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THE DIFFERENCES OF LEARNING OUTCOMES (CONCEPT UNDERSTANDING AND CONCEPT APPLICATION) STUDENTS THROUGH PROBLEM *BASED LEARNING* AND *DIRECT INSTRUCTION LEARNING STRATEGIES*

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Abstrak

Pada permulaan awal kehidupan terjadi sutu proses pembelajaran yang disebut *Problem based learning* (PBL). Strategi pembelajaran PBL sangat efektif dilakukan di sekolah perawat. Tujuan dari penelitian ini untuk mengetahui perbedaan pada hasil belajar (pemahaman konsep dan aplikasi) antara tim pelajar menggunakan PBL dengan tim pelajar yang menggunakan DI. Penelitian ini menggunakan teknik penelitian kuantitatif pre-ekperimen. Mahasiswa keperawatan DIII semester II merupakan populasi dari penelitian ini yang berjumlah 194 orang mahasiswa (terdapat 3 kelas pararel yaitu kelas A,B, dan C dengan jumlah mahasiswa kelas A 65 orang, kelas b 62 orang, dan kelas C 67 orang), sedangkan sampel pada penelitian ini ialah sebagian mahasiswa semester II program studi diploma III Keperawatan sejumlah 67, teknik sampling yang digunakan adalah cluster random sampling. Seluruh data dianalisis menggunakan software SPSS 20 for windows dengan taraf signifikan 5% ($\alpha = 0,05$). Hasil penelitian menunjukkan (1) terdapat perbedaan yang signifikan pada pemahaman konsep keperawatan dasar (2) terdapat perbedaan signifikan pada aplikasi konsep keperawatan dasar DI. Sehingga dalam pemahaman konsep dan aplikasi konsep PBL lebih unggul daripada DI.

Kata Kunci: *Problem Based Learning , direct instruction* , hasil belajar.

Abstract

At the beginning of early life there is a learning process called problem based learning (PBL). PBL learning strategies are very effective in nursing schools. The purpose of this study was to determine the differences in learning outcomes (concept understanding and application) between student teams using PBL and student teams using DI. This study uses pre-experimental quantitative research techniques. Second semester DIII nursing students are the population of this study, totaling 194 students (there are 3 parallel classes, namely class A, B, and C with 65 students in class A, 62 in class B, and 67 in class C), while the sample In this study, there were 67 students in the second semester of the Diploma III Nursing study program, the sampling technique used was cluster random sampling. All data were analyzed using SPSS 20 software for windows with a significant level of 5% ($\alpha = 0.05$). The results showed (1) there were significant differences in understanding basic nursing concepts (2) there were significant differences in the application of basic nursing concepts in DI. So that in understanding the concept and application of the PBL concept it is superior to DI.
Keywords: Problem Based Learning, direct instruction, learning outcomes

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PRELIMINARY

Education is something important and will determine a person's life in the future, this can mean that we must master knowledge and expertise. In addition, it is also required to have and understand various kinds of scientific disciplines so as not to be left behind in the development of an increasingly sophisticated era.

Education is an important factor that has a big role in advancing a nation (Neo & Neo, 2001) . Education is not only an obligation, more than that education is a necessity. Where humans will develop more with education.

Learning as effort for teaching student and the process of learning as linking new knowledge to the cognitive structure that the learner already has (Khan, 2017) . The definition contained mean that in learning there is activity select, define, and develop method or optimal strategy for reach results learning desired. Delivery strategy (*delivery strategy*) Learning methods can also be called learning methods which refer to the ways used to convey learning to the learner, and at the same time to receive and respond to input the learner.

Lecturer is a developer of learning media and this lecturer must know about the differences in approaches to learning so that can determine appropriates strategies of learning. The strategies of learning must chosen to provide motivation of the student, forming some person, serving individually differences, promoting meaningful learning, encouraging interaction, and facilitating contextual learning. But right now In reality, we can see that in the learning process, lecturers are often not able to condition their learning expecting students and the curriculum required. Sometimes lecturers cannot understand what student learning is like. The choice of learning strategy is important in process activities . The strategies apply in learning activities are call strategies of learning. The aim of the learning strategy is the realization of the effective and efficient in the activities of learning carry out by students. The parties involved in learning are educators (individuals and or groups) and student (individual, group, and or community) who interact educatively with one another (Moradi & Taghadosi, 2016).

The use of learning strategies that are less or inappropriate will affect student learning outcomes. The low student learning outcomes will have an impact on the decline in the quality of students in mastering the competencies of the subjects that must be mastered. This situation will lead to the low quality of graduates produced by these universities. An important and often encounter problem in lear activities is that there is a discrepancy in learning outcomes as stated in the learning objectives. understanding _ character from contents Theory lesson , character students , and also the learning process is a determinant of success in learning Bloom (1976) explain linkages Among character of student and quality from learning as well as results study.

Differences in components of strategies learning own different and consistent influences on learning results (Suryana, 2013) , it is intended that condition different learning (eg , characteristics contents field study and characteristics students) can influential consistent in achieving results learning (Degeng & Sudana, 1997).

Problem based learning (PBL) is process of learning which starts from real problems in life, based on a problem students stimulating the study problems based on knowledge and experience previously possessed by students (Drake & Long, 2009) . This will make them have new knowledge and experience.

PBL learning strategies are very effective used on school nursing, because college student Nurses will be faced with problems when they provide appropriate nursing care then students are sued for can solve the problem (Yunitasari & Hanifah, 2020) .

Comparison of PBL strategies in study this used *direct instruction* strategy (learning directly) (Opton et al., 2014) . Learning strategy this is a real learning strategy character *teacher center*. This strategy is a strategy that can used because right.

This research goal test and analyze if there are any difference (understanding concept and application concept) on who learn to use PBL strategies of learning and group of student who learn to use DI learning strategies.

METHOD

Study it uses technique study quantitative with pre- experimental method. Population from study this the whole is college student second semester of program study Diploma III of Nursing , totaling 194 students (there are 3 classes of students, classify by class A, B, and C with a total of 65 students in class A , 62 in B class, and 67 in class C), while the sample in this study was partially college student second semester of study program Diploma III Nursing, totaling 67, the sampling technique used is random cluster sampling. Learning activity for basic nursing courses on the subject of meeting oxygenation needs use *problem based learning strategies learning* is done 8 meetings. Before learning, the students are given a pre-test and after *problem-based learning activities learning*. All data were analyzed using SPSS 20 with level significant 5% ($\alpha = 0.05$).

RESULTS AND DISCUSSION

Test Results for the Pretest Value of Concept Understanding and Concept Application

The results of the pretest understanding of concepts apply the students who received treatment of *problems based learning learning strategies* and the group of students who received *direct instruction* learning strategies were recapitulated to get an overview of the initial conditions of research subjects. The recapitulation of the results of the *pretest t* understanding of the concept and application of the basic concepts of nursing students is presented in the following table.

	Learning strategy	N	Mean	Std Deviation	Std. Error Mean
Result study in understanding concept (pretest)	DI	62	45.3226	8.48678	1.07782
	PBL	67	42.9851	6.68896	.81719
Result study in application concept (posttest)	DI	62	47.5000	6.44968	.81911
	PBL	67	46.4179	6.78713	.82918

Independent Samples Test

	Levene's Test of Variances		t-test for Equality of Means					
	F	Sig.	t	df	Ig.(2-	Mean	STd. Error	95% Confidence Interval of the

						tailed)	Difference	DIfference	Difference	
									Lower	Upper
Result study in understanding concept (pretest)	Equal varian assumed	3.364	.069	1.744	127	.084	2.33751	1.34030	-.31470	4.98971
	Equal varian not assumed			1.728	115.893	.087	2.33751	1.35259	-.34149	5.01650
Result study in application concept (posttest)	Equal varian assumed	.045	833	.927	127	.356	1.08209	1.16786	1.22890	3.39308
	Equal varian not assumed			.928	126.906	.355	1.08209	1.16554	1.22432	3.38850

The results of the SPSS output in *Group Statistics* above show that there are 67 students in the experimental class or with PBL have an average value of understanding the concept of 42.98, while in the control class or DI of 45.32. While the average score for the application of concepts is 46.42, while in the control class is 47.50. The output table for the *Independent Samples Test* shows that the *Sig Levene's Test* scores are 0.069 (concept understanding) and 0.833 (concept application). Both significant value are better than 0.05, concluding is nothing differences in the diversity (variance) of the value of understanding the concept and application of concepts on the group, so that the independent t test can be carried out with the assumption of homogeneous data variance (*equal variance assumed*).

Furthermore, to find out the existence of these differences, it is necessary to carry out statistical testing using an independent sample t test. Based from table on shows the results of independent t test for the value of understanding the concept (pre test) between the control group (DI *)* and the experimental group (PBL) with a significance value of 0.084 (p>0.05, accept Ho), which means that there is no significant difference in the understanding value (pre test) between the control group (DI *)* and the experimental group. (PBL) . While the independent results of the t test for the value of the concept application (pre test) between the group (DI) and the experimental group (PBL *)* with a significan value of 0.356 (p>0.05, accept Ho), which means that there is there is no differences in the value of the application of the concept (pre test) between the groups (DI). and group experimental (PBL) . In other words, before being given treatment in the form of learning using PBL learning strategies and using DI learning strategies , the value of understanding concepts and applicate of concepts from students in grades 1C and 1B (group control) were not significant differently or relative the same.

Test Results for Post-test Value Concept Understanding and Concept Application

Post test results are the value of students from the problem of understanding concepts and application of concepts obtained after students are given learning using PBL *learning* strategies and using *direct instruction learning strategies* . A clearer description of the results of the *Posttest* understand the concepts and the application of basic nursing concepts based on the applied learning strategies (PBL and DI *strategies*) to students is presented in Figure 1 and 2

Figure 1. Histogram of concept understanding in groups of students who learn to use *direct instruction learning strategies* and those who learn to use *Problem based learning strategies based* on the average score, highest score, lowest score and standard deviation.

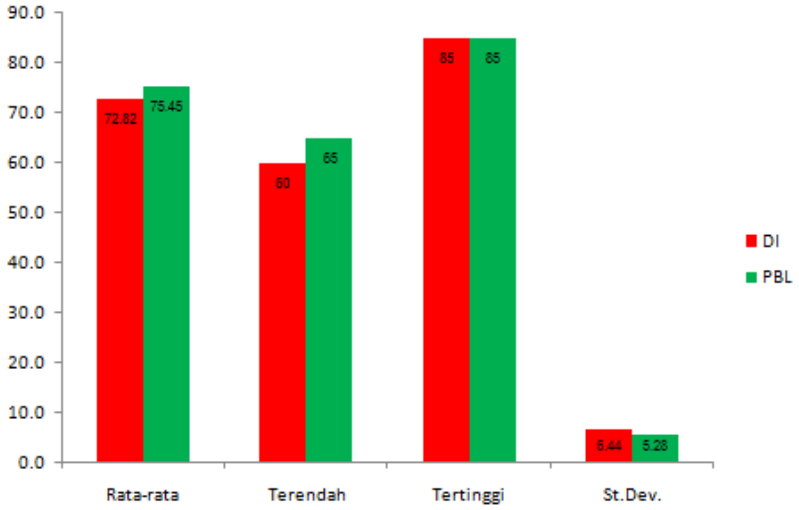
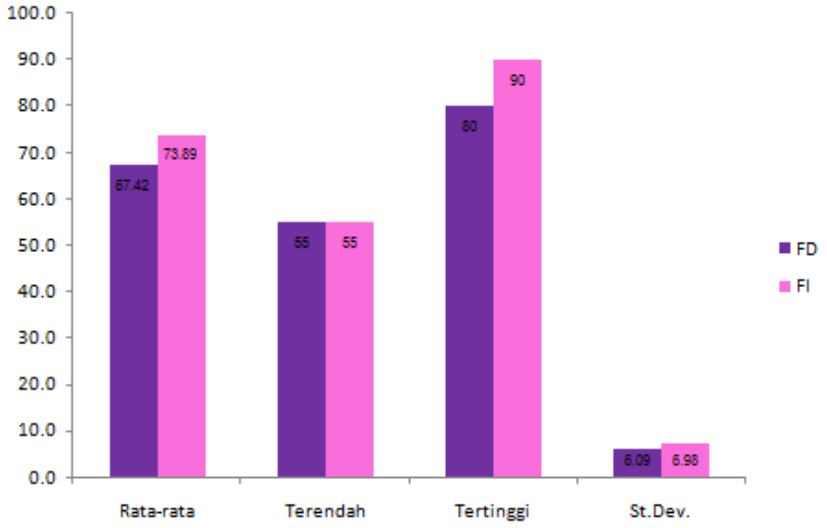


Figure 2. Histogram of concept application in groups of students who learn to use *direct instruction learning strategies* and who learn to use *Problem based learning g strategies based* on the average score, highest score, lowest score and standard deviation.



Normality Test Data Understanding concepts and applications of basic nursing concepts with *DI Learning* Strategies and PBL learning strategies .

The calculations result using the SPSS program showed the results of the normality test of data on understanding concepts and application of course concepts Basic nursing concepts with DI learning strategies and those learning using *PBL learning strategies are* presented in Table 1.

Table 1 Data Normality Test Results for Concept Understanding Scores and Applications of Basic Nursing Concepts Based on Learning Strategies

	Result study in understanding concept (pretest) using DI	Result study in understanding concept (pretest) using PBL	Result study in application concept (posttest) using DI	Result study in application concept (posttest) using PBL
N	62	62	67	67
Normal Parameter: Mean	67.4194	72..8226	67.4242	73.1818
Std. Deviation	6.12318	6.44147	6.02829	6.48290
Most Extreme Differences Absolute	.170	.169	.165	.162
Positive	.170	.169	,156	.162
Negative	-.147	-.137	-.165	-.141
Kolmogorov-Smirnov Z	1.337	1.334	1.334	1.318
Asymp.Sig.(2-tailed)	.056	.057	.054	.062

a. Test distribution is Normal

b. Calculated from data

Refer of the table of the calculation result of the probability value *of the Kolmogorov-Smirnov . Test of Normality* it can be concluded that the score in understanding basic nursing concepts (*post test*) in the group of students who studied with the PBL learning strategy and those who studied with the DI learning strategy (DI) show that a significan value (probability) of 0.056 and 0.057 which was better than 0.05. Likewise with the concept application score, the output table of statistical test results with SPSS shows that the significance value (probability) is better than 0.05, namely 0.054 for the PBL learning strategy and 0.062 for the DI learning strategy. The means that the two mark data on concept understanding and application of basic nursing concepts (*post test*) in class experiment (PBL) and control class (DI) in normal distribution.

The description of the normality of the data for the basic nursing concept understanding score of the learning strategy is presented in Figure 3 and Figure 4 . Meanwhile, the scores for the application of basic nursing concepts are presented in Figure 5 and Figure 6 , as follows:

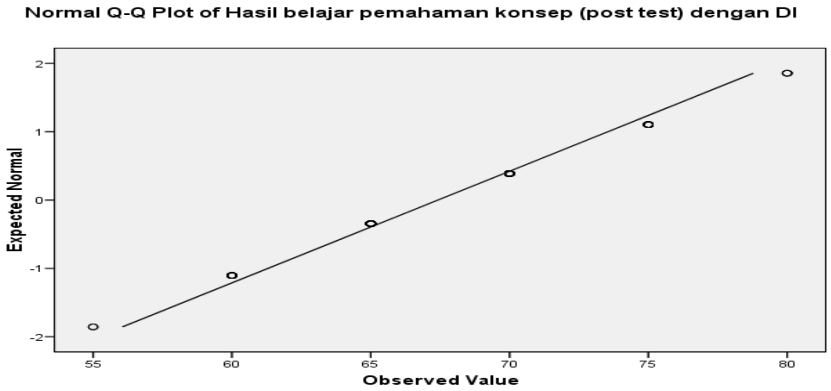


Figure 3 . Normal QQ Plot for Concept Understanding on DI Learning Strategies

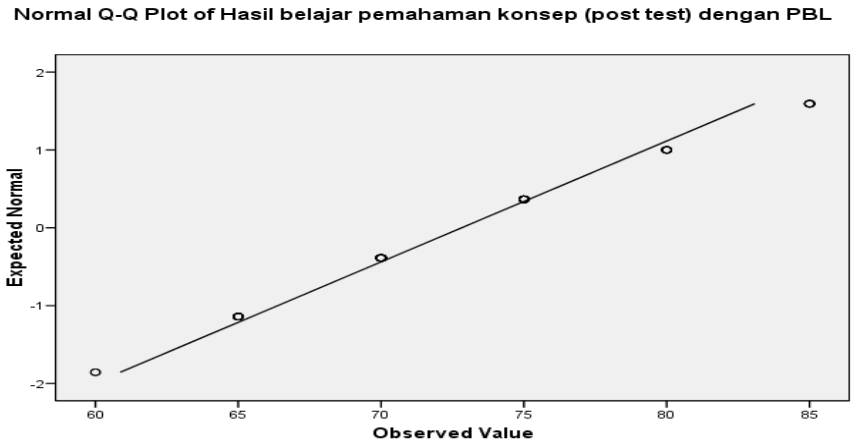


Figure 4 . Normal QQ Plot for Concept Understanding in PBL Learning Strategy

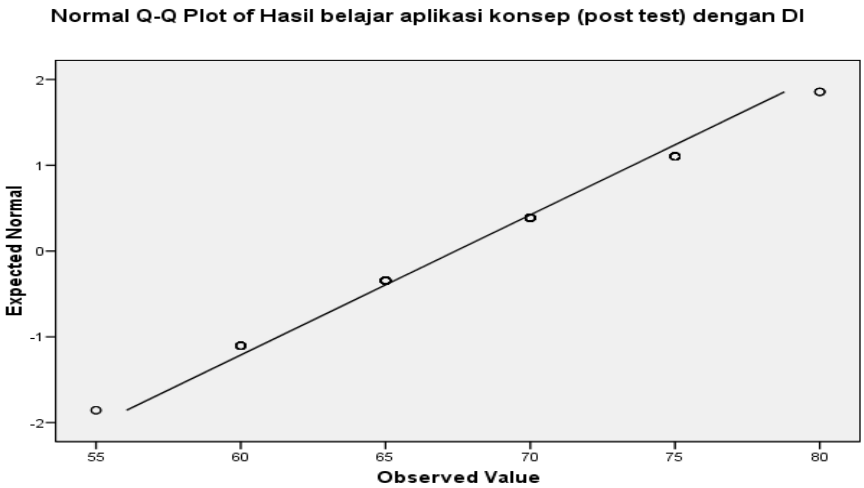


Figure 5 . Normal QQ Plot for Concept Application on
DI Learning Strategy

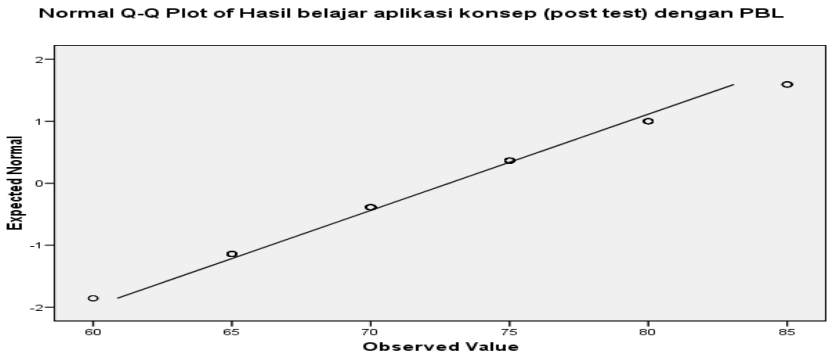


Figure 6 Normal QQ Plot for Concept Applications in PBL Learning Strategies

Figure 3 and Figure 4 show that the results of understanding basic nursing concepts in DI grup learning strategies and PBL learning strategies shows all data in the leading on top right and no data locate far

apart from the data distribution. It shows that all groups of data on the results of understanding basic nursing concepts in the student group who study with the DI strategy and PBL strategy have a normal distribution.

Figure 5 and Figure 6 above show that the results of the application of basic nursing concepts DI and the PBL learning strategy show that data are clustere around the test line that points to the upper right and no data is located far apart from the distribution. This shows that all groups of data on the application of basic nursing concepts to the group of students who study with the DI and PBL learning strategy have a normal distribution.

Homogeneity Test

The homogeneity test was carried out with the aim of knowing whether the values in the sample group were homogeneous. In this study, the homogene test conduct to determine if the variance value of concept understanding and applicant of concepts individually was homogeneous between groups. For presence and the of heterogeneity according to A Yunanda et al . (2014) was conducted using the homogeneity of variance or *variance-covariance* test, namely the Levene test *(Levene test homogeneity of variances)* . Testing the homogeneity of sample variation with *Levene's test* with a significance level of 0.05. If the significance is more than 0.05, it can be concluded that Ho is accepted, which means that the sample variation is homogeneous. The results of the sample variation test using *Levene's test* use SPSS in Table 2 below.

Table 2 . Results of Homogeneity Test of Understanding and Application Data
Draft

Levene's Test of Equality of Error Variance's

	F	df	df2	Sig.
Result study in understanding concept (pretest)	1.527	3	125	211
Result study in application concept (posttest)	1.394	3	125	248

Test the null hypothesis that the error variance of the dependent variable is equal across groups.
a. Design, intercept+strategy, learning+cognitive model+strategy, learning+cognitive model

The result from Levene's test, the significant value to the concept understanding data has a significant value of 0.211 which is better than alpha 0.05 (p>0.05), it can be concluded that the variance of the concept understanding data is homogen. Likewise for concept application data has a significant value of 0.248 which is greater than alpha 0.05 (p>0.05), it can be concluded that the variance or variance of concept application data is homogeneous. That is, *the variance-covariance* matrix of the dependent variable is the value in understanding the concept and application of basic nursing concepts was the same for the existing groups (*independent variable*), name of learning strategies (PBL and DI) and cognitive styles (high and low). As with ANOVA, the MANOVA output can interpreted well if *the variance-covariance matrix* of the dependent variable is relative the same in each *independent group* .

Based on results through the prerequisites described above, namely the normal test and the homogen test, it is known that the data are normally distributed and homogen. Therefore, testing the *multivariate analysis of analysis of variance* (*manova*) can be done, because the assumptions in normality and homogene of data variance have been met.

A. The Effect of Learning Strategies on Learning outcomes Concept Understanding

From the results of hypothesis testing, it shows the basic nursing concepts from the group learn to use PBL strategies and groups of student who learn to use DI learning strategies are understanding. The average score

obtained on understanding the concepts of student using PBL learning strategies 73.51, while those who learn by using the DI learning strategy 67.42. This shows that the ability of students to understand concepts that learn with PBL learning strategies learn by using the DI strategy .

This result is in accordance with the theory El-Tawil et al. (2016) , that PBL is a learning result from the process of investigating, understanding, and providing solutions to problems. This means that the main principle of PBL is solving authentic problems. The problems presented in class are the initial stimuli and the basic context in learning.

By using PBL learning strategies, students are stimulated to learn so that concept understanding of the material is achieved well (Gul & Boman, 2006) . Difference in learning outcomes regarding understanding the concept of basic nurse courses on the subject of meeting oxygenation needs between classes/groups of students who study using learning strategies PBL with classes/groups of students who learn by using learning strategies DI shows that learning outcomes are influence by learning strategies, even though students are given the same learning materials and questions as well as facilities.

From the results research and supported by several studies on PBL, the learning strategy with PBL is very effective concept in improving student understanding learning outcomes, especially for nursing students.

B. The Effect of Learning Strategies on Concept Application Learning Results

H result from testing hypothesis about the effect of learning strategies on the result of learning the applicate in difference basic nursing concepts group of student who learn to use PBL learning strategies and group of student who learn to use DI learning strategies. From the test results, it was found that the group of student who study with the PBL learning strategy got an average score of 75.45, while the group of student who study with the DI learning strategy got an average score of 72.82. This shows that with PBL learning strategy students get higher concept application learning outcomes than students who learn with the DI learning strategy .

Learning outcomes according to Laksana et al. (2019) includes all effect will indicate of the value of using method of learning under different learning conditions. Learning outcomes can be in the form of real results (*actual outcomes*) and desired outcomes (*desired outcomes*). Al-Zahrani & Aba Al-Khail (2015) and Frick & Reigeluth (1999) said that result study is the effects of learning strategies.

In practice, it is often found that the cases presented in learning are not in accordance with the reality they face when students enter the world of work. To overcome this, of course, creativity and innovation are needed in determining the substance/material of the study and adapting it to the characteristics of basic nursing learning (Oja, 2011) .

The tests are grouped based on the learning strategies used, while the conclusion from the results of the hypothesis testing is that the strategies used significantly influence the learning outcomes in the application of concepts of basic nursing course.

Based on the description, it was found that with the PBL learning strategy students got higher concept application learning outcomes than students who studied with the DI learning strategy. This means that the PBL learning strategy affects the concept of outcomes learning for students in the Diploma III Nursing program.

CONCLUSION

The results of research and discussion , several conclusions were obtained:

1. There is a significant difference in understand the basic nursing concepts between group of students who learn to use PBL strategies and groups of students who learn to use DI learning strategies.
2. There are significant difference in the application of basic nursing concepts between group of student who learn using PBL strategies learning and group of students who learn to use DI

learning strategies.

PBL has an advantage over DI in achieving the learning outcomes in understanding concepts and application of concepts.

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