

The influence of PjBL Models and Learning Styles on Learning Outcomes

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Abstrak

Kata Kunci:

Model PjBL, Pembelajaran Langsung, Gaya Belajar, Hasil Belajar Tata Busana.

Tujuan penelitian ini adalah menganalisis perbedaan model dan gaya belajar PjBL dan Direct instruction terhadap hasil belajar desain busana. Penelitian kuantitatif ini menggunakan metode eksperimen. Peneliti menggunakan SPSS 25 untuk menghitung uji analisis varians dua arah. Desain penelitian yang digunakan adalah desain faktorial 2x3. Karena penelitian ini dilakukan pada empat kelas yaitu 2 kelas eksperimen dan 2 kelas kontrol. Kelas eksperimen diberi perlakuan dengan Model PjBL sedangkan kelas kontrol diberikan metode pembelajaran Direct instruction. Masing-masing kelas kontrol dan kelas eksperimen dibagi menjadi tiga kelompok, yaitu kelompok audio, visual, dan kinestetik. Teknik analisis data dalam penelitian ini adalah analisis varian dua arah dengan tingkat signifikansi $\alpha = 5\%$. Berdasarkan hasil analisis data terdapat pengaruh yang signifikan antara Model PjBL dan gaya belajar terhadap Hasil Belajar Menjahit. Berdasarkan hasil penelitian disimpulkan bahwa penggunaan Model PjBL dan Gaya Belajar dapat meningkatkan Hasil Belajar Desain Busana.

Abstract

Key Word:

PjBL Model, Direct Instruction, Learning Styles, Learning Outcomes of Dressmaking.

The purpose of this research is to analyze the differences between the PjBL and Direct instruction models and learning styles on fashion design learning outcomes. This quantitative research uses experimental methods. Researchers used SPSS 25 to calculate a two-way analysis of variance test. The research design used is a 2x3 factorial design. Because this research was conducted in four classes, namely 2 experimental classes and 2 control classes. The experimental class was treated with the PjBL Model while the control class was given the Direct Instruction learning method. Each control class and experimental class were divided into three groups, namely audio, visual and kinaesthetic groups. The data analysis technique in this research is two-way analysis of variance with a significance level of $\alpha = 5\%$. Based on the results of data analysis, there is a significant influence between the PjBL Model and learning styles on Sewing Learning Outcomes. Based on the research results, it was concluded that the use of the PjBL Model and Learning Styles can improve Fashion Design Learning Outcomes.

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INTRODUCTION

Vocational High School SMKN 6 Margorejo Surabaya is a vocational school that opens several majors, one of which is the Department of Fashion Design which equips students with the skills, knowledge and attitude to be competent in the field of clothing. The Department of Fashion Design has several subjects that must be taken, one of which is the Basics of Sewing. Sewing Fundamentals is a subject that emphasizes practice to students. This subject is given to class X as a basis for making clothes which will later be applied to class XI and class XII.

Based on observations at SMKN 6 Margorejo Surabaya, the curriculum applied is to use the 2013 curriculum, but its use has not been maximized. In terms of teachers, they have tried their best to implement the 2013 curriculum and learn independently. The facilities and infrastructure are very optimal, but the facilities that have been prepared are not used properly by students. Besides that, the use of laboratories that are used interchangeably, sometimes there is one class that does not get a sewing laboratory room, causing delays in student work. The teacher has guided students so that there are no gaps between students, but students are still not able to make maximum use of it because of a lack of guidance from the teacher. Even though SMKN 6 Margorejo Surabaya has implemented the Merdeka Learning curriculum, there are still many teachers who are not ready with all forms of administration and many complaints from students.

Therefore, it is necessary to have a good learning strategy in the learning process of Sewing Basics.

One of the strategies taken is a learning model with a pleasant learning atmosphere for students. The various problems that have been described, to overcome them, the PjBL model will be applied. The selection of the PjBL model to be applied in this study is because the model is considered suitable to help improve student learning outcomes. PjBL will assist teachers in implementing practical learning (Gunawan, 2024). The PjBL model aims to focus on complex problems that students need to carry out investigations, and guide students in carrying out collaborative projects. Project-based learning models can improve students' Learning Styles (Visual, Video, Kinesthetics), encourage their ability to do important work, make students more active and successful in solving complex problems (Gunawan, 2024).

Setiyawin & Sulistyaningrum, (2021) research the importance of using new and innovative learning models to help students adapt easily and remain interested in the learning process, avoiding boredom (Baran et al., 2021; Launuru et al., 2021). Apart from that, there have been many studies examining the PjBL model in various contexts, such as its effect on motivation, problem solving abilities, learning achievement, and critical thinking skills in physics (Culclasure et al., 2019).

Much research has been conducted on the PjBL model on student learning outcomes. Such as research on the PjBL model on critical thinking abilities (Ratnasari et al., 2018) and creative thinking abilities (Lianti et al., 2023). Based on this, the author needs to conduct research on the PjBL model regarding the influence of the PjBL model on learning styles on student learning outcomes. So, the aim of the following research is to investigate the influence of the PjBL model on students' fashion design learning outcomes with a comparison with the direct instructional method. based on the characteristics of the educational level and year of research, it is hoped that the research results will provide accurate information for teachers regarding the application of the PjBL model in learning fashion design.

METHOD

This research is research that uses experimental research methods. The experimental method is defined as a method with a systematic form with the aim of finding the influence of one variable on another by providing special treatment and strict control in a condition. This experimental research is included in the form of a quasi-experimental design or quasi-experimental which is a development of true experimental design. the experimental group was given treatment or treatment with the application of the Project Based Learning model while the control group used Direct Instruction as practiced by the teacher. The purpose of using the learning model in this study is to determine student learning outcomes in the cognitive, affective, and psychomotor domains after treatment or action in the form of a PjBL learning model.

This study used two kinds of instruments, namely test and non-test instruments. The test instrument includes pretest and posttest, while the non-test instrument is the observation sheet. All of these instruments will be used in both classes, both the control class and the experimental class. The following instruments were used in this study: (1) pre-test and post-test instruments which were objective tests, and (2) learning style instruments. The data in this study will be tested with a normality test. Data analysis and hypothesis testing used a computer program that was SPSS 25, in this case a 2x3 two-way analysis of variance (ANOVA) technique.

RESULTS AND DISCUSSION

Result

The descriptive results of this experimental class are as follows.

Table 1. Research Descriptive Test Results

Descriptive Statistics				
Dependent Variable: FASHION LEARNING OUTCOMES				
METHOD	LEARNING STYLE	Mean	Std. Deviation	N
PJBL	VISUAL	66.0455	4.13438	22
	AUDIO	68.8261	5.15798	23
	KINESTHETIC	74.8000	6.60622	20
	Total	69.7231	6.37992	65
DIRECT INSTRUCTION	AUDIO	62.4848	1.85609	33
	KINESTHETIC	62.7188	1.83574	32
	Total	62.6000	1.83542	65
Total	VISUAL	66.0455	4.13438	22
	AUDIO	65.0893	4.74927	56
	KINESTHETIC	67.3654	7.31646	52
	Total	66.1615	5.88627	130

Based on table 1 it can be explained that the students involved in this study were 4 classes X-AB and X-CD in Class X SMKN 6 Margorejo Surabaya with a total of 130 students, where in the implementation of this learning the sample was selected randomly, the selected namely Class X-AB and Class X-CD. The learning implementation applied to Class X-AB is to use the PjBL Model and Class X-CD is to use Direct Instruction.

Table 1 explains that the PjBL and Direct Instruction Models applied can improve students' learning outcomes for dressmaking, as indicated by the final dressmaking learning outcomes obtained by students. For class X-AB, in general, there was a significant increase where at the beginning of learning it had an average of 70, while at the end of learning the learning results for Dressmaking obtained was 82.57. Likewise, for class X-AB which applied Direct Instruction, there was an increase which is also quite significant where at the beginning of learning it has an average of 74 while at the end of learning the Learning Outcomes of Dressmaking obtained is 78.71.

And based on observations and calculation results it is known that the PjBL Model has more students who have Learning Styles (Visual, Video, Kinesthetics) and with better average scores, as well as Direct Instruction where students have Learning Styles (Visual, Video, Kinesthetics) more when compared to students who have Learning Styles (Visual, Video, Kinesthetics). And overall, students are more likely to have Learning Styles (Visual, Video, Kinesthetics) in PjBL and Direct Instruction Models.

Based on the table above, it can be explained that in general differences occur between the application of the PjBL Model and the application of Direct Instruction, both for students who have Learning Styles (Visual, Video, Kinesthetics). Based on the results of this descriptive calculation it can be explained that there are differences in Learning Outcomes of Dressmaking between students who are taught using the PjBL Model and those who are taught using Direct Instruction for students with high Learning Styles (Visual, Video, Kinesthetics) and students who have Learning Styles (Visual, Video, Kinesthetics) although to see the difference is significant or not significant, evidence is needed with statistical calculations.

With regard to the 2-factor analysis of variance carried out can be seen in the following table.

Table 2. Factor Analysis of Variance Test Results

Tests of Between-Subjects Effects

Dependent Variable: FASHION LEARNING OUTCOMES

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2481.438 ^a	4	620.359	39.003	.000	.555
Intercept	537787.135	1	537787.135	33811.691	.000	.996
METHOD	2189.159	1	2189.159	137.637	.000	.524
LEARNING_STYLE	710.734	2	355.367	22.343	.000	.263
METHOD * LEARNING_STYLE	212.523	1	212.523	13.362	.000	.097
Error	1988.170	125	15.905			
Total	573525.000	130				
Corrected Total	4469.608	129				

a. R Squared = .555 (Adjusted R Squared = .541)

Based on table 2 it can be explained with respect to the PjBL and Direct Instruction Models, and Learning Styles (Visual, Video, Kinesthetics) as well as the interactions between the application of the PjBL and Direct Instruction Models and having Learning Styles (Visual, Video, Kinesthetics) with the following results: (1) Application of the PjBL and Direct Instruction Models with a significance value smaller than $\alpha < 0.05$, namely 0.000, so that it can be explained that there are differences in the Learning Outcomes of Dressmaking for class X students between those taught using Direct Instruction and the PjBL Model, (2) Learning Styles (Visual, Video, Kinesthetics) students with a significance value of less than $\alpha < 0.05$, namely 0.000, meaning that there are differences in the Learning Outcomes of Dressmaking for class X students between those who have Learning Styles (Visual, Video, Kinesthetics), (3) Model Interaction PjBL and Direct Instruction with a significance value less than $\alpha < 0.05$, namely 0.000, so that there is an interaction of Direct Instruction and PjBL Models and Learning Styles (Visual, Video, Kinesthetics) on Student Learning Outcomes of Dressmaking.

Based on the results of the research and calculations carried out using analysis of variance of the 2 factors, it can be explained that in general, this is related to the hypotheses that have been given before. Based on these calculations it can be explained that all hypotheses can be accepted based on calculations using two-way analysis of variance. In detail, with respect to the hypothesis that has been proposed it can be

explained that in this study there are differences in Learning Outcomes of Dressmaking caused by the use of PjBL and Direct Instruction Models in students with Learning Styles (Visual, Video, Kinesthetics), so that there is an interaction between the use of the method learning that is applied to the Learning Outcomes of Fashion Design. Where in this study, the use of the PjBL Model was more able to improve the learning outcomes of students' dressmaking compared to the use of Direct Instruction. In addition, students with Learning Styles (Visual, Video, Kinesthetics) also have better Learning Outcomes of Dressmaking compared to students with Learning Styles (Visual, Video, Kinesthetics).

The results of the three hypothesis tests carried out using SPSS 25, all the hypotheses proposed in this study were proven, because the results of the data analysis showed significant numbers.

Discussion

Differences in PjBL and Direct Instruction Models on Learning Outcomes of Dressmaking

Basic Competency Achievement of Students in the Control Class Using Direct Instruction The control class is a class that is not given special treatment. The control class uses Direct Instruction. The number of respondents in the control class was 65 students. The results of the study showed that 84% of students achieved KKM in the control class and 16% of students did not achieve KKM. The control class average was 78.7 with a maximum score of 87 for students and a minimum score of 67 for students.

The learning process in the control class ran smoothly. Students take part in learning enthusiastically. Student enthusiasm can be seen when students pay attention when the teacher demonstrates in front of the class. Then the students immediately put it into practice. Students who pay close attention to the teacher's explanation have no difficulty in doing practical assignments. Students do well according to the teacher's orders so that students understand the material presented.

The results of the learning achievements obtained by students showed that most students had mastered the learning material, namely 84% of students achieved KKM, but 16% of students did not reach KKM. There were students who did not reach the KKM because there were some students who were not well controlled by the teacher. Students pay less attention when the teacher explains. Students do not dare to ask the teacher when they do not understand the material presented.

As a result, students work according to their own wishes. Because Direct Instruction is centred on the teacher, students who pay attention to the teacher will further develop, while students who do not pay attention to the teacher will be increasingly left behind.

From the results of the research above it can be concluded that learning using the PjBL model is better than Direct Instruction (Ananda et al., 2021; Dewi et al., 2021; Purwaningsih et al., 2020). Because in learning students are required to be more active and creative. In learning students are required to try to find knowledge and solve problems from various existing sources (AKHARRAZ, 2021; Dwiantoro & Basuki, 2021; Wahyudi et al., 2021). According to Bruner's theory, the search for knowledge by humans will provide the best results and produce meaningful knowledge (Coronado et al., 2021; Kusnayati et al., 2021; Rahmadana, 2022). Whereas in Direct Instruction it tends to be boring because in the learning process students only listen to explanations from the teacher (lectures) and continue to work on the questions given by the teacher (Fitriani et al., 2021; Ginanjar et al., 2021; Haryadi et al., 2021).

Differences in Learning Styles Against Dressmaking Learning Outcomes

Attainment of Basic Competency in Basic Sewing Students in Experimental Class Using the PjBL Model The experimental class is a class that is given special treatment (treatment).

The treatment used in the experimental class is applying the PjBL model. The number of respondents in the experimental class was 65 students. The results showed that 100% of students achieved KKM in the experimental class. The experimental class average was 83.5 with a maximum score of 90 for students and a minimum score of 76 for students. The learning process in the experimental class ran smoothly. Student enthusiasm is very high. The learning process of students is divided into groups. The division of this group raises the spirit of competition for students because what is assessed is not only individually but cooperation within the group. Cooperation in the group can be seen from the role of the group leader and its members. Students learn to communicate and solve problems on their own. One group jointly completed the practical task given by the teacher. This group system makes it easier for teachers to control student work. After students finish doing their work in one group, students then report the results of their work to the teacher, followed by group evaluation by the teacher. This evaluation determines the extent to which students understand the material presented before the written test is carried out together in one class.

The results of learning achievement obtained by students showed 100% of students had achieved

KKM. Even though 100% of students achieve KKM with the PjBL model, with the group learning system there are students who are less active in group work, students who have weaknesses in participating in learning find it difficult in group learning, so that collaboration in the group is not working maximally.

Based on the results of the study, students' learning styles tend to be visual and auditory (Isnanto, 2022; Musfirah et al., 2022; Sumarli et al., 2022). This is in accordance with the results of research conducted by (Delima & Budianingsih, 2020; Muminu et al., 2020; Suyanto, 2020) which also found that the most dominant learning style is the Visual learning style (40.91%).

According to (Jayanti & Leksono, 2022; Yuliaty et al., 2023) student learning styles are not fixed and permanent, but rather a tendency. Then the ability of the Basics of Sewing students based on learning styles, it can also be concluded that students with visual and auditory learning styles have the ability of Basics of Sewing with a Kinesthetics learning style have the ability of Basics of Sewing. It can be concluded that students with visual and auditory learning styles are only able to represent definitions and facts, as well as interpret simple representations and are only able to solve familiar or routine problems and can perform simple calculations. For groups of students who have a Kinesthetics learning style, students need to integrate and connect all content, situations and representations of non-routine problem solving, interpretation of problem situations and statements of basic sewing using several methods that are clearly involved in simple sewing basics. Students in this competency are able to work on problems that require students to perform procedures clearly, including procedures that require sequential decisions, work aesthetically with models for concrete but complex situations that may involve restrictions to make assumptions.

The Effect of Interaction Between PjBL and Direct Instruction Models and Learning Styles on Learning Outcomes of Dressmaking

There is an Effect of Using the PjBL Model on the Achievement of Basic Competency of Basic Sewing Students The effect of the PjBL model on the achievement of Basic Competency of Basic Sewing is known by comparing the learning achievement of the experimental class and the control class is higher or lower through hypothesis testing using a comparative t-test of two samples correlated with a significance of 5%. From the results of the t-test table, it is obtained that t count is 5.085 with degrees of freedom (dk) of 61 so that a t table is 2.000, then the results of the comparison t count > t table are 5.085 > 2.000 with a significance of 0.000, this shows that the PjBL model (Project Based Learning) can increase the achievement of Basic Competency in Sewing Basics. Based on the results of the t-test, it can be concluded that there is an effect of using the PjBL model on students' achievement of Basic Basics of Sewing competence.

Based on the description above, the PjBL model is more effective for increasing student competency compared to Direct Instruction. This is because the PjBL model makes students the centred of learning so that the learning process becomes two-way between the teacher and students. Students are taught to study independently after getting an explanation of the subject matter to be worked on.

The PjBL model is suitable for practical subjects, so that students are active in learning and creative in making assignments from the teacher. the PjBL model is appropriate to be applied to Basic Sewing Fundamentals subjects because: (1) the system of grouping and coordination between group members is more suitable to be applied to practical subjects because students can work together, (2) teaches students to plan mature in making a product, (3) arousing student creativity in the learning process, (4) developing interactions between students and students and teachers, (5) can provoke learning activities that are more attractive to students so that they can support the learning process, (6) interesting to apply in study groups because there are group leaders and group members who help each other in the learning process.

Research on the PjBL Model conducted by researchers in Sewing Fundamentals learning revealed that there was an effect of the application of the PjBL Model on Learning Styles (Visual, Video, Kinesthetics) Basics of Sewing Students in accordance with the problems raised disclosed in the background. It is from this problem that teachers must have the ability to manage learning, one of which is by using the PjBL Model. The results of the observations of researchers in the learning process using the PjBL Model are going well and as they should. In this study, using the PjBL model, in the classroom students are more concerned with learning.

Learning to use the PjBL Model (Project Based Learning) makes students more active in finding solutions to problems given by the teacher. Students also learn about the use of Sewing Basics in everyday life and learn about the use of Sewing Basics for the future. This makes students happy and have Learning Styles (Hakim et al., 2022) in learning (Isnanto, 2022; Musfirah et al., 2022; Sumarli et al., 2022). This makes it easier for students to understand the material because they work on the questions using their own way plus the questions given are related to students' daily lives. Students who used to think that the Basics of

Sewing was a subject that was difficult to understand and didn't exist in everyday life, now when students learn to use the PjBL Model (Project Based Learning), students find it easier to understand the material and know how to use the Basics of Sewing in life. every day (Amin & Shahnaz, 2023; Utami, 2023).

The existence of the PjBL Model makes students have Learning Styles (Visual, Video, Kinesthetics) to be even more active in learning (Marcia & Nurhafizah, 2022; Nuriah et al., 2022; Yulistio, 2022).. As stated by (Araiku, 2022; Musfirah et al., 2022; Sumarli et al., 2022) that Learning Style (Visual, Video, Kinesthetics) is defined as a driving force within a person to carry out certain activities in order to achieve certain goals. So that as a whole or in general it can be concluded that the application of the PjBL Model is learning that can spur student learning outcomes. Besides that, other supporting factors that encourage the achievement of maximum learning outcomes are Learning Style factors (Visual, Video, Kinesthetics) because with the application of any learning if it is not followed by Learning Styles (Visual, Video, Kinesthetics), the achievement of student learning outcomes is not optimal (Araiku, 2022; MUSFIRAH et al., 2022; Sumarli et al., 2022).

CONCLUSION

Based on the description, data analysis and discussion above, several conclusions can be drawn, as follows: (1) There is a significant difference between the use of the PjBL and Direct Instruction Models on the Learning Outcomes of Dressmaking in Class X, this can be proven by a significance value that is smaller than $\alpha < 0.05$, namely 0.000, meaning that there is an influence on Learning Outcomes of Dressmaking between the PjBL Model and Direct Instruction applied to Class X students, (2) There is a significant difference between the Audio, Visual and Kinesthetics Learning Styles of Class X students, from the results of the analysis it is known that the significance value is smaller than $\alpha < 0.05$, namely 0.000, meaning that there are differences in Learning Outcomes of Dressmaking between students who have Audio, Visual and Kinesthetics Learning Styles in students in the subject of Dressmaking in Class X, (3) There is an interaction between the use of the PjBL Model and Direct Instruction on the Learning Outcomes of Dressmaking in Class X students, from the results of the analysis it is known that the significance value is less than $\alpha < 0.05$, namely 0.000, meaning that there is an interaction between the use of the PjBL Model and Direct Instruction on the Learning Outcomes of Dressmaking.

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