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LEARNING METHOD, FACILITIES AND INFRASTRUCTURE, AND LEARNING RESOURCES IN BASIC NETWORKING FOR VOCATIONAL SCHOOL

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ABSTRAK

This study aims to examine the contribution of learning methods on learning output, the contribution of facilities and infrastructure on output learning, the contribution of learning resources on learning output, and the contribution of learning methods, the facilities and infrastructure, and learning resources on learning output. The research design is descriptive causative, using a goal-oriented assessment approach in which the assessment focuses on assessing the achievement of a goal. The population in this study are teachers and students involved in English for Vocational School subject, namely the Class X of Multimedia and TKJ expertise. The samples in this study are teachers and students of Class X in Multimedia and TKJ expertise at SMK Negeri 1 Pogalan. The results shows that the contribution of learning methods on learning output is 31.57%, the contribution of facilities and infrastructure to the learning output is 19.824%, and the contribution of learning resources to the learning output is 16.112%. The contribution of learning methods, facilities and infrastructure, and learning resources to the learning output is 67.506%.

***Keywords**: Learning Method, Facilities and Infrastructure, Learning Resources.*

I. INTRODUCTION

The Indonesian government is currently promoting Vocational School intensively as a secondary school after graduating from junior high school. This is because Vocational School not only teaches knowledge as well as in high school, but also teaches the students skills and independence. Skills are needed in today's workplace. Therefore, the existence of Vocational School is to answer the needs of the community. The advertisements of vocational schools aired on television have opened the minds of the community, especially the parents to take their children to Vocational School. Therefore, Vocational School becomes the main choice of the parents to take their children's education in upper secondary level.

The main purpose of the establishment of vocational school is to form graduates who are ready to work. The mission of several vocational schools mentioned that they position themselves as a proud school, has vision to produce graduates with superior competence, good personality, skillful and self-employed in the global era. In reality the vision and mission is still not yet achieved. For example, SMK Negeri 1 Pogalan in Trenggalek, East Java, has graduated as many as 4 graduates so far. From an average of 40 students per class graduated annually, only 11 students are reported to have gained employment. Ironically enough, Vocational School which is an institution that works to create a workforce produces only 27.5% of workers. Graduates are the reflection of the learning quality. If the graduates are still not in accordance to the vision of the school, then the learning process is still not done well.

Methods of learning, facilities and infrastructure, and learning resources are part of learning process. The variety of materials and media involved requires a good learning method that able to accommodate any learning activities. Each student has different analytical and creativity, so they have different level of understanding on each of the subjects [1]. A good learning method is able to accommodate students according to their level of understanding and develop the entire potential of students holistically. The teacher at SMK Muhamadiyah Prambanan uses classical methods, namely the lecture method, then the students listen and write [2]. The use of lecture me-

thods without any variation in learning over a long period of time can lead to saturated, less motivated students who will ultimately lead to declining student's learning output. This can be shown by the presence of students who sleep or make fuss with their friends when the learning process takes place.

SMK Negeri 1 Gorontalo, especially in class X Multimedia expertise, so far the teaching method used by the teachers tend to be one way communication, where teachers are more active in providing information to the students [3]. Teachers don't pay attention to the student's thinking ability. The method used is less varied, so the student's learning motivation becomes difficult to grow. This has an impact on student's learning output that are still classified into low category, which is 55% of learning mastery, while the applied mastery standard is 70% with an average value of 65.

Learning facilities and infrastructure is one of the determinants of learning output. Learning facilities and infrastructure are all tools of equipment, materials, and furniture, which are directly used in the learning process in the class. The average suitability of TKJ practice room's equipment for SMK Negeri 1 Pogalan is 23.57%, and for SMK Negeri 1 Suruh is 19.51%, and the average suitability of TKJ lab room's furniture for SMK Negeri 1 Pogalan is 39.02%, and for SMK Negeri 1 Suruh is 26.82% [4]. The suitability of the practice room's equipment and furniture for both vocational schools are still below 50%, which means it is still very low. The availability of the practice room can also affect the student's learning condition. The percentage of practice room availability for SMK Negeri 1 Pogalan is 66,66%, and for SMK Negeri 1 Suruh is 33,33%.

The determinant of learning output other than the use of learning methods and the condition of the learning environment is the availability of learning resources. Currently the learning resources should be easy to obtain via the Internet, but in practice this is not the case. TKJ expertise at SMK Negeri Pancatengah, the main learning resource used by the students is the notes given by their teachers in the class [5]. This may be due to the vastness of the internet so that students have difficulties in finding and filtering out what materials should be used as a reference in learning without the guidance of the teacher.

Planning and implementation of the learning that is less than optimal affects the learning output as well. The classroom condition that the learning process is still centered to the teacher, the use of lecturing method to deliver the materials which makes the students tend to be passive, supported by the use of learning methods and resources that are less than optimal, resulting in student's learning output that mostly do not meet the Standar Ketuntasan Minimal (SKM) [5]. In that study, the percentage of students whose grade meets SKM is only 3.03% out of 32 students in total.

Learning methods that do not accommodate learning activities, facilities and infrastructure that do not support teaching and learning activities, and the low availability of learning resources can affect student's learning output. In order to solve the problem, and improve the learning output, it is necessary to review each learning component, and see which component gives the greatest contribution to the learning output. For that purpose, this research intends to study the contribution of learning methods, facilities and infrastructure, and learning resources to the students' learning output in English for Vocational School subject.

II. METHOD

The research design used is descriptive causative, using a goal-oriented assessment approach, where the assessment focuses on assessing the achievement of a goal. The researcher position himself as an observer, data collector, data analyzer, data interpreter, and as reporter of the research result. The presence of researcher is known by the research subjects. The presence of the researcher does not alter or affect the conditions experienced by the research subjects, but only wants to assess a phenomenon, which is the contribution of learning methods, facilities and infrastructure, and learning resources to the learning output on the subject of English for Vocational School.

Research phase is divided into 2 main phases, namely assessment and analysis. Both phases are hierarchical or should be done sequentially. The assessment phase is done by assessing the variables based on predefined standards. Analysis phase is done by analyzing the contribution of independent variables to the dependent variable. Contribution analysis is done partially or all in one. The main purpose of this study is to make a conclusion about which independent variables that contribute most to the dependent variable. These conclusions can be used as suggestions for improvement of the learning process to obtain more optimal learning output. Assessment phase for each variable in this study can be seen in Fig. 1 below:

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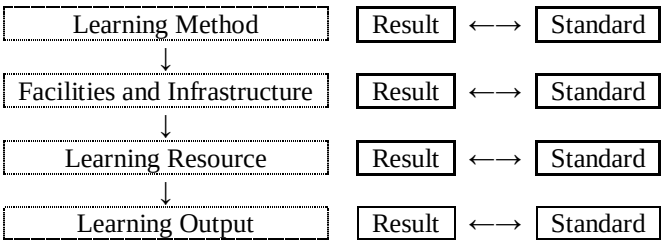

Fig. 1. Assessment Phase

Assessment is done sequentially starting from the learning method to the learning output. Assessment is done by comparing the results against the predefined standards. After the assessment is done, then do the contribution analysis. The framework of the independent and dependent variables on the contribution analysis can be seen in Fig. 2 below:

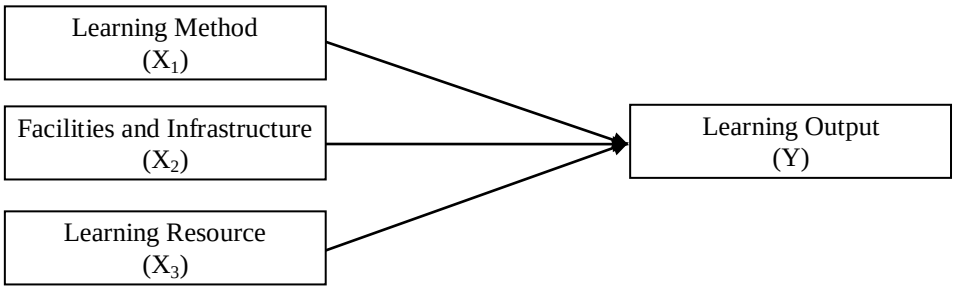

Fig. 2. Variables Framework

Assessment for the learning method is done by comparing the Rencana Pelaksanaan Pembelajaran (RPP) which has been prepared by the teacher with the standard that has been determined, in this case the syllabus of 2013 curriculum adapted from the Peraturan Menteri Dinas Pendidikan dan Kebudayaan (Permendikbud) No. 70 of 2013 on the Basic Framework And Structure of Vocational High School Curriculum / Vocational Madrasah Aliyah [6]. In general, learning methods in the scientific approach include lectures, literature review, experiments, discussions, and frequently asked questions. Assessment is focused on the suitability of aspects or components designed by the teacher to the predefined standard.

The assessment of the infrastructure is done by observing and giving questionnaires to the laboratory about the completeness or suitability of facilities and infrastructures that support the English for Vocational School subject against the predefined standards. The infrastructure standard for SMK or MAK has been regulated [7]. Broadly speaking, the aspects assessed are the suitability of conditions, furniture, educational equipment, educational media and other equipment in the classroom, library, and language laboratory.

The assessment of learning resources is done by observing and giving questionnaires to the respondents. The standard of assessment is the syllabus of the 2013 curriculum. In general, the observed aspects are the suitability or availability of the learning resources, which include textbooks, teacher manuals, books or other relevant references, print or electronic media, and the environment.

The assessment of learning output is done by assessing student learning output from all the cognitive, affective, and psychomotor aspects. Student's learning output are obtained from the daily test scores or report and teacher observations. The purpose of this assessment is to know the number of students whose mark meets and does not meet the Standar Ketuntasan Minimal (SKM). The greater the percentage of students whose mark meets the SKM, the better the learning quality is.

The population in this study are teachers and students involved in English for Vocational School subject, namely Class X of Multimedia and TKJ expertise. This research is conducted at SMK Negeri in Trenggalek City. Trenggalek is chosen because it is one with the highest level of income inequality and severity of poverty in East Java, so the role of vocational school as the worker producer needs to get a special attention. The sample in this study is taken randomly with random sampling method, with the provisions of the SMK has both Multimedia and TKJ expertise, and has graduated students. Based on these provisions, the samples taken are teachers and students of Class X in Multimedia and TKJ expertise at SMK Negeri 1 Pogalan. The types of instruments used in this

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study are observation sheets, questionnaires and documentation.

Once the required data has been collected the next step is to describe the data in percentage form. To change the data that has been obtained into percentage form used the formula as follows:

$$Percentage = \frac{S}{N}\ x\ 100\% \quad (1)$$

Where S is the number of scores obtained and N is the maximum number of scores. Then the calculation results are analyzed and then qualified based on Table 1 below:

TABLE I
SCORES QUALIFICATION

Category	Percentage	Qualification	Equivalent
A	80% - 100%	Valid	Suitable
B	60% - 79%	Quite Valid	Quite Suitable
C	50% - 59%	Less Valid	Less Suitable
D	0% - 49%	Not Valid	Not Suitable

After all data is calculated, then do the follow up that is finding the learning aspect which gives contribution or influence to student's learning output most using regression test. The prerequisite tests for the regression test includes normality test, heteroscedasticity test, linearity test, multicollinearity test, and autocorrelation test. Normality test is used to determine whether the data being analyzed has normal distribution or not. Heteroscedasticity test is used to determine whether or not there is a deviation of classical assumption of heteroscedasticity, that is the existence of variant inequality of the residual for all observation in regression model. Linearity test is used to determine whether two variables have a linear relationship or not significantly. Multicollinearity test is used to determine whether or not the deviation of classical assumption of multicollinearity, that is the existence of linear relationship between independent variable in regression model. Autocorrelation test is used to determine whether or not there is a deviation of classical autocorrelation assumption, that is the correlation between residual in one observation with other observation on regression model.

III. FINDINGS AND DISCUSSIONS

Normality test is done by chi-square test. This test is done by using SPSS 16. The menu used is Analyze, then Non Parametric, then 1-Sample KS. The variable entered as the dependent variable is the unstandardized residual value. A variable is said to be normally distributed if the value of Asymp. Sig. (2-tailed) more than 0.05. The following figure is the result of the normality test in this study:

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		60
Normal Parameters[a]	Mean	.0000000
	Std. Deviation	2.96718087
Most Extreme Differences	Absolute	.124
	Positive	.124
	Negative	-.092
Kolmogorov-Smirnov Z		.958
Asymp. Sig. (2-tailed)		.318

a. Test distribution is Normal.

Fig. 3. Normality Test

Based on the test result, the obtained Asymp value. Sig. (2-tailed) is 0.318. This value is greater than 0.05 so it can be concluded that all variables in this study are normally distributed.

Heteroscedasticity test is done by Glejser test. This test is done by using the help of SPSS 16. The menu used is Analyze, then Regression, then Linear. The variable entered as the dependent variable is the absolute value of the

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unstandardized residual. A variable is not experiencing symptoms of heteroscedasticity if the value of Sig. on the test result is more than 0.05. The following figure is the result of the heteroscedasticity test in this study:

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.342	4.600		.944	.349
	Sumber	-.027	.121	-.045	-.225	.823
	Metode	.048	.092	.123	.520	.605
	Sarpras	-.052	.089	-.156	-.583	.562

a. Dependent Variable: Abs_Res

Fig. 4. Heteroscedasticity Test

Based on the test result, Sig value obtained on the Learning Method is 0.605. This value is greater than 0.05, so it can be concluded that Learning Method does not experience symptoms of heteroscedasticity. Sig value obtained on the Learning Resources is 0.823. This value is greater than 0.05, so it can be concluded that Learning Resources does not experience symptoms of heteroscedasticity. Sig value obtained on the Facilities and Infrastructure is 0.562. This value is greater than 0.05, so it can be concluded that the Facilities and Infrastructure does not experience symptoms of heteroscedasticity.

Linearity test is done by using test for linearity. This test is done by using the help of SPSS 16. The menu used is Analyze, then Compare Means, then Means. In the Option check the test for linearity menu to test the linearity of the variable. Two variables are said to have a linear relationship if the value of Sig on the Deviation from Linearity is greater than 0.05. The following figure is the result of the linearity test in this study:

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
Nilai * Metode	Between Groups	(Combined)	1152.730	21	54.892	4.679	.000
		Linearity	946.585	1	946.585	80.685	.000
		Deviation from Linearity	206.145	20	10.307	.879	.612
	Within Groups		445.810	38	11.732		
	Total		1598.540	59			

Fig.5. Linearity Test for Learning Method

Based on the test result above, the obtained value of Sig on the Deviation from Linearity is 0.612. This value is greater than 0.05, so it can be concluded that the relationship between Learning Method with Learning Output is linear.

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
Nilai * Sumber	Between Groups	(Combined)	1011.205	14	72.229	5.534	.000
		Linearity	801.512	1	801.512	61.410	.000
		Deviation from Linearity	209.693	13	16.130	1.236	.287
	Within Groups		587.335	45	13.052		
	Total		1598.540	59			

Fig. 6. Linearity Test for Learning Resources

Based on the test result above, the obtained value of Sig on the Deviation from Linearity is 0.287. This value is greater than 0.05, so it can be concluded that the relationship between Learning Resources with Learning Output is linear.

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
Nilai * Sarpras	Between Groups	(Combined)	1136.466	22	51.658	4.136	.000
		Linearity	922.701	1	922.701	73.884	.000
		Deviation from Linearity	213.765	21	10.179	.815	.686
	Within Groups		462.074	37	12.488		
	Total		1598.540	59			

Fig. 7. Linearity Test for Facilities and Infrastructure

Based on the test result above, the obtained value of Sig on the Deviation from Linearity is 0.686. This value is

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greater than 0.05, so it can be concluded that the relationship between Facilities and Infrastructure with Learning Output is linear.

Multicollinearity test is done by comparing the value of individual determination coefficient (r^2) with the value of simultaneous determination coefficient (R^2). This test is done by using the help of SPSS 16. The menu used is Analyze, then Regression, then Linear. Collinearity diagnostics is selected in the Statistic menu to test the variable's multicollinearity. A variable is said to have no collinearity problem if the VIF value is less than 5. The following figure is the result of the multicollinearity test in this study:

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	6.855	6.759		1.014	.315		
	Sumber	.431	.177	.280	2.435	.018	.438	2.283
	Metode	.407	.135	.410	3.016	.004	.314	3.186
	Sarpras	.180	.131	.212	1.379	.173	.245	4.075

a. Dependent Variable: Nilai

Fig. 8. Multicollinearity Test

Based on the test result above, the obtained VIF value on the Learning Method is 3.186. This value is less than 5, so it can be concluded that there is no collinearity problem in the Learning Method variable. The VIF value of the Learning Resources is 2.283. This value is less than 5, so it can be concluded that there is no collinearity problem in Learning Resources variable. The VIF value of the Facilities and Infrastructure is 4.075. This value is less than 5, so it can be concluded that there is no collinearity problem in Facilities and Infrastructure variable.

Autocorrelation test is usually done by using the Durbin-Watson (DW) test. This test is done by using the help of SPSS 16. The menu used is Analyze, then Regression, then Linear. Durbin Watson menu is selected in the Statistics to test the autocorrelation of the variables. A variable is said to have no autocorrelation problem if the DW value is between dU and 4-dU. The following figure is the multicollinearity test in this study:

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.822[a]	.675	.658	3.04562	1.765

a. Predictors: (Constant), Sarpras, Sumber, Metode

b. Dependent Variable: Nilai

Fig.9. Autocorrelation Test

Based on the Durbin Watson table, for N as much as 60, 5% of significance level and the number of independent variables is 3, the dU value is 1.689. Based on that, the value of 4-dU is 2.311. In the picture above, the obtained Durbin-Watson value is 1.765. This value is greater than 1.689 and less than 2.311, so it can be concluded that there is no autocorrelation problem on this research variable.

The contribution test is done if all the prerequisite tests are met. This test is done by using the help of SPSS. The tests used are partial regression coefficient test (t test) and correlation test. The menu used for partial regression coefficient test is Analyze, then Regression, then Linear. The t value can be seen in the Coefficients table. The following figure is the result of the partial regression coefficient test in this study:

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.855	6.759		1.014	.315
	Sumber	.431	.177	.280	2.435	.018
	Metode	.407	.135	.410	3.016	.004
	Sarpras	.180	.131	.212	1.379	.173

a. Dependent Variable: Nilai

Fig.10. Partial Regression Coefficient Test

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The contribution of each independent variable to the dependent variable is calculated by multiplying the value of Standardized Coefficient from the result of the partial regression coefficient with the correlation value between the independent variables with the dependent variable. The correlation of each independent variable to the dependent variable is done by using Analyze menu, then Correlate, then Partial. In the Option menu select the zero-order correlations. The following figure is the result of the correlation test in this study:

Correlations

Control Variables			Metode	Sarpras	Sumber	Nilai
-none- [a]	Metode	Correlation	1.000	.826	.658	.770
		Significance (2-tailed)	.	.000	.000	.000
		df	0	58	58	58
	Sarpras	Correlation	.826	1.000	.746	.760
		Significance (2-tailed)	.000	.	.000	.000
		df	58	0	58	58
	Sumber	Correlation	.658	.746	1.000	.708
		Significance (2-tailed)	.000	.000	.	.000
		df	58	58	0	58
	Nilai	Correlation	.770	.760	.708	1.000
		Significance (2-tailed)	.000	.000	.000	.
		df	58	58	58	0
Nilai	Metode	Correlation	1.000	.581	.250	
		Significance (2-tailed)	.	.000	.056	
		df	0	57	57	
	Sarpras	Correlation	.581	1.000	.453	
		Significance (2-tailed)	.000	.	.000	
		df	57	0	57	
	Sumber	Correlation	.250	.453	1.000	
		Significance (2-tailed)	.056	.000	.	
		df	57	57	0	

a. Cells contain zero-order (Pearson) correlations.

Fig. 11. Partial Regression Coefficient Test

Based on the test result above, the obtained correlation value between Learning Method and Learning Output is 0.770. The correlation value between Learning Resources and Learning Output is 0.708. The correlation value between Facilities and Infrastructure and Learning Output is 0.760. Based on Figure 3.8, the value of Standardized Coefficient for Learning Method is 0.410, for Learning Resources is 0.280, and for Facilities and Infrastructure is 0.212. The contribution of each independent variable to the dependent variable is calculated by multiplying the value of Standardized Coefficient with the correlation value between the independent variables and the dependent variable. The contribution of Learning Method is 0.770 x 0.410 = 0.3157 = 31.57%. The contribution of Learning Resources is 0.708 x 0.280 = 0.19824 = 19.824%. The contribution of Facilities and Infrastructure is 0.760 x 0.212 = 0.16112 = 16.112%. Based on the above calculations, the total contribution of all independent variables to the dependent variable is: 31.57% + 19.824% + 16.112% = 67.506%. The conclusion is the contribution of Learning Methods, Learning Resources, and Facilities and Infrastructure to the Learning Output is 67.506%, and the remaining 32.494% is determined by the other factors.

IV. Conclusions and Suggestions

Based on the findings and discussion, the contribution of Learning Method on Learning Output is 31.57%, the contribution of Learning Resource on Learning Output is 19.824%, the contribution of Facilities and Infrastructure on Learning Output is 16.112%, and the contribution of Learning Method, Learning Resources, and Facilities and Infrastructure on Learning Output is 67.506%. The remaining 32.494% is determined by the other factors. The contribution of Learning Output has the highest value, and the contribution of Facilities and Infrastructure has the lowest value. Teachers should pay attention to the learning method, learning resources, and facilities

and infrastructure in the learning process, because those have significant contribution to the learning output.

REFERENCES

[1] Agustini, Kesiman, & Astuti, "The Relationship Between Analytical and Creativity Power of Learning Results in Informatics Sciences of Informatics Engineering Education Department UNDIKSHA Singaraja". Bali: Jurnal Nasional Pendidikan Teknik Informatika of Undiksha, 2012.
[2] Y. Ervan, "Development of Learning Media in Mechanical Engineering Expertise Based on Adobe Flash CS3 Professional at SMK Muhamadiyah Prambanan". Yogyakarta: UNY e-Prints, 2012.
[3] Hasriyanti. (2011, Oct). Improving Student Learning Outcomes in Chemical Bonding Materials. [Online]. Available: http://www.slideshare.net/adheesamin/skripsi-ku.
[4] D. F. Perwitasari, "The Relationship between Practice Facility of TKJ, Suitability of Apprenticeship Workplace, and TKJ Competence with Skill Competency Test Results on Students of Public Vocational School". Malang: State University of Malang Press, 2013.
[5] E. Hartono, "Implementation of Problem-Based Instruction Learning Model In Basic Digital Technical Competence at SMK Negeri Pancatengah: Classroom Action Research Study". Bandung: UPI Digital Repository, 2012.
[6] Mendikbud, "Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 70 Year 2013 on Basic Framework and Structure of Curriculum of Vocational High School / Vocational Madrasah Aliyah". Jakarta: Minister of Education and Culture, 2013.
[7] Mendiknas, "Regulation of the Minister of National Education of the Republic of Indonesia Number 40 Year 2008 on Facilities and Infringement Standardsfor Vocational High School / Vocational Madrasah Aliyah". Jakarta: Minister of National Education, 208.