

# Analysis of the Factors of Influence on Motivation Learn Automotive Electrical Material for Students of Class XI SMK YP Delanggu Klaten, Central Java, Indonesia (An Empirical Study)

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**Abstract** - The purpose of this study is to determine the interest and knowledge, facilities and schools, and how teachers teach to the motivation of study in vocational automotive electrical SMK YP Klaten Delanggu either partially or simultaneously. The study was conducted at SMK YP Delanggu Klaten. This study population is all class XI students majoring in automotive, amounting to approximately 128 students. Sample of 40 students by using purposive sampling techniques. Data analysis techniques using multiple linear regression analysis, test the accuracy of the model and the assumption of classical test. The results of this study were (1) There is a partial influence student's interest and knowledge of student's motivation ( $0.036 < 0.05$ ), (2) There is a partial influence on school facilities and students' motivation ( $0.015 < 0.05$ ), (3) No partial influence the way teachers teach to student's motivation ( $0.938 > 0.05$ ) and (4) There are influences simultaneously the independent variables interest and knowledge of students, school facilities and infrastructure, and how teachers teach) to the dependent variable ( $F = 17.523$ ). R Square = 59% means that changes in student's motivation is influenced by variables in the study by 59% in relative terms and the remaining 41% are influenced by variables other than research. Effectively research variables affect student's motivation to change their interest and knowledge of which is 28.26%, school facilities and infrastructure amounting to 29.88%, and the way teachers teach by 0.82%.

**Keywords:** interest and knowledge, facilities and infrastructure, the way teachers teach, motivation to learn and automotive electrical

## INTRODUCTION

Motivation encourage somebody doing something to attain goals that want to rise. Motivation determining the rate of successfully learning activity or failures of the students. Learning without motivation difficult to achieve success optimally (Hamalik, 2005).

Automotive electrical material need to be studied that students can follow the development of the technology's electrical motorbikes and cars as a means of transport is important, because electricity is one of the main support system in the vehicle, in addition to the operational system. Electricity automotive are two things that must be understood, electricity is something abstract, they should know the nature and the laws of electricity. To the functioning of the electricity system there should be support to control of the components of the electricity therefore have to understand of completeness automotive components of electricity.

Automotive electricity is the subject matter must be followed by vocational high school students study of the technique automotive program. Subjects, it has the purpose that students know and comprehend technology electricity automotive a very rapid progress along technology development EFI (Electronic Fuel Injection). But in fact students tend to less motivated in electricity automotive, attending school because they regard electricity automotive pertaining to a thing an abstract and hard as to be fatal.

Someone motivated, one who executes efforts to substantial, to support the production of unity ex-coworker, some of the causes and any organization in which he worked. Motivation mean granting motive, the evocation motive or thing which gives rise to an impulse or the state of being inflict impulse. Motivation is a factor that encourage people to act in certain ways (Martoyo, 2000).

Sabri (1996) students in learning process has a motivation that strongly and distinctly will surely assiduous and succeeded of learning. Motivation third functions : (1) thruster people to do in achieving its goal, (2) at the purpose of determining the direction of a deed which is to be accomplished and (3) selector deed so that the work of the one who has the motivation everlastingly selective and ever toward the goal to be achieved. The function of motivation can be concluded that motivation going to push in order to work out or perform something the deed by determine the result of his work.

## REVIEW OF LITERATURE

### Interest and Knowledge

Interest is a desire of which settled on the self students to be steered on a certain as needs, later on continued to embody in a real action by the presence of attention on objects he wants it to search for information as insight for his own. Dimiyati and Mudjiono (2000) there are some things that can affect motivation learn students, including: (1) ideals and aspirations of students, (2) the ability of students, (3) the condition of students, (4) environmental conditions and (5) an attempt in the teaching for students.

## **Facilities and infrastructure**

School facilities is everything that support directly against the smooth process of teaching and learning. Infrastructure is everything that indirectly can support the success of teaching and learning. Completeness infrastructure will raise up motivation students in learning and can help teachers in the implementation of the learning process (Suryosubroto, 2004).

## **In The Manner of Teachers**

Teach the ability not just to serve as professional teacher educator but also have the duties of humanity and sociological, however, the ability of an essential that deals with the main task of the teacher should be owned by a teacher as lecturers and pedagogues. According to Bafadal (2004) the ability of professional teacher includes: (1) the ability of teaching, making plans, (2) the ability of teaching including judgment and (3) the ability to hold the relationship between the personal with students.

## **Research Previous**

Otoshi, Heffernan (2011) researched the motivation in school students against the understanding is desired or desire against the lesson chosen which is the english against the variables of anatomy, relatedness and competence causing the occurrence of the relation of cause and effect on intrinsic factor motivation and the variables of competence only influential on the dependent variable for english.

Zadok, Leiba and Nachmias (2011) researched the motivation children are playing the game of online, practicing or the test? Regarding the differences with the object of an online game using analysis the log file. In the online computer or a cyber cafe often have certainly file biling or to sign the user. Researchers is exploring the use of a file or record of login the log. The aim of this research is find out motivation school children in behaving learn whether by playing the game is one form of motivation to exercise, or is it only to play been the motivation, or measure the aptitude yourself (self-test).

Bernaus and Gardner (2008) research on the influence of environmental factors good teachers and students against a motivation in improve performance language english. Variable influence or factors that affect motivation among others: integrativeness, the attitude towards the situation, learning intrumental orientation, encouragement, parental and language anxiety. Among the factors overall impact on scholastic achievement motivation learn of students in english.

Nilsen (2009) research about the relationship of student behavior in learning that is influenced by factors of motivation, self-efficacy and value expectation. Model that included among others the motivation factors of university student academic behavior in learning and instruction. His research results showed that the motivation of learning a student influenced by internal factors: self-efficacy, and the values of hope against the majors or courses as to increase learning.

Lee and Yuan (2010) exploring motivation learn, about an effect the total lecturer and quality learning assisten. Factors influencing increased capacity assisten students and lecturer in learning one affected by motivation their study. Conclusion this research is motivation affected by the field of study are ability in teaching quality and learning peer-assisted.

## **PROBLEM OF STATEMENT**

1. Whether a factor of interest and knowledge students having influence against motivation class XI in following lessons of electricity automotive in SMK YP Delanggu Klaten?
2. Whether a factor of facilities and infrastructure of school has an influence upon motivation class XI in following lessons of electricity automotive in SMK YP Delanggu Klaten?
3. Whether a factor in the manner of teachers teach having influence against motivation class XI in following lessons of electricity automotive in SMK YP Delanggu Klaten?
4. Whether a factor of interest and knowledge , facilities and infrastructure at public schools and the manner of teachers teach simultaneously having influence against motivation class XI in following lessons of electricity automotive in SMK YP Delanggu Klaten?

## **OBJECTIVE OF RESEARCH**

Objectives to be achieved of this research is to find out the influence of:

1. A factor of interest and knowledge students against motivation class XI in following lessons of electricity automotive in SMK YP Delanggu Klaten.
2. A factor of their facilities and infrastructures against motivation class XI in following lessons of electricity automotive in SMK YP Delanggu Klaten.
3. A factor in the manner of teachers teach against motivation class XI in following lessons of electricity automotive in SMK YP Delanggu Klaten.

4. A factor of interest and knowledge, their facilities and infrastructures and means teacher taught simultaneously against motivation class XI in following lessons of electricity automotive in SMK YP Delanggu Klaten.

## CONTRIBUTION

1. For researchers can be used to know and comprehend factors anything that affects motivation class XI in attending school electricity automotive in SMK YP Delanggu Klaten.
2. For teachers can be used as a reference for increasing the quality of students to willing to learn electricity automotive in their schools and as material adder intellectual wealth
3. For schools is input for SMK YP Delanggu Klaten in implementation of the learning process electricity automotive, to hold change, improve and maintain the learning strategy to knowledge and skill students on matter electricity automotive increase.

## RESEARCH METHODOLOGY

### Type and Design Research

This research is research descriptive quantitative with factors of learning through research the population. Design research used is research associative or correlational used to seek the relation or influence between variables free with a variable bound.

### Population and Sampling

Population in this research is all the students of an automotive engine SMK YP Delanggu Klaten are 128 students. To determine the size of the sample in this research, based on Arikunto (2005) the sample is up to 30% and this research set large sample of the population is  $30\% \times 128 = 42$  students rounded up to 40 students.

### Techniques and Data Collection

Techniques and methods of data collection is to use research instrument in the questionnaire closed. Question form is a way of collecting data by using a checklist or list of questions has been prepared and arranged in such a way that respondents fill out or mark the answer sheet provided. This questionnaire method was used to obtain primary data i.e. data about the intrinsic factor consists of interest and knowledge of students of electrical automotive and extrinsic factors of data consisting of the means and manner of teacher teaching.

### Technique of Data Analysis

Technique that uses the technique of correlation and multiple linear regression test, because the relationships between variables that happen is linear between the variables affecting the interests and knowledge, the school facilities and infrastructure, and how teachers teach to the variables that influenced the motivation of students in improving learning automotive. multiple linear regression model used is:  $Y = c + a_1X_1 + a_2X_2 + a_3X_3 + e$ .

### Test of Normality

Testing aims to test his regression models in an independent variable, dependent variable, or both have a normal distribution or not. Good regression models is data distribution normal or close to normal. To test normality in this study using One Sample Kolmogorov Test Sminorv. Basis in decision making is if 0.05, then regression models meet the assumptions of normality and vice versa (Gujarati, 2003).

### Linearity

Test is important, because this test and can be used to see whether the specification of the model use is correct or not. This research will be used in a tested Ramsey. Test this by way of comparing Ramsey value of  $F_{count}$  with  $F_{table}$ . If  $F_{count} < value F_{table}$ , then the zero hypothesis which states that the specifications in the form of linear is true cannot be denied (Gujarati, 2003).

### Multicollinearity

Analyzes whether there is multicollinearity problem used the *Variance Inflation Factor* (VIF), tolerance and correlation between independent variables are quantity. The regression model is guideline that non tolerance value is multicollinearity a low equals values VIF above 10. So, a low tolerance value equal to the value of the VIF is high (VIF = 1 tolerance) and showed a high collinearity (Gujarati, 2006).

### Heteroskedastisity

Testing heteroskedastisity in this research using Glejser test. The technique of using test Glejser absolute residual value if the values of the independent variable to variable dependent significantly affect the absolute value, residual then there are the symptoms heteroskedastisity research (Gujarati, 2006).

## RESULTS

A descriptive can be explained (Table 1) about interest and knowledge students against matter of electricity automotive with an average value amounting to score quisionner 44.12 (of the total the highest value is 5 x 12 items statement = 60, and total the lowest value = 1 x 12 items statement = 12) showing in a qualitative manner that interest and knowledge students against electricity automotive average height matter with standard deviation as much as 7,275 mean value score against interest and knowledge students between the 44.12-7,275 namely 36,845 until 44.12 + 7,275 namely 51,395, thus, interest and knowledge students against matter of electricity automotive on average is quite high with a score of higher than 30 of the total score highest 60.

**Table 1: Description of Research Data**

Variabel	Average	Standard Deviation
Interest and knowledge students against matter of electricity automotive	44,12	7,275
School facilities and infrastructure support	36,52	6,114
Teacher teaching material as well as the practice of electricity automotive	36,25	6,246
Motivation students in studying electricity automotive	37,25	6,105

(Source: Primary data, 2013)

Perception students against their facilities and infrastructures obtained from the results of the spread of poll (1), the table a descriptive can be explained that the average score obtained by 36,52. As known that the number of statement as much as 10 item with the lowest and highest scale 15 so that the total value of the score is 50 and highest score total lowest value is 10. Thus perception students against their facilities and infrastructures of 36,52 higher than 25 (50% of the total score which is 50). Thus can be explained that score 36,52 was in a qualitative manner having understanding more than enough or can be interpretation enough approaching high or moderately high with standard deviation 6,114 mean value score against their facilities and infrastructures between 36,52 - 6,114 namely 30,406 until 36,52 + 6,114 42,634, namely that the perception students against their facilities and infrastructures is quite high or students feel that facilities and infrastructure that there was at school. They have even support their students against his need whether it's a means of learning as well as a means of practice. A descriptive can be explained (Table 1) about the way that teachers teach against matter of electricity automotive with an average value amounting to score quisionner 36.25 (of the total the highest value is 5 x 10 items statement = 50, and total the lowest value = 1 x 10 items statement = 10 ) showing in a qualitative manner that the way the teacher taught against electricity automotive average height matter with standard deviation as much as 6,246 mean value score against the way the teacher taught between 36.25 - 6,246 namely 30.5 until 36.25 + 6,246 namely 42,5. Thus, in the manner of teachers teach against matter of electricity automotive on average is high with a score of higher than 25 of the total score highest 50. A descriptive inexplicable (Table 1) about motivation against electricity automotive matter with an average value score quisionner 37.25 - 37.25 (highest score of total 5 x 10 items statement = 50, and total the lowest value = 1 x 10 items statement = 10) indicating that motivation qualitative students learning to electrical average height matter automotive with standard deviation by 6,105 mean value score motivation students learning between 37.25 - 6,105 namely 31,5 hingga 37.25 + 6,105 namely 43,45. Thus, motivation students learning materials of automotive against electricity on average with a score of considerable higher than 25 of the total score top 50.

## Multiple Linier Regression

**Table 2: The Result of Testing Multiple Linear Regression**

Variable	Coefficient	t count	Sig.
Constanta	6,818		
Interest in and knowledge of students of electrical automotive learning material (X1)	0,334	2,183	0,036
School facilities and infrastructure that support (X2)	0,417	2,559	0,015
How teachers teach material or practical automotive electrical (X3)	0,013	0,079	0,938
F count = 17.253 Sig. = 0.001			
R Square = 0.590			
Adjusted R Square = 0.556			

(Source: Primary data, 2013)

In accordance with the result of testing in SPSS 16 windows as it seems at Table 2 :  $Y = 6,818 + 0,334X1 + 0,417X2 + 0,013X3 + e$  the constant = 6,818 it means that if within a model research the relation between motivation learn students who influenced by third variables such above that is, (X1, X2, and X3) did not influence, the magnitude of motivation learn students have a fixed value is as much as 6,818. The regression coefficient (X1) = 0,334 it means that if within a model research this relationship variable influence only affected by interest and knowledge students about electricity automotive (the other variables are considered to be fixed or no effect) by the presence of change of the variables interest and knowledge of 1 would affect motivation learn students of 0,334.

The regression coefficient (X2) = 0,417 it means that if within a model research this relationship variable influence only affected by their facilities and infrastructures (the other variables are considered to be fixed or no effect) by the presence of change of the variables their facilities and infrastructures of 1 would affect motivation learn students of 0,417.

The regression coefficient (X3) = 0,013 it means that if within a model research this relationship variable influence only effected by means of teachers teach (the other variables are considered to be fixed or no effect) by the presence of change of the variables way of teaching of 1 would affect motivation learn students of 0,013.

The results of the test t variable interest and knowledge (X1) obtained the result that  $t_{count} (2,183) > t_{table} (2,021)$  then  $H_0$  rejected, mean interest and knowledge students affect motivation learn students. Test t variable their facilities and infrastructures (X2) obtained the result that  $t_{count} (2,559) > t_{table} (2,021)$  then  $H_0$  rejected, means of facilities and infrastructure affect motivation learn school students. The teacher t variable manner of teaching (X3) obtained the result that  $t_{count} (0,079) < t_{table} (2,021)$  then  $H_0$  accepted, mean the the way the teacher taught does not affect motivation learn students. Based on the testing  $f_{count} \text{ known} > \text{amounting to } (17,253) > f_{table} (2,84)$  then  $H_0$  rejected, means there significant influence between interest and knowledge students (X1), their facilities and infrastructures (X2), and the manner of teaching ( X3), teachers simultaneously against motivation learn students (Y).

Based on the result analysis of R-square obtained value amounting to 0,590 (Table 2 ) means a variable interest and knowledge students, facilities and infrastructure at public schools and the manner of teachers teach affect motivation learn students of 59,0 % while the rest of (41,0%) influenced by another factor that is not incorporated in this research, for example, factor cost factor the quality of teachers, or other factors that has correlation high with motivation learn students.

## DISCUSSION

Research conducted in SMK YP Delanggu Klaten that is vocational school education automotive the engineering practice supported by accoutrements sufficient. Contributions and knowledge, a variable interest facilities, schools teacher motivation and manner of teaching students to learn on subjects electricity automotive. Overall contribution variable influence towards motivation learn this research students on subjects automotive electricity indicated by influence simultaneously namely  $F_{count} = 17,253$  significant on standards  $\alpha = 0,05$  ( $p=0,001$ ).

The influence of the simultaneous interest and knowledge, infrastructure and facilities of the school and how teachers teach supports previous research by Zadok, Leiba, and Nachmias (2011) the results of his research that is practice, game or test? Exercises, games, and tests all three affect the interest of users of the online games to play games. The research equation with Zadok, Leiba, and Nachmias (2011) is on the dependent variable, the variable is examined by Zadok, Leiba, and Nachmias (2011) is an online game where users motivation majority wearer is school children who seek their dexterity in the game play. The difference is in that affect his motivation, games and tests while in this study is of interest and knowledge, the school facilities and infrastructure, as well as how teachers teach.

Contribution of knowledge and interest in learning motivation of students in automotive electronics. Interest and knowledge of a positive and significant effect on student learning motivation on automotive electrical known from  $t_{count} = 2,183$  ( $p = 0,036$ ) significance level significant at  $\alpha = 0.05$ . The regression coefficient of 0,334 showed that students increased knowledge and interest will increase the motivation of his studies of 0,334 units with a note that there are no other variables that affected it in addition to the interest and knowledge of the automotive electrical students. This research supports research Nilsen (2009) is self-efficacy affect the academic motivation of students in improving their learning activities. Self efficacy is a condition on the motivating yourself or desire or interest to able or willing to do something on the basis of such knowledge.

School facilities and infrastructure contribution towards the study motivation of students in automotive electronics. The influence of school facilities and infrastructure against known motivations of significant  $t_{count} = 2,559$  ( $\rho = 0,015$ ) on significance level  $\alpha = 0.05$ . The regression coefficient of 0,417 pointed out that when the means and means of increasing the school will improve student learning motivation of 0,417 unit, shows that the school has the facilities and infrastructure impact on learning motivation of students in a positive and significant. Research that supports research and Yuan Lee (2010) the effect of learning motivation one is affected by the variable total quality of teaching is one of variabelnya is the means or equipment learning school.

Contributions to the way teachers teach to the student learning motivation in automotive electronics. How teachers teach in its effects on the motivation of school learning has no effect or can be said to have influence but not significant. This note is based on  $t_{\text{count}} = 0,079$  insignificant ( $p = 0,938$ ) at level of significance of  $\alpha = 0.05$ . Research of its kind that is how teachers teach conducted by Gardner and Bernaus (2008), which is about the influence of the environmental factors both teachers and students to increase achievement motivation in language of United Kingdom. Bernaus research and Gardner (2008) the influence of teacher in teaching of indirect influences of instrumental orientation. Results of the research the way teachers teach to the student learning motivation in mind how teachers teach has no significant influence. How is the teacher teaching student perceptions of the viewpoints of teacher teaching students turned out to have no significant effects on the motivation of their learning. However, the third such variables simultaneously affecting learning motivation of students. Change of student learning motivation variation can be explained by changes in these variables i.e. third variation of (R Square) = 0,590 or 59%, third variables can affect student learning motivation of 59% while the remaining influences of 41% is affected by other factors not included in this research.

## CONCLUSION

1. There is a positive influence and significant factor interest and knowledge students against motivation learning in attending school electricity automotive. From results test hypotheses where the value of significant ( $0,036 < 0,05$ ) and influence in partial value  $t_{\text{count}} (2,183) > t_{\text{table}} (2,021)$  then  $H_0$  rejected, mean interest and knowledge students affect motivation learning students in attending school electricity automotive.
2. There are influence them were found and significant factor their facilities and infrastructures against motivation learning students in attending school automotive. From results test hypotheses where the value of significant ( $0,015 < 0,05$ ) and is partial value  $t_{\text{count}} (2,559) > t_{\text{table}} (2,021)$  then  $H_0$  rejected, mean their facilities and infrastructures affect motivation learning students in attending school electricity automotive.
3. There are negative influence and no significant factor in the manner of teachers teach against motivation learn students in following lessons of electricity automotive. This can be seen from the results of the test hypotheses where the value of significant ( $0,938 > 0,05$ ) and in partial value  $t_{\text{count}} (0,079) < t_{\text{table}} (2,021)$  then  $H_0$  accepted, means perception of students in the way the teacher taught does not affect motivation of learning from the lessons of electricity automotive.
4. There are the influence of them were found and significant factor siswa, interest and knowledge facilities and infrastructure at public schools and the manner of teachers teach betawi together against motivation learned in the following lessons of electricity automotive. This can be seen from the results of the test hypotheses where the value of significant ( $0,0001 < 0,05$ ) and simultaneously value  $F_{\text{count}} (17,253) > F_{\text{table}} (2,84)$  then  $H_0$  rejected, mean interest and knowledge, facilities and infrastructure at public schools and the manner of teachers teach simultaneous to affect motivation of learning in following lessons of electricity automotive.

## SUGGESTION

1. By understanding interest, ability, early students and knowledge the teacher could devise a strategy choose the concepts and methods of learning proper and students will be motivated follow the subject matter that is delivered by the teacher.
2. Facilities and infrastructure is media of education to help teachers in teaching. Teacher told the subject matter assisted by means of the lesson and props to lesson better. In other words, the teacher could not in the classroom, superseded by the media. According to the perception from the research facilities and infrastructure has been sufficient however, the facilities reck function and conformity with matter taught, in this respect, especially conformity with technology development.
3. From the research students according to perception means teacher taught not affecting been the motivation, then that students in learning electricity automotive always motivated should teachers matter electricity need to increase competence and skill.
4. In general this research result showed that motivation students learning against matter electricity automotive good. But there is a factor that not affecting motivation, learn especially manner teachers teach students according to perception of no influence, there should be other researcher with additional factors on the performance and means teacher teaching.

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