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Activity and Achievement Motivation Influence on Expertise Competence Teknik Mesin Faculty of Engineering Unima

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ABSTRACT
Activities and motivation for achievement have an effect on the competence of the Engineering Faculty machine expertise Unima will be analysed. Then lack of learning outcomes will have an impact on the competence of the expertise possessed by students. The purpose of this study is to determine the influence of activity and achievement motivation on the competence of mechanical engineering expertise. The method used in this study is a quantitative descriptive approach using a regression analysis, the population in this study amounted to 50 and the sample taken amounted to 44 respondents. Data collection techniques are carried out by questionnaires for activity variables and achievement motivation while expertise competencies using learning outcome documentation data with indicators of all mechanical engineering expertise courses. The results of this study found a significant positive influence between activity variables and motivation on the competence of mechanical engineering expertise.

Keywords: *Activity, Motivation, Competence expertise*

1. INTRODUCTION

With the aim of achieving learning outcomes that are in accordance with the character of vocational education, of course, the obstacles from outside and within the world of vocational education are very large. Especially in the Department of Mechanical Engineering Education, Faculty of Engineering Unima which is the Printer of "Vocational Education Technicians" for the field of machinery.

One thing that can be seen is the lack of learning outcomes of students majoring in mechanical engineering education in the field of mechanical engineering expertise which is actually the goal or target of the mechanical engineering education department. This lack of learning outcomes will have an impact on the competencies that students will have. Based on the Accreditation Form of the Department of Mechanical Engineering explains that expertise based on the field of science (professionalism) of students majoring in mechanical engineering education based on user responses, in this case the principal of the Vocational Middle School, namely 70% feel sufficient, 18% feel good, 8% less and 4% very good [1][2]. From these data, it can be seen that 70% of graduate users feel sufficient in expertise based on the field of science of graduates majoring in mechanical engineering education.

From various experiences of learning activities, it is a fact that not all students get good achievements in the learning process. Some get good grades and some get less good grades. Even though in teaching does not distinguish between one student and another. Therefore, there may be other factors outside of learning activities that influence that cause variations in student achievement. Factors that may cause this can be classified into two types, namely internal factors and external factors. Internal factors are all factors that come from within students including the level of intelligence, student perception of lecturer competence, talent, creativity, learning independence, psychic state, learning motivation, learning methods, activities and so on [3][4][5]. While external factors are all factors that come from outside the student including teaching methods used by lecturers, the

surrounding environment, socioeconomic level of parents, learning facilities and so on.

To improve learning outcomes that have an impact on expertise competencies, there are several variables that affect the competence of expertise possessed, including activity, and achievement motivation [6].

Mangkunegara suggests that competence is a fundamental factor possessed by someone who has more abilities, which makes it different from someone who has average or ordinary abilities [9]. Sedarmayanti suggests that competence is a fundamental characteristic possessed by someone who has a direct influence on, or can predict excellent performance. In other words, competence is what oustanding performers do more often, in more situations, with better results than what policy raters do. Another factor to watch out for is behavior [7][8].

Learning activities or activities are a series of activities in the learning process [18]. According to Sriyono said that "activities are all activities carried out both physically and spiritually" while according to Oemar Hamalik learning is a process of changing individual behavior through interaction with the environment [22]. So learning activities are all activities that are carried out physically and spiritually in mastery and skills in learning [10].

Another opinion was put forward by Howe [20], that achievement motivation is also influenced by three components, namely:

a. Cognitive drive is the desire of students to have competence in the subject they pursue and the desire to complete the task at hand with the best possible results.
b. An ego-enhancing one is the student's desire to improve his self-esteem status, for example by excelling in all fields.
c. The affiliation component is the student's desire to always be affiliated with another student.

Based on the opinions of experts, it can be concluded that there are three factors that affect achievement motivation, namely cognitive drive, self-esteem, and the need for affiliation [11][12][13]. Cognitive drive is related to the student's desire to have competence in the subject he pursues and to complete the task at hand with the best possible results. Self-esteem is that student's study diligently, carry out tasks to gain status and self-esteem.

2. RESEARCH METHODS

In this study using a quantitative descriptive approach,using regression analysis, to measure the extent of influence between the following variables:

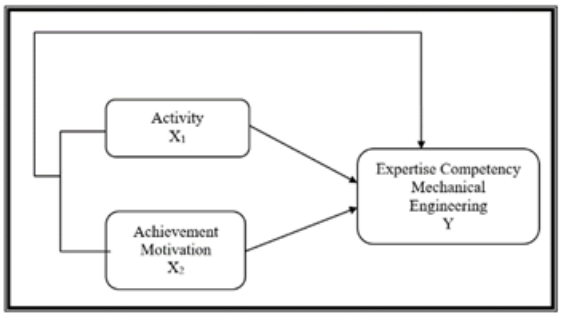

Figure 1. Research Variable Relationship Constellation Design

Figure 1. Research variable relationship constellation design

This study was conducted on a population of 50 with a sample of 44 respondents. Data collection techniques use questionnaire instruments for activities, and motivation to perpetrate. And for the competence of mechanical engineering expertise, documentation data on exam results with indicators of mechanical engineering expertise courses are taken. While the data analysis technique is carried out by analyzing test trial data, namely validity tests and reliability tests and data analysis of research results, namely normality tests, linearity tests and homogeneity tests [14].

The data analysis intended here is to test the correctness of the hypothesis. The technique used in this study is regression analysis. Before data analysis is carried out, research data will be described from 3 independent variables and 1 dependent variable in the form of data tables, distribution, frequency and histograms. Before the hypothesis test is carried out, the prerequisite analysis test is first carried out through the normality test and then the hypothesis test [15][16].

3. RESULTS AND DISCUSSION

Research Results

Testing requirements analysis:

1. Normality Test

The hypotheses proposed in the normality test are:

H0: The estimated error data is normally distributed.

H1: The estimated error data is not normally distributed.

The provisions in this test are if Lcalculate ≤ Ltabel (α=0.05). Then the data is normally distributed, otherwise if Lcalculate > Ltable (α=0.05) then the data is not normally distributed [18].

a. Data Normality Test Score Y over X1

Based on calculations, it turns out that the regression equation $\hat{Y}$ = 13.359 + 0.481 X2 with the Liliefors normality test can be produced Lcalculate = 0.095 for α = 0.05 critical value Ltable (α=0.05: 44) = 0.134. From the price of Lcalculate ≤ Ltabel (0.05: 44), H0 is accepted. Thus, it can be argued that the estimated error distribution Y over X2 comes from a population that has a normal distribution.

b. Y Data Normality Test over X2

Based on calculations, it turns out that the regression equation $\hat{Y}$ = 39.673 + 0.649 X3 with the Liliefors normality test can be produced Lcalculate = 0.093 for α = 0.05 critical value Ltable (α= 0.05: 44) = 0.134. From the price of Lcalculate ≤ Ltabel (0.05 :44), H0 is accepted. Thus, it can be argued that the estimated error distribution Y over X3 comes from a population that has a normal distribution.

2. Regression Significance and linearity Test

a. Significance and Linearity of Regression Y Upper X1

From the results of calculations and analysis of the regression equation variable Y over X 1, the regression equation $\hat{Y}$ = 13.359 + 0.481 X1 has been obtained as explained in the following table 2.

Table 2. ANAVA for Significance and Linearity testing Regression Y over X 1 ($\hat{Y}$ = 13.359 + 0.481 X1)

Source of Variance	MIN	JK	RJK	F_{count}	F_{table}	
					a=0,05	α=0,01
Total	44	2657,500				
Regression (a)	1	319772,8	319772,8			
Regression (b/a)	1	943,376	943,4	23,115	4,072654	7,279561
Remnant	42	1714,124	40,8			
Tuna Match	16	923,725	57,7	1,899	2,051758	2,778068
Error	26	790,399	30,4			

Information:

dk= degrees of freedom
jk= sum of squares
RJK= Average Number of Squares

Based on the test results presented in the previous table, it can be concluded that the regression equation $\hat{Y}$ = 13.359 + 0.481 X 1 has F count (23.115) > Ftable (4.072654) at α = 0.05. This means that the regression equation is very significant [19].

b. Significance and Linearity of Regression Y Over X2

From the results of calculations and analysis of the regression equation of variable X1 over variable X 2 has been obtained regression equation $\hat{Y}$ = 39.673 + 0.649 X2 the results obtained are as explained in the following table:

Table 3. ANAVA for Significance and Linearity testing Regression Y over X 2 ($\hat{Y}$ = 39.673 + 0.649 X2)

Source of Variance	MIN	JK	RJK	F_{count}	F_{table}	
					a=0,05	α=0,01
Total	44	2657,500				
Regression (a)	1	319772,8	319772,8			
Regression (b/a)	1	1784,998	1785,0	85,925	4,072654	7,279561
Remnant	42	872,502	20,8			
Tuna Match	18	520,919	28,9	1,976	2,054331	2,789225
Error	24	351,583	14,6			

Information:

dk = degrees of freedom
jk = sum of squares
RJK= Average Number of Squares

Based on the test results presented in the previous table, it can be concluded that the regression equation $\hat{Y}$ = 39.673 + 0.649 X3 has F count (85.925) > Ftable (4.072654) at α = 0.05. This means that the regression equation is very significant.

Hypothesis Testing:

1. Activities (X1) on Mechanical Engineering Expertise Competency (Y)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Itself.
		B	Std. Error	Beta		
1	(Constant)	13.362	15.001		.891	.378
	X2	.481	.100	.595	4.804	.000

a. Dependent Variable: Y

Based on the outpus table SPSS Coefficients, it is known that the significance value (sig) of the variable X1 is 0.000. Because of the value of sig. < probability 0.05, so it can be implied that the hypothesis is accepted. This

means that there is an influence of Activities (X1) on the Competence of Mechanical Engineering Expertise (Y).

Based on the table, the hypothesis test that will be tested in this study is the influence of Activities on the Competence of Mechanical Engineering Expertise. The hypothesis states that there is a positive influence between Variable X2 and Variable Y students of the Faculty of Engineering Unima.

Model sumarry

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.595[a]	.355	.339	6.39575

a. Predictors: (Constant), X2

Based on the Model Summary table X1 against Y, it can be seen that the magnitude of R Square is 0.355. That means 35.5% of Variable X2 can be explained by Variebel Y, and the rest is influenced by other variables.

2. Achievement Motivation (X2) to Mechanical Engineering Expertise Competency (Y)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Itself.
		B	Std. Error	Beta		
1	(Constant)	39.653	4.968		7.982	.000
	X3	.650	.070	.820	9.272	.000

a. Dependent Variable: Y

It is known that the significance value (sig) of the variable x2 is 0.000. Because of the value of sig. < probability 0.05, so it can be implied that the hypothesis is accepted. This means that there is an influence of achievement motivation (x2) on mechanical engineering expertise competence (y) [21].

Based on the table, the hypothesis test that will be tested in this study is the influence of achievement motivation on mechanical engineering expertise competence. The hypothesis states that there is a positive influence between variable x2 on variable y students of the faculty of engineering unima [23].

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.820[a]	.672	.664	4.56076

a. Predictors: (Constant), X3

Based on the Model Summary table X2 against Y, it can be seen that the magnitude of R Square is 0.672. That means 67.2% of Variable X 2 can be explained by Variebel Y, and the rest is influenced by other variables.

3. Activities (X1) and Achievement Motivation (X2) Against Mechanical Engineering Expertise Competencies (Y)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Itself.
1	Regression	1819.294	2	909.647	44.261	.000[b]
	Residual	842.633	41	20.552		
	Total	2661.927	43			

a. Dependent Variable: Y
b. Predictors: (Constant), X2, X3

Based on the outpus table SPSS ANOVA, it is known that the significance value (sig) of the variables X1 and X2 together is 0.000. Because of the value of sig. < probability 0.05, so it can be implied that the hypothesis is accepted. This means that there is an influence of Activity (X 1) and Achievement Motivation (X2) on Mechanical Engineering Expertise Competence (Y).

Based on the table, the hypothesis testing that will be tested in this study is the influence of Activity (X1) and Achievement Motivation (X2) on Mechanical Engineering Expertise Competence. The hypothesis states that there is a positive influence between Variables X 1 and X2 on Variable Y students of the Faculty of Engineering Unima.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.827[a]	.683	.668	4.53343

a. Predictors: (Constant), X2, X3

Based on the Model Summary table X1 and X2 against Y, it can be seen that the magnitude of R Square is 0.683. That means 68.3% of variables X 1 and X2 can be explained by Variable Y, and the rest are influenced by other variables.

4. Activities (X1) and Achievement Motivation (X2) Against Mechanical Engineering Expertise Competencies (Y)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Itself.
1	Regression	2490.975	3	830.325	194.282	.000[b]
	Residual	170.953	40	4.274		
	Total	2661.927	43			

a. Dependent Variable: Y
b. Predictors: (Constant), X1, X2, X3

Based on the outpus table SPSS ANOVA, it is known that the significance value (sig) of the variables X1 and X2 together is 0.000. Because of the value of sig. < probability 0.05, so it can be implied that the hypothesis is accepted. This means that there are Activities (X 1) and Achievement Motivation (X2) on Mechanical Engineering Expertise Competencies (Y).

Based on the table, the hypothesis testing that will be tested in this study is the influence of Activity (X1) and Achievement Motivation (X2) on Mechanical Engineering Expertise Competence. The hypothesis states that there is a positive influence between Variables X 1 and X2 on Variable Y students of the Faculty of Engineering Unima [24].

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.967[a]	.936	.931	2.06732

a. Predictors: (Constant), X1, X2, X3

Based on the Model Summary table X1 and X2 against Y, it can be seen that the magnitude of R Square is 0.936. That means 93.6% of variables X 1 and X2 can be explained by Variebel Y, and the rest are influenced by other variables [25].

Discussion

1. Positive activities towards Mechanical Engineering Expertise Competency

In this study, Activity directly affects the Competence of Mechanical Engineering Expertise. This is evidenced by the calculated t value for the variable Activity on Mechanical Engineering Expertise Competence greater than t-table. Where t count = 4.804 > t-table = 1.680 at $\alpha = 0.05$. So that the influence of the activity on the competence of mechanical engineering expertise is positive and significant.

2. Positive Achievement Motivation for Mechanical Engineering Expertise Competency

In this study, Achievement Motivation directly affects the Competence of Mechanical Engineering Expertise. This is evidenced by the calculated t value for the variable Achievement Motivation to Mechanical Engineering Expertise Competence greater than t-table. Where t count = 9.272 > t-table = 1.680 at $\alpha = 0.05$. So that the influence possessed by Achievement Motivation on the Competence of Mechanical Engineering Expertise is positive and significant.

3. Activities and Motivation for Positive Achievement towards Mechanical Engineering Expertise Competencies

In this study, Party Activities and Motivation directly affect the Competence of Mechanical Engineering Expertise. This is evidenced by the calculated F value for the variables Activity and Motivation to Party on Mechanical Engineering Expertise Competence greater than F table.

F table is found in the distribution of r values of statistical tables at significance 5% or 0.05 using the formula F table = (k ; n-k). Where "k" is the number of independent variables while "n" is the number of respondents or research samples. In this study the number of "k" is 2, namely the variables Activity (X2) and Party Motivation (X3). While the number of "n" is 44 students (Respondents). Then we enter this value into the formula, then produce the number (2 ; 44-2) = (2 ; 42), this number is then used as a reference to find or see the F value of the table in the F distribution of the statistical table. So, it was found that the F value of the table is 3.20. so Fcount = 44,261 > Ftable = 3.20 at $\alpha = 0.05$. So that the influence possessed by Party Activities and Motivation on the Competence of Mechanical Engineering Expertise is positive and significant.

4. CONCLUSION

After going through a series of research stages, in this finding can be concluded as follows:

1. Activities have a positive influence on the competence of Mechanical Engineering

expertise Faculty of Engineering, Manado State University.

2. Achievement motivation has a positive influence on the competence of Mechanical Engineering expertise, Faculty of Engineering, Manado State University.
3. Achievement activities and motivation have a positive influence on the competence of Mechanical Engineering expertise, Faculty of Engineering, Manado State University.

5. SUGGESTION

Based on the results of research and conclusions, the following suggestions can be put forward:

1. To the teaching staff in teaching pay attention to creativity and activity so that students are motivated to excel.
2. To students to be more creative and active in learning so that they can be motivated to excel. Thus can have competence in the field of mechanical engineering.

REFERENCES

[1] Ahmad Surjadi Sumadiredja. 2014. Intelligence and the Educational Environment. Bandung: Madar Maju Publishers.

[2] Amir Taufik. 2015. Designing Questionnaires; concepts and guidelines for attitude, personality, and behavior research. Jakarta: Kencana

[3] TF Afiati T.F. (2015)., The Effect of Achievement Motivation and Learning Continuity on Learning Achievement of Office Automation Class X Students Competency of Office Administration Expertise of Smk Negeri 1 Purbalingga School Year 2014/2015., eprints.uny.ac.id

[4] Brief. (2007). Active education; physical education, physical activity and academic performance. Jurnal-Active living research. San Diego State University: San Diego

[5] Darmadi Hamid. 2014. Educational and Social Research Methods. Bandung: Alfabeta

[6] Hamzah Uno. 2015. Theory of Motivation &; Its Measurement: Analysis of the Field of Education. Jakarta: Bumi Aksara

[7] Hutapea, Parulian and Nurianna Thoha, 2008, Competence Plus: Theory, Design, Case and Application for HR and Dynamic Organizations, Publisher: Gramedia Pustaka Utama, Jakarta.

[8] Juliansya Noor, 2011. Research Methodology, Thesis, Dissertation & Scientific Papers. Jakarta: Kencana

[9] Mangkunegara, Anwar Prabu, 2005, Human Resources Performance Evaluation, first edition, first printing, Publisher: Refika Aditama, Bandung.

[10] Malthis, Robert L. and John H. Jackson, 2006, Human Resource Management, Tenth Edition, Translation: Diana Angelica, Publisher: Salemba Empat, Jakarta

[11] Masriam Hill. 2014. Vocational Education Strategy and innovation; from competence to competition. Bandung: Alfabeta

[12] Munandar, Utami. 2004. Development of Gifted Children's Creativity. Jakarta: Rineka Cipta

[13] Nasution. 1995. Didactics of Teaching Principles. Bandung: Zemmars.

[14] Nyoman Dantes. 2012. Research Methods. Yogyakarta: Andi Publisher

[15] Prasetyono Dwi Sunar, 2015. Let's Find Out Your IQ and Personality. Yogyakarta: Saufa

[16] Sanjaya Vienna, 2013. Educational Research Types, Methods and Procedures. Jakarta: Kencana

[17] Sardiman A. M. 2014. Interaction & Motivation for Teaching and Learning. Jakarta: Rajawali Press

[18] Sutisno, 2012. Creatively develop ICT-based learning activities. Jakarta:References

[19] Sugiyono. 2014. Qualitative Quantitative Research Methods and R&D. Bandung: Alfabeta

[20] Difficulty. 2013. Methodology of Educational Research Competency and Its Practice. Jakarta: Bumi Aksara.

[21] Supardi. 2015. Authentic Assessment of Affective, Cognitive, and Psychomotor Learning: Concepts and Applications. Jakarta: Rajawali Press.

[22] Suyono and Harianto, 2011. Learning and learning. Bandung:P T Remaja Rosdakarya

[23] Sjukur S.B. (2012 Journal of Vocational Education, 2012 - journal.uny.ac.id

[24] Sri Yani Widyaningsih, Haryono, Sulistyo Saputro (2012)., MFI and pogil models in terms of learning activities and student creativity towards learning achievement by., ISSN: 2252-7893, Vol 1, No 3, 2012 (pp 266-275)http://jurnal.pasca.uns.ac.id

[25] Tirtiana Chandra Putri (2013) The influence of learning creativity, the use of Power Point learning media, and the family environment on the learning outcomes of accounting subjects in grade X Akt Smk Negeri 2 Blora students for the 2012/2013 academic year (learning motivation as an intervening variable)., http://journal.unnes.ac.id/sju/index.php/eeaj