Motivation and Interest of Students to Learn in the Mathematics Education Department, Ikip Gunungsitoli

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This research was conducted in IKIP, Gunungsitoli and used one group pre-test post-test design research method which involved a questionnaire of learning motivation, an interest in learning questionnaire, and a test of learning outcome. The average learning outcomes without distributing motivation and learning interest questionnaires obtained from the midterm exam score is 74.46 and the Standard deviation is 6.85. The average learning outcome through distributing motivation and learning interest questionnaires obtained from final exam value is 53.65 and the Standard deviation is 16.66.3. Based on the results of testing the hypothesis, it was determined that: F count 0.737 and F table 3.39. (F count <F table). Based on these results, it can be said that H_0 is accepted means that motivation and interest in learning do not significantly influence learning outcome, or, it can be said that learning outcomes have no relation with motivation and interest in learning.

Key words: *Motivation, Interest, Student, Mathematics, Education, Learning, Outcome.*

Introduction

Everyone has internal and external conditions where both conditions play a role in their daily activities. One of these internal conditions is motivation and interest. Motivation can be defined as a difference between being able to implement and wanting to implement. Motivation is also power, both from inside and outside which encourages a person to achieve certain goals that have been previously set. From the results of the questionnaire that the researchers distributed to Mathematics Education Department students in Academic Year

2016/2017, the average learning motivation was 61.93% (Enough), and the average interest in learning was 58.60% (Less).From the observation of researcher as one of the Gunungsitoli

IKIP lecturers in the FPMIPA Mathematics Education Department, it was found that students and their motivation to learn in attending face-to-face lectures was met with a lack of enthusiasm. Students acceptance of course material was not enthusiastic or passionate. This was evident from the initial quiz lectures submitted by the researcher as lecturer. Students were not able to answer well and do not provide responses or arguments from the quiz which causes inefficiency in class. Also during class, students generally did not have the correct books related to course, instead relying solely on information from the lecturer. The results of interviews with students in the Mathematics Education department regarding group assignments found that the students were happy if creative students were among those groups to rely on completing the task. From these statements the researcher concluded that their interest in learning and attending lectures had no stimulation for love or the want to have permanent knowledge, resulting in dishonest attitudes or characters. Based on graduation data at the Faculty of Mathematics and Natural Sciences Education of Mathematics Education Study Program in IKIP Gunungsitoli, the following students have graduated as shown in the following table.

Table 1: The Recapitulation Graduated Students and Average Index Achievement of Mathematics Education Program from 2014 – 2017

GRADUATION YEAR							
2014 PERIOD		2015 PERIOD		2016 PERIOD		2017 PERIOD	
I	II	I	II	I	II	I	II
53 students	62 students	35 students	56 people	40 people	78 people	22 people	51 people
GPA= 3,21	GPA= 3,14	GPA= 2,99	GPA= 3,08	GPA= 3,00	GPA= 3,05	GPA=2,96	GPA=3,14
$\overline{X}_{IP} = 3,175$		$\overline{X}_{IP} = 3,035$		$\overline{X}_{IP} = 3,025$		$\overline{X}_{IP} = 3,05$	

Source: *Data from GRADUATION BOOK of IKIP Gunungsitoli.*

From the observation of the researcher, Mathematics Education students are less creative. During each lecture meeting, if a lecturer asked about the material that has been studied, they cannot answer adequately. During the course of the lecture, only one or two people asked questions, while the others only paid attention or heard the questions asked by their friends. In general, students only had one reference book for each subject borrowed from the library. Students rarely bought books related to the course due economic limitation of their parents. From the results of the interview, the researcher identified that only one or two students were involved in the discussion, while the others only listened and recorded what their friends said in the group discussion.

Literature Review

Some theories such as behaviourism, cognitivism, humanism, and cybernetics explain learning processes. These learning theories direct researchers to choose the basis theory for conducting learning activity. Thorndike, one of the founders of behaviourism learning theory put forward the notion that learning is a process of interaction between stimulus and response. In this case, stimulus and response may be a thought, feeling, or movement. It is clear that behaviour change can be something concrete that y can be observed or something non-concrete that they cannot be observed. In general, these three experts - Clark Hull, Edwin Guthrie, and BF Skinner - also use stimulus and response variables to explain their theories that lead to the theory of evolution. All behavioural functions are beneficial, especially to maintain survival, because satisfying the biological needs occupy a central position. Finally, the theory cannot be widely used practically even though it is often used in various experiments in the laboratory. Guthrie explains that giving a stimulus often encourages students to respond immediately, and one day, it becomes a habit related to learning activity that requires the practice of changing students' behaviour immediately formed, then the stimulus can be done in the form of theory. Furthermore, the practice is immediately followed by theory so that the theory can be integrated with practical activities in learning activity so the formation of behavior will be easier. Good and Brophy stated that learning is a process or interaction that someone takes in acquiring something new in the form of behavior change as a result of experience itself (learning), so that it appears in the mastery of students in the patterns of responses, the environment in the form of skills, habits, attitude or principle, ability, knowledge, understanding, emotion, appreciation, physical and ethics or character and social relation.

The Definition of Learning Motivation

The term motivation comes from the word motive which can be interpreted as the power contained in individual, which causes the individual behave and act. Motive something cannot be observed directly, but can be interpreted from their behavior in form of encouragement or a power emerges certain behavior. According to Indonesia Dictionary "motivation is an impulse that arises in a person consciously or unconsciously to carry out an action with a specific purpose". According to Hamzah, motive can be divided into 3 (three) types, namely "(1) biogenetic motive is a motive originating from the needs of organism for the continuation of his life, such as hunger, thirst, the need for activity and rest, taking breath, sexuality, and so on, (2) sociogenetic motive, namely the motive that develop originate from the cultural environment in which the person is located. So this motif does not develop by itself but it is influenced by the local cultural environment. For example, the desire to listen to music, eating pecal, eating chocolate, etc.; (3) theological motive is a motive about godly human, so there is interaction between human and God such as worship in daily life, carrying out God's order, realiing the norms according his religion ". Hamzah classifies the motivational indicators as

follows: Persevering in the task (can work continuously for a long time, never stops before finishing). Hard work in facing difficulties (not quickly discouraged). Do not need encouragement from outside to excel. Want to explore material / fields knowledge provided. Always trying to achieve immediately (not quickly satisfied with their achievement), Demonstrating interest in various kinds of "adult" problems (for example towards development, corruption, justice, etc.). Learning diligently, full of enthusiasm, get bored quickly with routine tasks, can maintain opinions (if you are sure of something, it is not easy to let go of what is believed). Pursuit of long-term goals (can delay satisfying the momentary needs you want to achieve later). The interest in learning that relates to a person's behavior towards their main assignment as a student when and anywhere still shows the attitude as a candidate for scientist.

The Definition of Interest in Learning

According to Big Indonesia Dictionary that "interest means a tendency toward something". Interest is basically the acceptance of a relationship between yourself and something outside of yourself. The stronger or nearer the relationship, the greater the interest. Crow and crow in Djali said that interest is related to the style of motion that drives a person to deal with or deal with people, things, activities, which are stimulated by the activity itself. So interest can be expressed through statement shown that students prefer to something, it can also be manifested through participation in an activity. Interest is not taken from birth, but is obtained later. According to Slamet stated that interest is a fixed tendency to pay attention and remember some activities. Activities that people are interested in are constantly being watched with pleasure. The condition of effective teaching and learning is the interest and attention of student in learning. Interest is important in teaching and learning process. Students who learn with interest will be motivated to do something in their field. While students who study without interest will find it difficult to achieve success because they lack passion but only compulsion in learning. William James in Daryanto sees that student interest is the main factor that determines the degree of student learning activity.

Interest Indicator

To analyze learning interest can be used several indicators of interest as follows:

According to Slamet, an interest can be expressed through statement shown that students prefer something than other things. It can also be manifested through participation in an activity. Students who have an interest in a particular subject tend to pay greater attention to the subject. According to Djamarah, expressing interest can be expressed by student through: a). Statement likes something more than other, b). Active participation in activity, c). Give greater attention to what they are interested in.

The Definition of Learning Outcome

Learning outcome is something that has been achieved by someone toward a better learning process. To find out student learning outcome in a lesson, an evaluation or test of learning outcome need to be held. The learning outcome is expressed in the form of numbers or letters at any given period.

Research Methodology
Research Design

This study used the research one group pretest post-test design method. This method is one of the pre-experimental design using one experimental group where measurements were made before and after treatment. The design is as follow:O_1 X O_2,

Information:

O_1 = the measurement results before treatment
X = treatment given (treatment)
O_2 = measurement result after treatment

Data Collection Procedure and Data Analysis
   1. Research Instrument

To collect the data needed in conducting this research as follows:
a. Learning Motivation Sheet
b. Learning Interest Sheet
c. Learning Outcomes Test
2. Data Analysis
a. Learning Motivation Questionnaire
b. Learning Interest Questionnaire
c. Learning Outcome Assessment

The data that the researcher need about the learning outcome of A class in fourth semester is the final Mid Semester score in the form of essay test as much as five items and the final Semester score in the form of essay test of (three) items and to process the test was used these formula :

$$NSS = \frac{SPWB/S}{SMBSY} \text{ X weight, where}$$

 NSS   = The value of each question,
SPWB/S   = Score of learning,
SMBSY   = The maximum score of the item in question.

After obtaining score on each question (NSS), the final value (NA) of each student can be calculated with the set of questions, using the formula: **NA=** $\sum NSS$

1. Hypothesis Testing

In this study, testing the hypothesis used the method of multiple linear regression analysis because the independent variable consists of more than one. Multiple linear regression analysis is linear regression to analyze the correlation and the influence of independent variables which are more than two. According to Sugiyono (2014: 277) the multiple linear regression equation specified are as follows:

$$Y = a + b_1 X_1 + b_2 X_2 + \ \varepsilon$$

Information:

Y	:	predictive value from Y
a	:	constant number
$b_1, b_2, \ldots$	:	free variable coefficient
$x_1, x_2, \ldots$	:	independent variable
ε	:	Error, interference variable

Hypothesis testing will be carried out using a significance level of 0,05 ($\alpha = 5\%$) or a confidence level of 0.95. The hypotheses that have been previously determined are tested using the t test and F test statistic methods.

The t test partially test the regression coefficient, this test is conducted to determine the significance of the partial role of the independent variable toward the dependent variable by assuming that other independent variables are considered constant. The criteria used are as follows:

-        H_0 accepted if value $t_{count} < t_{table}$ or $sig > a$ value
-        H_0 rejected if value $t_{count} \geq t_{table}$ or $sig \leq a$ value

The F test is a test of the regression coefficient simultaneously. This test is conducted to determine the effect of all the independent variables contained in model together (simultaneous) on the dependent variable. In this study, the F test was used to test the

significance influence of motivation and interest in learning outcome simultaneously and partially. The criteria used are as follows:

- H_0 accepted if values $F_{count} < F_{table}$ or $> asig$ value
- H_0 rejected if value $F_{count} > F_{table}$ or $sig < a$ value

Processing and Analysis of Data

A. The Implementation of Research
Research Setting

This research was conducted in Gunungsitoli Teacher's Training College (IKIP), especially students at the Faculty of Mathematics and Natural Sciences Education (FPMIPA) of Mathematics Education Department fourth semester of A class Academic Year 2016/2017.

Data Processing

Based on the result of the questionnaire Motivation and Interest in learning from FPMIPA students of 2016/2017 of fourth semester of Mathematics Education department in academic year 2016/2017 processed by using 1-4 Likert scale with the result as following table:

a. Learning Motivation

Table2: The Recapitulation of Learning Motivation

Semester / Class	INDICATOR			
	Willingness to Study	The Passion With Course	Habit for Studying without any Coercion Element	The Awareness Going to College from Failure
IV/A	73 (enough)	67 (enough)	75 (enough)	75,4 (enough)
$\bar{X}$	72,6 (enough)			

b. Learning Interest

Table3: The Recapitulation of Learning Interest

Semester/ Class	DIMENSION		
	Suitability of Learning with Student Needs	Willingness to Join Lecturing	Student Effort to Join Lecturing
IV/A	77,25 (Good)	72,00 (enough)	58,67 (less)
$\bar{X}$	69,31 (enough)		

c. Learning Outcome

Table 4: Learning Outcome Test Values in Midterm Exam (UTS)

No	Value	No	Value
1	75	15	80
2	60	16	85
3	85	17	85
4	80	18	75
5	75	19	70
6	70	20	75
7	80	21	60
8	75	22	70
9	70	23	75
10	75	24	70
11	75	25	75
12	80	26	75
13	60	27	80
14	80	28	70
$\bar{X}$		74,46	

Table5: Learning Outcome Test Values in Final Semester Exam (UAS)

No	Value	No	Value
1	74,22	15	74,73
2	41,47	16	84,57
3	83	17	82,15
4	62,85	18	59,62
5	36,79	19	33,45
6	46,1	20	56,64
7	71,65	21	35,45
8	30,06	22	31,23
9	50,59	23	53,07

10	56,58	24	32,35
11	57,27	25	60,67
12	59,52	26	42,32
13	32,16	27	45,63
14	57,83	28	50,16
$\bar{X}$		53,65	

Data Analysis

a. Learning Motivation

Based on the results of table 2 about the learning motivation of students of Mathematics Education Department above, it can be analyzed based on indicators consisting of: willingness to go to college, passion with course, habit of college without any coercion, and awareness of wanting to study from failure, then presented as follows:

Fourth semester of A Class which is: the willingness to go to college only reaches 56.8 (less), passion with the course reaches 52 (enough), the habit of studying without any element of coercion reaches 60.67 (less), and awareness of wanting to study failure reaches 59.8 (less), so the average learning motivation of fourth semesters students in mathematics education program only reaches 57.31 (less).

b. Learning Interest

Based on the results of table 3 about the learning interest of students of Mathematics Education Department above, it can be analyzed based on dimension consisting of: suitability of learning with student needs, willingness to attend lecturing class and student effort to take lecturing class, then it can be explained as follows: fourth Semesters of A Class, namely: the suitability of learning with the needs of students reaches 56.25 (less), the willingness to attend lectures reaches 55.46 (less), and student effort to attend lecturing class reaches 46.67 (bad), so the average interest in learning fourth semester students of A Class of Mathematics Education Department only reaches 52.79 (less).

c. Learning Outcome

Based on the results of table 4 about the learning outcome of Midterm Exam result of Mathematics Education Department students in fourth Semester of A Class above, it can be analyzed that:

1) The average learning outcome of the tests given are 74.46.
2) The standard deviation is 6.85.

Based on the results of table 5 about the learning outcome of Midterm Exam result of Mathematics Education Department students in fourth Semester of A Class above, it can be analyzed that:

1) The average learning outcome of the test given is 53.65.
2) The standard deviation is 16.66.

Hypothesis Test

Based on the results of the calculation of multiple regression analysis through SPSS, data analysis was obtained as follows:

Model		Unstandardized Coefficient		Standardized Coefficient	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	22,688	39,830		,570	,574
	Motivation	,341	,539	,126	,633	,532
	Interest	,297	,546	,109	,545	,591
a. Dependent Variable: learning outcome						

Coefficients^a

From the table above, it was obtained information that the value of multiple linear regression that has a relationship between the independent variable (x) and the dependent variable (y) is:

$\beta_0 = 22{,}688$ $\beta_1 = 0{,}341$ $\beta_2 = 0{,}297$

So the estimated model from linear regression is:

$Y = 22{,}688 + 0{,}341X1 - 0{,}297X2$

Decision-making:

if t count<= ttable or probability> = 0.05 then H_0 is accepted

If t count> t table or probability <0.05 then H_0 is rejected

Based on the analysis above, it can be assumed that the regression model is Y = 22,688:

◆ Constant: Based on the table above, it can be seen that the value of t count for Constant is 0.570, at t table with db 25 and a significant level of 0.05 is obtained at 1.708, because t count <t table then Ho is accepted. While the sig in table B is 0.574 which means a probability of 0.574, because the probability is more than 0.05 then H_1 is rejected. It means that coefficient value β_0 for α = 5% does not affect the estimated value of Y in analyzing

multiple linear regression.

◆ Motivation: Based on the table above, it can be seen that the value of t count for motivation is 0.633, at t t table with db 25 and a significant level of 0.05 is obtained 1.708, because t count <t table then H_0 is accepted.

While the sig in table B is 0.523 which means the probability is 0.523, because the probability is more than 0.05 (p> 0.05) then H_1 is rejected. It means that coefficient value β_1 for α = 5% did not affect the estimated Y value in analyzing multiple linear regression. So it can be concluded that the motivation variable did not affect the learning outcome.

◆ Interest: Based on the table above, it can be seen that the value of t count for motivation is 0.545, on T table with db 25 and a significant level of 0.05 obtained at 1.708, because t count < t table then H_0 is accepted.

While the sig in table B is 0.591 which means the probability of 0.591, because the probability is more than 0.05 (p> 0.05) then H_1 is rejected. It means that the coefficient value is β_2 for α = 5% did not affect the estimated value of Y in analyzing multiple linear regression. So it can be concluded that interest variable did not affect learning outcome. From the two independent variables included in regression model, the variable motivation (0.523) and variable interest (0.591) did not affect learning outcome because it was seen from the probability of significance of the two variables well above 0.05.

Hypothesis 3

$H_{03} : \mu_1 = \mu_2;$ there is no significant influence on motivation and interest in learning simultaneously on learning outcome

$H_{a3} : \mu_1 \neq \mu_2;$ there is a significant effect of motivation and interest in learning simultaneously on learning outcomes

Criteria:

H_{03} is accepted if $t_{table}> α = 0,05$

H_{a3} is accepted if $t_{tabel}≤ α = 0,05$

Based on the results of the calculation of multiple regression analysis through SPSS, data analysis was obtained as follows:

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	180,829	2	90,414	,309	,737[b]
	Residual	7310,620	25	292,425		
	Total	7491,449	27			

a. Dependent Variable: learning outcome
b. Predictors: (Constant), interest, motivation

From the table below, the F value= 0.309 can be used to do a hypothesis test or F-test in predicting the contribution of independent variables (X1 and X2) to the dependent variable (Y).

Hypothesis:
$H_{03}: \mu_1 = \mu_2 = 0$
H_{a3}: At least one of two variables is not equal to zero

By determining the level of significant (α) = 5% (0.05) and the degree of freedom for df1 = 2 and df2 = 25, then obtained from the table (in statistical book) F-table = 3.39. Therefore = 0,309< F_{count} (0,05) = 3,39, so H_{03} is accepted and H_{a3} is rejected. In conclusion, the independent variables (X1 and X2) do not significantly contribute to the dependent variable. Based on the Significant value, it can be seen in the sig column which is 0.737, it means the probability of 0.737 is more than 0.05 (0.737> α), then Ho is accepted. It means that for α = 5% learning outcomes have no relationship with motivation and interest in learning. There is no non-zero coefficient or meaning coefficient, so this regression model cannot be used to predict learning outcome or it can be said that motivation and interest do not affect learning outcome.

Conclusions and Suggestion
Conclusion

Based on the results of data analysis on student learning motivation and interest of Faculty of Mathematics and Natural Sciences Education (FPMIPA) of Mathematics Education Department IKIP Gunungsitoli of fourth semester of A Class Academic Year 2017/2018, It can be concluded that:

1. The average learning outcome without the distribution of motivation and learning interest questionnaires obtained from the midterm test (UTS) score was 74.46 and the Standard deviation was 6.85.
2. The distribution of motivation and learning interest questionnaires obtained from the final exam (UAS) score was 53.65 and the Standard deviation was 16.66.
3. Based on the results of testing hypotheses was obtained that: F count

a. The results of partial hypothesis test stated that the value of t count was greater than the t table with value of 1.708. Or based on significant value, it can be seen that the value of each probability was more than 0.05 (p> 0.05). From these results, partially it can be said

thatH_0 is acceptedmotivation and interest variables do not significantly influence learning outcome.

b. The results of testing the hypothesis as a whole with the result of F count was smaller than F table with a value of 3.39 or based on significant values, it can be seen that the probability value was 0.737 more than 0.05 (0.737> α). Based on these results, it can be said thatH_0 is accepted. Motivation and interest in learning did not significantly influence learning outcome. Or it can be said that learning outcome has no relation with motivation and interest in learning.

Conclusion

1. Each lecturer should be paid attention to and / or adjust motivation theory during the lecturing process.
2. Each lecturer should paid attention to and / or adjust the theory of interest during the lecturing process.

REFERENCE

Dalyono (2010), Education Psychology, Jakarta: Rineka Cipta.

Djaali.(2008), Education Psychology, Jakarta: Earth Aksara.

Hamzah. (2007), Motivational theory & measurements, Jakarta: Bumi Aksara.

Great Dictionary of Bahasa Indonesia (2008).

Sardiman, A.M, (2011), Interaction and motivation to learn to teach, Rajawali Pers, Jakarta.

Slameto (2010), Learning and influencing factors. Jakarta: Rineka Cipta.

Sugiyono (2012), Education research Methods, Bandung: Alfabeta.

Sugiyono (2016) Statistics for research, Alfabeta, Bandung.

Uno, H.B (2011),Theory of Motivation and measurement: analysis in Education, Earth Aksara, Jakarta.