

Stages	The Role of Teachers

Phase 1 (Orientation) Conveying the objectives and preparing students	1. The teacher sets learning targets. 2. Prepares students to be ready to learn. 3. Describes the material using language that can be understood by students, in a structured, clear, and fluent manner. At the beginning of a learning session, the teacher explains the specific learning objectives, provides information about the learning context, explains why the learning is relevant, and prepares students physically and mentally to begin learning..
Phase 2 (Presentation) Demonstrating knowledge and skills	1. The teacher provides an explanation and examples of the use of tools or materials. 2. Describes the steps in stages and demonstrates them. 3. Develops skills according to the instructions in the picture book. The teacher serves as an example by demonstrating knowledge or skills correctly. Information is presented sequentially and systematically according to the correct structure.
Phase 3 (Structured Training) Guiding the training	1. The teacher gives instructions on the next steps that students must take in making something using the picture book guide. 2. The teacher and students work together to prepare the tools/materials needed using the picture book as a guide. The teacher makes plans and provides initial instructions and guidance to students.
Phase 4 (Guided Practice) Checking understanding and providing feedback	1. Each student is given the opportunity by the teacher to create an object that has been determined and described sequentially in a picture book. 2. While students are doing the activity, the teacher checks each group. Teachers evaluate whether students have successfully completed tasks, provide opportunities to practice concepts and skills, and assess whether or not they can provide positive feedback.
Phase 5 (Independent Practice) Provides opportunities for further training and application	1. Instructions are given to students regarding the actions to be taken next. 2. All students are immediately evaluated to assess their level of understanding independently. Teachers provide opportunities for additional practice, particularly focusing on applying concepts to more complex situations or applications in everyday life.

METHODS

This research method is True Experimental Design. In this study, the design or plan used is Control Group Pretest-Postest. Where this design is divided into two groups, then given a Pretest to determine the initial condition whether there is a difference between the experimental group and the control group. Furthermore, post-test questions will be given

to determine the increase in students' Technical Drawing learning outcomes after being treated with the Explicit Instruction learning model. After the instrument test was carried out on class XI DPIB-1, out of 30 questions, there were 24 valid questions and 6 invalid questions. In the distribution of trial data for the test difficulty index on the subject of DPIB Basics of Technical Drawing elements, there were 8 questions in the easy category, 13 questions in the moderate category and 3 questions in the difficult category.

Based on the distribution of test discrimination power data from the results of the calculation of the question discrimination power, 10 questions were obtained in the good category, 6 questions in the sufficient category, and 8 questions in the very good category. According to the distribution of test reliability trial data, based on the calculation of the correlation index of the test reliability of the DPIB Basics of Engineering Drawing elements is 0.872, which is included in the very high category. In order for the research data obtained to be used in statistical analysis in hypothesis testing that applies the product moment correlation formula, it is necessary to meet the analysis requirements first.

The analysis requirements test is carried out to ensure that the research data has a normal distribution and homogeneity. The normality test for research data is carried out using the Lilliefors formula. The test criteria are if the calculated F is smaller than the F table at a significance level of 5%, then the research data is considered homogeneous. After the data is tested for normality, the next step is to test its homogeneity. The homogeneity test is carried out to determine the variation in the population, namely to determine whether the research data is homogeneous or not, using the F test formula.

RESULTS

Table 2. *Data Normality Test Results*

Class	Data	N	Lo	Ltabel	Conclusion
Model EI	*Pre-test*	30	0,166	0,161	Normal
	Post-test		0,231	0,161	Normal
Model DL	*Pre-test*	30	0,238	0,161	Normal
	Post-test		0,167	0,161	Normal

The normality test of research data was tested using the Liliefors test, in this case the null hypothesis was tested which stated that the sample came from a normally distributed population. After that, it was continued with the homogeneity test.

Table 3. *Data Homogeneity Test Results*

Data Variance	F_{count}	F_{table}	Conclusion
Pre-test	1,0890	3,327	**Homogen**
Posttest	0,2794	3,327	**Homogen**

Based on the research that has been conducted at SMK Negeri 1 Percut Sei Tuan DPIB Expertise Program class X DPIB 1, the results of student learning were obtained from the pre-test activities before being given treatment and post-test after being given treatment, namely with the Explicit Instruction model. Data obtained from 30 students who took the pre-test obtained the lowest score of 21, the highest score of 92, the average

pre-test result of 53.07 and the standard deviation of 16.463. To see the student's score, the interval class was used, the number of students who had a learning outcome score, and the relative frequency, namely the percentage of the learning outcome score as presented in the table below,

Table 4. *Pre-Test Frequency Distribution Data in Experimental Class*

No	Interval		Frequency	Percentage
1	21	29	2	6,66%
2	30	38	3	10%
3	39	47	7	23,33%
4	48	56	4	13,33%
5	57	65	1	3,33%
6	66	74	3	10%
7	75	83	9	30%
8	84	92	1	3,33%
Total			30	100%

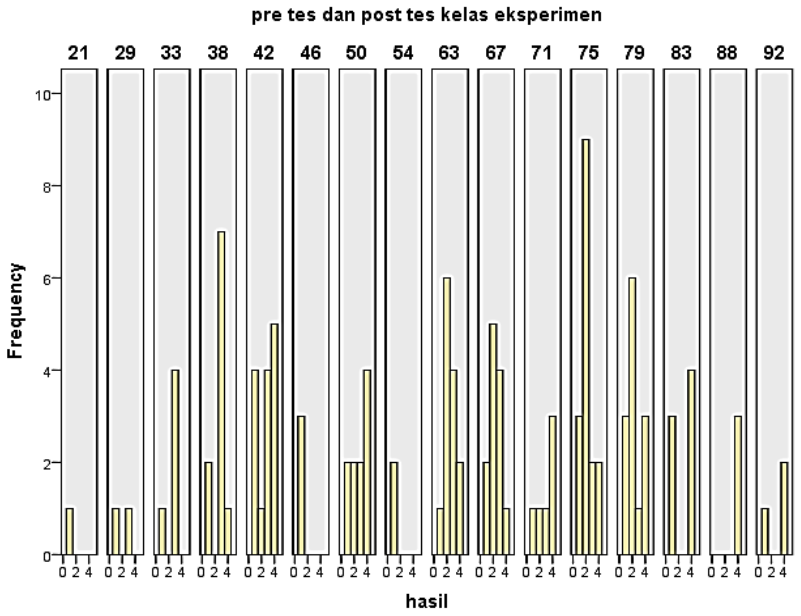

Figure 1. *Histogram of Pre-Test and Post-Test Data for Experimental Class*

Furthermore, the data obtained from 30 students who took the post-test obtained the lowest score of 42, the highest score of 79, the average post-test result of 69.17 and the standard deviation of 9.494. To see the student's score, the interval class was used, the number of students who had a learning outcome score, and the relative frequency, namely the percentage of the learning outcome score as presented in the table below,

Table 5. *Post-Test Frequency Distribution Data in Experimental Class*

No	Interval		Frequency	Percentage
1	42	50	3	10%
2	51	59	0	0%
3	60	68	11	36,66%

4	69	77	10	33,33%
5	78	86	6	20%
	Jumlah		30	100%

The frequency distribution of post-test data on the learning outcomes of the Basics of DPIB Engineering Drawing elements in the experimental class can be described based on the interval classes that have been determined in the image.

DISCUSSION

Based on the calculation results with the F test on the pre-test and post-test values of the DPIB Basics of Engineering Drawing elements subject, the F value in the pre-test was 1.0890 and in the post-test 0.2794. This value is compared with the Ftable value, with dk1 = 30 and dk2 = 30, the Ftable value is 3.327. From the calculation results, it is obtained that the Fcount value is smaller than the Ftable value ($F_{count} < F_{table}$), namely in the pre-test 1.0890 <3.327 and in the post-test 0.2794 <3.327. This shows that both data, both pre-test and post-test, have homogeneous data variance. This means that the two classes used as samples in this study can represent other classes.

After analyzing the data requirements test in the form of normality tests and homogeneity tests, it was concluded that both groups (experimental and control) were normally distributed and homogeneous. Based on these results, data analysis can be continued using the t-test. In summary, the t-test conducted on the post-test data from both classes obtained the following results:

$$t = \frac{69{,}17 - 67{,}37}{1 \quad (1) \quad \sqrt{\quad + \frac{1}{30}}} = \frac{1{,}8}{0{,}957}$$

$$t = 1{,}88 \qquad (2)$$

At a significant level = 0.05 and df = n1 + n-2 = 30 + 30-2 = 58 through the ttable distribution table, which is 1.672, for complete details can be seen in the appendix. Thus, tcount = 1.88 and ttable 1.672 ($t_{count} > t_{table}$) are obtained, so Ha is accepted and H_0 is rejected. It can be concluded that the use of the Explicit Instruction learning model has a superior influence on the learning outcomes of DPIB Basics in Engineering Drawing elements for class X DPIB students at SMK Negeri 1 Percut Sei Tuan in the Even Semester of the 2023/2024 Academic Year.

The Explicit Instructional learning model is an approach that emphasizes the direct and systematic delivery of material by the teacher. This model is very suitable for application in Vocational High Schools (SMK) because it helps students understand practical skills and theory in a more structured way. With this method, teachers provide clear instructions, so that students can more easily understand the concepts taught. One of the advantages of this learning model is its ability to present material in stages, from introducing concepts to applying them in real situations. In vocational schools, students need a deep understanding of theory before practicing technical skills. With explicit instructions, students not only know what to do but also understand why and how a process is carried out. In the Explicit Instructional learning model, teachers have a central role in directing the learning process. Teachers provide concrete and direct examples, which help students connect theory with practice. This is very important for vocational high school students who need clear guidance in mastering vocational skills that they will use in the world of work.

The learning structure in the Explicit Instructional model allows students to build their understanding systematically. Teachers usually start by explaining the learning objectives, followed by a demonstration of the steps to complete the task, and providing guidance until students can do it independently. This approach helps reduce errors in understanding concepts and increases students' confidence in applying the knowledge they have learned. This model also allows teachers to provide quick and specific feedback. Thus, students can immediately correct their mistakes before they become bad habits. In vocational schools, where practical skills are very dominant, quick and precise feedback is crucial to ensure students master the correct techniques. The application of the Explicit Instructional model in vocational schools has been proven to increase student engagement in learning. Because instructions are given clearly and directly, students find it easier to understand the steps they need to take. This reduces confusion and increases learning effectiveness, especially in subjects that require high motor and technical skills. In addition, this model also helps students develop critical thinking and problem-solving skills. After receiving clear instructions, students are given the opportunity to practice what they have learned and face challenges that encourage them to think more deeply. This helps improve their analytical skills in solving technical problems that are often found in the workplace.

Another advantage of this learning model is its ability to improve students' memory of the material being taught. Because instructions are given explicitly and often repeated in various contexts, students find it easier to remember the concepts learned. This is especially helpful in vocational fields, where repetition and practice are essential to building solid skills. In its implementation, the Explicit Instructional model also provides students with the opportunity to learn gradually according to their abilities. Teachers can adjust the level of difficulty of the material based on students' understanding, so that no one is left behind in the learning process. This allows each student to develop at their own pace without feeling pressured. In addition to helping students who have learning difficulties, this model is also beneficial for students who quickly grasp the material. With a systematic structure, more advanced students can be given additional challenges that encourage them to explore the topic being studied more deeply. This makes learning more inclusive and provides equal opportunities for all students to develop.

In the vocational high school environment, the implementation of the Explicit Instructional model can help improve students' discipline and responsibility in learning. Because this model requires full attention from students, they are more accustomed to following instructions well and practicing discipline in completing tasks. This is an important skill that is very much needed in the world of work. In addition, this model also helps reduce students' stress and anxiety levels in learning. With clear instructions, students do not need to feel confused or worried about the steps they must take. They are more confident in completing tasks because they have received adequate guidance from teachers. In the long term, the implementation of the Explicit Instructional learning model in vocational high schools can improve students' work readiness. Because they are accustomed to structured learning based on clear instructions, they will be more easily able to adapt to the demands of work in the industry. This increases their chances of getting a job that suits their skills. In addition to providing benefits for students, this model is also beneficial for teachers. With a systematic approach, teachers can more easily control the learning process and evaluate student progress. They can also be more effective in identifying learning difficulties faced by students and providing appropriate interventions.

However, the implementation of the Explicit Instructional model requires teachers to be prepared to prepare clear and systematic learning materials. Teachers must be able to present instructions that are not only easy to understand but also interesting for students. Therefore, training for teachers in implementing this model is very necessary so that learning outcomes can be optimal. The success of this model also depends heavily on a conducive learning environment. Schools must provide supporting facilities, such as

adequate practice equipment, so that students can apply the knowledge they have learned well. Without adequate support facilities, the effectiveness of this model in improving learning outcomes can be reduced. In addition to teacher and facility factors, student motivation also plays an important role in the success of implementing the Explicit Instructional model. Students who are highly motivated will more easily absorb the material taught and be more active in the learning process. Therefore, this approach should be combined with other strategies that can increase student motivation.

The Explicit Instructional learning model provides many benefits in improving student learning outcomes in vocational schools. With clear, systematic, and practice-based delivery of material, students find it easier to understand concepts and develop the skills needed in the world of work. Although this model is very effective, its implementation must be carried out with careful planning. Teachers must be skilled in developing effective instructions, schools must provide adequate facilities, and students must be highly motivated to learn. With the synergy between these three factors, the Explicit Instructional model can have a significant impact on improving the quality of vocational education.

CONCLUSION

Based on the results of the study, the use of the Explicit Instruction type cooperative learning model has a better influence on the learning outcomes of the Basics of DPIB Engineering Drawing elements in the cognitive domain. This can be seen from the results of the study which show that the average learning outcomes of students in cognitive abilities taught with the Explicit Instruction learning model are 69.17 higher than the average learning outcomes of students who are treated with the Discovery Learning learning model of 67.37. This can also be seen from the data from the results of the study with the t-test obtained a t-count value = 1.88 and t-table = 1.672 ($t_{count} > t_{table}$).

REFERENCES

Aditya, Dodiet. 2014. “Modul Uji Validitas Dan Reliabilitas Instrumen Penelitian.” Modul Statistika 1–12.

Albina, Meyniar, Ardiyan Safi’i, Mhd. Alfat Gunawan, Mas Teguh Wibowo, Nur Alfina Sari Sitepu, and Rizka

Ali, Ismun. 2021. “Pembelajaran Kooperatif Dalam Pengajaran Pendidikan Agama Islam.” Jurnal Mubtadiin 7(1):247–64.

Ardiyanti. 2022. “Model Pembelajaran Di Abad Ke 21.” Warta Dharmawangsa 16(4):939–55. doi: 10.46576/wdw.v16i4.2446.

Arikunto, Suharsimi. 2020. DASAR-DASAR EVALUASI PENDIDIKAN. Edisi 3. edited by R. Damayanti. Jakarta: PT. Bumi Aksara.

Aviliani, Regina, and Nuryadin Eko Raharjo. 2018. “Evaluasi Pelaksanaan Sistem Blok Pada Mata Pelajaran Gambar Teknik Siswa Kelas X Kompetensi Keahlian Dpib Smk Negeri 1 Magelang.” Jurnal Elektronik Mahasiswa Pendidikan Teknik Sipil 6(3):1–8.

Damayanti, Ayu. 2022. “Faktor-Faktor Yang Mempengaruhi Hasil Belajar Peserta Didik Mata Pelajaran Ekonomi Kelas X SMA Negeri 2 Tulang Bawang Tengah.” SNPE FKIP Universitas Muhammadiyah Metro 1(1):99–108.

Elvadola, Connyta, Yulita Dwi Lestari, and Try Indiastuti Kurniasih. 2022. “Penggunaan Model Pembelajaran Discovery Learning Dalam Meningkatan Hasil Belajar Siswa Sekolah Dasar.” Pedagogia: Jurnal Ilmiah Pendidikan Dasar Indonesia 4(1):31–38. doi: 10.52217/pedagogia.v4i1.732.

Hamzah, Mokhamad Fuad, and Setiyo Hartoto. 2016. “Perbandingan Metode Pembelajaran Lansung Dan Metode Pembelajaran Tidak Lansung Terhadap Hasil Belajar Renang Gaya Dada (Studi Pada Siswa Kelas V SDN Leminggir Kabupaten Mojokerto).” Jurnal Pendidikan Olahraga Dan Kesehatan 04(03):611–16.

Hasanah, Zuriatun, and Ahmad Shofiyul Himami. 2021. “Model Pembelajaran Kooperatif Dalam Menumbuhkan Keaktifan Belajar Siswa.” Irsyaduna: Jurnal Studi Kemahasiswaaan 1(1):1–13. doi: 10.54437/irsyaduna.v1i1.236.

Makki, M. Ismail, and Aflahah. 2019. KONSEP DASAR BELAJAR DAN PEMBELAJARAN - Google Books.