

THE RELATIONSHIP BETWEEN COGNITIVE SELF-REGULATED LEARNING AND COMPUTER ARCHITECTURE ACHIEVEMENT

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ABSTRACT: Education has a special role in improving the cognitive skills of students; to enhance and develop the student's cognitive is not enough if the only formal education alone but needed independent study. The strategy with the independent study to enhance cognitive skills and learning achievements of students on courses of computer architectures can be measured by the correlation coefficient calculation technique is to know the positive and significant relationship between independent study and student learning outcomes. This quantitative study, data were taken as much as 24% of the student population of 112 computer engineering and informatics Courses in STT Payakumbuh by using the Purposive Sampling technique. The results of this research show that the independent study for students who take the courses of architecture or organization computer is at a high percentage of category 59.3%, with an average score of 75.2 of the now that earnings are on the score 66-80. Based on the calculation of the correlation coefficients obtained the value of 0.152. The correlation Coefficient value of the interval (0.00-0.19) with the very low category with the highest coefficient of determination of 8%, and based on the results of the test t, retrieved the value t-calculate of 1.478. On a significant level of 5% obtained grades t-table of 2.060, so t-calculate < 2,060 t-table then H0 is accepted and the H1 is rejected. This then there is a positive and significant relationship between independent study with cognitive learning achievements of students on architecture or organization computer courses.

Keywords: Cognitive, Quantitative, Independent, Significant, Achievements

1. INTRODUCTION

Education is all planned efforts to influence others both individuals, groups or communities, so they did what was expected by the principals of education [1] so the person is actively developing potential himself to have a religious, spiritual power of self-control, personality, intelligence, morals, as well as the necessary skills by himself, the community, the nation, and the State.

Independent learning has become one of the main goals of education in recent decades. Briefing yourself is the Foundation of all learning types [2]. All individuals capable of independent study but the level of development varies due to individual differences, including their learning motivation, self-esteem, accuracy, openness toward experiences, even of intelligence. Independent learning has three dimensions: motivation, Metacognition, and self-regulation [3].

Now there is a tendency that education is a learning learner, not a teaching teacher. Teachers have a part in the educational process, while the ability of learners to independently, create, discover and learn for themselves is ignored. This has undermined the role of learners in the educational process. Learning the language, given by John Dewey, includes also what the learner should do for himself. Therefore, the reason for

learning must come from the students themselves [4].

Based on the results of observation on STT Payakumbuh generally impressed students are still not optimally in doing independent study due to various reasons such as tired, busy with different activities. In addition, students sometimes just put his book away without reading or studying repeated material that has been taught by lecturers when in the House, as well as the intensity of the students to the library to read or search for related books with the subject matter at a time when certain hours are still not optimally. From these findings indicate that students in the STT Payakumbuh not yet fully have the initiative to do an independent study to the maximum, so this needs to be examined to what extent the influence of independent study students toward achievement student learning in courses of computer organization and architecture in STT Payakumbuh.

Previous research cited by Chou and Chen pointed out that independent learning and academic performance. Studies reported a positive correlation between learning and independent study and between GPA and class only. They also reported that learning independently predict academic success. [5]

2. THE PURPOSE OF THE RESEARCH

The purposes of this research are:

- 1) To know the description of independent study students STT Payakumbuh
- 2) To know the description of the learning achievements of students on courses of computer Organization and architecture
- 3) To find out the relationship between the independent study with student learning achievements in courses Computer Architecture and Organization in the STT Payakumbuh.

3. RESEARCH METHOD

The type of research used in this research is quantitative research correlational the nature of the data is exposed facto, i.e., collecting data and process data about events that have already passed in accordance with the circumstances of fact or reality the real [6]. Independent study data taken from the spread of the now which contains a number of the written statement presented to the students and their learning achievements of computer architecture courses are taken from the value of the end results of student learning

3.1 Research Design

To find out the results of this research are then performed the deployment questionnaire to students who have done the lecture computer architecture or computer organizational forces 2015, 2016 and 2017. The following is a description of the design of this research can be seen in Figure 1.

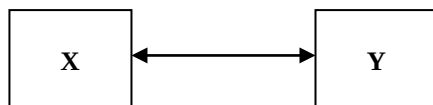


Fig. 1 Research Design

Information :

X = free variables i.e. independent study student

Y = variable i.e. student learning achievement

3.2 Population and Sample

1) Population

The population of the region is composed of a subject, object, which has the quality and characteristics of which are determined by the researchers. So the population not only humans but also objects and other natural objects. [7] in this research, a topic that will be discussed are the

students who have taken courses of computer architecture or computer organization in STT Payakumbuh force 2015, 2016 and 2017 are active as much as 112 people. (based on data of absentee students)

The following table of the student population has been held lecture architecture or computer organizational forces 2015, 2016 and 2017 in table 1 below:

Table 1 Number of the student population of computer architecture and organization

No	Force	Amount	Percentage
1	2017	19	17%
2	2016	40	35.7%
3	2015	53	47.3%
Amount		112	100%

2) Samples

The sample is part of the number and characteristics of the population owned by [8]. According to Suharsimi Arikunto in the subject or a total population of fewer than 100 people, better-taken everything so that his research is the research population. Furthermore if the amount of its subject or its population of more than 100 people, then drawn between 10-15% or 20-25%. [9] in determining the number of samples, the researchers took 24% of the population, so that the number of samples in the study amounted to 27 people by using Purposive Sampling technique, i.e., sampling on the basis of a specific purpose so that meet the wishes and interests of the researchers.

3.3 Data Processing Techniques

The technique used in this study researchers is using the data to get the now independent study and documentation to get student learning achievement data.

- 1) Observation, by the way, do the observations with regard to the variables of the study.
- 2) Questionnaire namely the technique of data collection which contains a number of written questions posed to the respondents who were selected as samples.

to get answers objectively. As for the form of a statement by using the Likert Scale with option 4 can be seen in table 2:

Table 2 Criteria of Scorers Likert Scale

No	Alternative answers	Score
1	Very Often (SS)	4
2	Often (S)	3
3	Sometimes (KK)	2
4	Never (TP)	1

Indicator research instrument relating to relationship product independent study with the accomplishment of learning in courses of computer Architecture or computer organization in STT Payakumbuh, in the form of questionnaires item-based item as set forth in Table 3 below:

Table 3 The Indicator Instrument Independent Study

Variable	Indikator	No questionnaires
Independent Study (X)	a. initiative	1, 2, 7, 8, 12, 15, 17
	b. Select the source and Learning Media	5, 9, 10
	c. Setting learning objectives	3
	d. Choose A Place To Learn	6, 13
	e. Evaluate The Results Of The Study	4, 14
	f. Set study time	16
	g. Specify How To Learn	11
The Learning Achievements (Y)	The final value of the students of courses of computer organization/architecture	

- 3) Documentation that is gathering the required written document in this study such as, the final value of students, profile STTPayakumbuh includes the number of students, lecturers, and the inventory.
- 4) Tabulated is the process of placing data into a table that has been given a code or a score in accordance with the needs of the data analysis.

4. RESULT AND DISCUSSION

4.1 Validity and Reliability Test Results

In quantitative research, there are tests of validity and reliability that is used to determine the size of what is an instrument to be used in research. This test is usually done on the research use of the instrument a questionnaire. A detailed questionnaire was tested first with the original participants to spread to as many as 20 questionnaires to respondents, the following description of test results of validity and reliability.

- 1). Based on the results of a test of the validity of the successive values of the acquired item 1 to item 20 is as follows: 0.583, **0.191**, 0.391,

0.571, 0.565, 0.337, 0.531, 0.477, **0.228**, 0.424, 0.332, 0.552, 0.632, 0.567, 0.356, 0.669, 0.547, **0.103**, 0.600, 0.556. Based on the data above, there are three items that are not valid because the value of count is smaller than r 0.3 (r minimum). So the number of remaining questions be 17 items.

- 2). Based on test results reliability using Cronbach Alpha SPSS program known is the 0.828 can be seen in table 4 below,

Table 4 Reliability Statistics

Cronbach's Alpha	N of Items
.828	17

Based on the calculation of the reliability values obtained, indicating the extent of 0.381 > 0.828 at 5% significance can thus be inferred that the instruments used in this study reliability.

4.2 Normality Test Result

In this study data, normality tests are used to find out whether normal data in the study. Normality test data using the Kolmogorov-Smirnov Z with normality is when a significant level of 0.05 > then normal data, and vice versa if significant level data then 0.05 < is not normal. Based on a test of Kolmogorov-Smirnov using normality Z obtained the value significance of 0.970 tables can be seen at 5. It can also be seen from the results of the p-plot in Figure 2 and the histogram in Figure 3.

Table 5 One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		27
Normal	Mean	.0000000
Parameters ^a	Std. Deviation	8.08526526
Most	Absolute	.094
Extreme	Positive	.075
Differences	Negative	-.094
Kolmogorov-Smirnov Z		.491
Asymp. Sig. (2-tailed)		.970

a. Test distribution is Normal.

Based on table 5 above, so the data is said to be normal as it has a significant value of 0.970. Where the value of $0.970 > 0.05$.

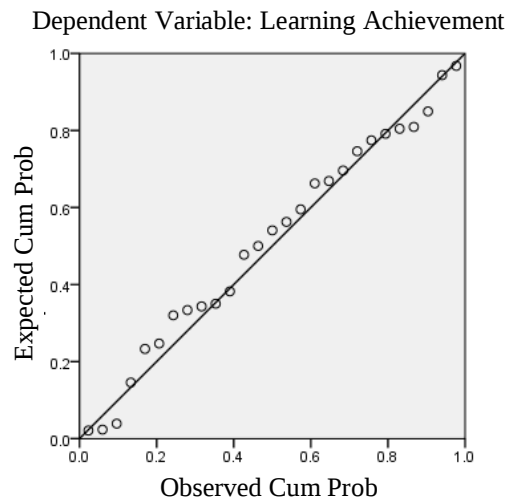


Fig. 2 Normality Test Results Using P-Plot Graph

Based on the graphic (P-Plot) in Figure 2 can be seen scattered points around the diagonal line and the distribution of the diagonal lines following the direction. It describes the data used in this study. While graph histogram gives the distribution pattern of approaching normal.

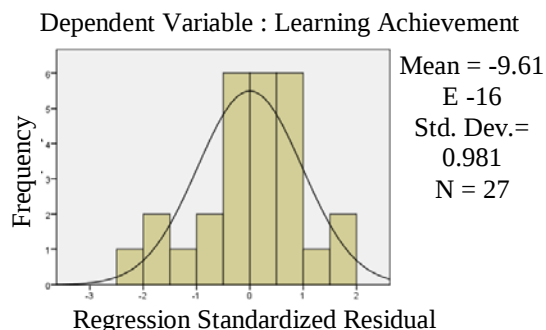


Fig. 3 Distribution Pattern Results using Histogram

Based on the graph the histogram in Figure 3 data used to approach normal then assumes normality.

4.3 Hypothesis Testing Research

1). Koefisien Product Moment

The next step is to do a calculation of coefficients of product moment. The calculation of the coefficients of product moment is used to find out if there is a close relationship with independent study achievements of students on courses of computer architecture or organization at STT Payakumbuh. Based on the results of the

calculation of the correlation of product moment may be known through table 6

Table 6 Correlations

		Learn to be independe nt	Learning achievem ent
Learn to be independen t	Pearson Correlation	1	.283
	Sig. (2-tailed)		.152
	N	27	27
Learning achieveme nt	Pearson Correlation	.283	1
	Sig. (2-tailed)	.152	
	N	27	27

Based on the output table 6 above can be drawn the conclusion with reference to the basic decision-making test correlation [10].

- Based on the value of the output significantly, table 6 it can be known among close to independent study (X) with Learning achievement (Y) has a significant value of 0.152 so $0.152 > 0.005$ then there is no significant correlation.
- Based on Asterisk SPSS output of table 6, note that the value of Pearson Correlation which is connected between each variable does not have an asterisk, it means there is no significant correlation between the variables linked.

Significant value then the value of 0.152 consulted in table 7 the interpretation of coefficients of relationship level to know how close relations level means the independent study (the variable X) and the learning achievements of students on courses or Computer Organization Architektur (variable Y).

Table 7 Interpretasi Koefisien [11]

Interval	Coefficient Of Relationship Level
0.00 – 0.19	Very low
0.20 – 0.39	Low
0.40 – 0.59	Is being
0.60 – 0.79	Strong
0.80 – 1.00	Very Strong

Having consulted on the chart interpretation, then the obtained coefficient of 0.152 is 0.00-0.19 at intervals with a very low level of relations.

2) Significance Test Result of Regression Coefficient Partially (t-test)

Table 8 Test Results t through the SPSS program

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
1 (Constant)	53.867	14.516		3.711	.001
Learn to be independent	.386	.261	.283	1.478	.152

a. Dependent Variable: Learning achievement

Based on the output's on table 8 above, the variable coefficients obtained regress independent study (X) is positive-valued 0.386 +, so it can be said that there is nothing independent study (X) positive effect taking action against Student Achievement (Y). The influence of Positif can be said that the increasing product independent study (X) then it will increase Student Achievement (Y). The hypothesis in this test is

H0 = Independent study (X) has no effect significantly to Student Achievement (Y)

H1 = Independent study (X) effect significantly to Student Achievement (Y)

The value of t table is:

$$\begin{aligned}
 T_{\text{table}} &= (\alpha/2 ; n-k-1) \\
 &= 0,05/2 ; 27-1-1 \\
 &= 0,025 ; 25
 \end{aligned}$$

Then the distribution of the value of the t table then found the value of t table 2.060.

Based on the results of the regression analysis values obtained value t calculate of $1.478 < t_{\text{table}} 2.060$ and significance value (sig) $1.52 > 0.05$. Then it can be inferred that H0 is accepted and rejected the H1, which means there is nothing

independent study (X) has no effect significantly to Student Achievement (Y).

Furthermore based on a test of F can be seen in table 9 indicates that significant value 0.152 meaning 0.152. from 0.05 probability, so that it can be concluded that there is nothing independent study has no effect against the achievements of students on courses of computer architecture or organization at STT Payakumbuh.

Table 9 Anova^b

		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	148.415	1	148.415	2.183	.152 ^a
	Residual	1699.659	25	67.986		
	Total	1848.074	26			

a. Predictors: (Constant), Learn to be independent

b. Dependent Variable: Learning achievement

Next, to find out the magnitude of the contribution of the independent study is nothing against learning achievements of students on courses of computer architecture or organization, it can be seen the results of the program SPSS on table 10 below:

Table 10 Model Summary^b

Model	R	R Square	Adjusted R Square	Std. The Error of Estimate	Durbin-Watson
1	.283 ^a	.080	.044	8.24539	2.089

a. Predictors: (Constant), Learn to be independent

b. Dependent Variable: Learning achievement

Based on table 10 then it can be seen the results determines coefficient (R Square) of 0.080. The magnitude of the value of the coefficient of determination (R Square) 0.080 equal to 8%. Those values mean that there is nothing independent study effect on student Learning achievement by 8%. While the rest are influenced by variables other than this research.

5. CONCLUSIONS

Based on the t-test can be aware that the value of t a table variable coefficients obtained regress independent study (X) is positive-valued 0.386 +, so it can be said that there is nothing independent

study (X) positive effect taking action against Achievements Students (Y). The influence of Positif can be said that the increasing product independent study (X) then it will increase Student Achievement (Y).

The magnitude of the value of the coefficient of determination (R Square) 0.080 equal to 8%. Those values mean that there is nothing independent study student learning achievement effect of 8%. While the rest are influenced by variables other than this research.

Based on the results of the regression analysis values obtained value t calculate of $1.478 < t \text{ table } 2.060$ and significance value (sig) $1.52 > 0.05$. Then it can be inferred that H_0 is accepted and rejected the H_1 , which means there is nothing independent study (X) has no effect significantly to Student Achievement (Y).

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