

# The Correlation of Learning Motivation and Reasoning Ability to the Scientific Writing Skills of Students in Teaching Indonesian to Speakers of Other Languages (TISOL)

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**Abstract:** *Scientific writing skills are skills that are still considered difficult to foreign students who learn Indonesian language. In connection with the results of this research, scientific writing skills students lack pertinent in understanding aspects of the composition and the ability to reason therefore, this study aims to determine whether there is a relationship between: (1) understanding the learning motivation and scientific writing skills, (2) the ability to reason and scientific writing skills, and (3) understanding of aspects of the learning motivation and the ability to reason together with scientific writing skills. This research was starting March to May 2015. The research method used is quantitative method. with correlational survey techniques. The population of this research is all class "Teaching Indonesian to Speakers of Other Language" in Sebelas Maret University, Solo, Central Java, Indonesia, with a sample of 104 students, they were taken by using the cluster random sampling technique. The analysis technique used regression and correlation. Differential analysis using the statistical technique of regression and correlation (simple, double). The results showed that: (1) there is a positive relationship between the understanding of aspects of the learning motivation and scientific writing skills. (2) there is a positive correlation between the ability to reason and scientific writing skills. and (3) there is a positive relationship between the learning motivation and the ability to reason together with scientific writing skills. Concluded that jointly understanding aspects of the composition and the ability to reason a significant contribution to the scientific writing skills. It shows that these two variables can be a good predictor for scientific writing skills in Teaching Indonesian to Speakers of Other Language.*

**Keywords:** motivation, ability to reason, Scientific Writing skill, TISOL

## 1. Introduction

In a presentation in the plenary session of 9<sup>th</sup> Indonesian Congress, it was discussed the role of Indonesian language as Media of Diplomacy in Developing Indonesia's image in International. Stated in the hearing that at the moment there are 45 states in which Indonesian is taught there, such as Australia, USA, Canada, Vietnam, and many other countries. As an example, in Australia, Indonesian becomes the fourth most popular language. There are 500 schools in which Indonesian language is taught. In fact, TISOL's students of 6<sup>th</sup> grade elementary school have been able to speak Indonesian.

In 2011, the results of an empirical study found that learning Indonesian for foreigners is aimed to support the diplomacy interest, and increase the knowledge about Indonesian, as well as increase understanding of cultural treasures. In this regard, Indonesian language modules need to be developed, so that the foreigners' need in learning Indonesian will be well-served.

In the 32<sup>nd</sup> ASEAN Inter-Parliamentary Assembly (AIPA) in Phnom Penh, Cambodia, 2011, the Indonesian delegation fought for an important mission to make Indonesian as ASEAN language, especially in AIPA meetings. Indonesia was optimistic in fighting for Indonesian as the official language of Asean because most people in Asean are familiar with Malay language. Infact, Indonesian is derived from Malay language.

The fact that Indonesian language is not only limited to be learned by the Indonesian (native speakers) opens a very wide doors for Indonesian Education Study Program graduates to jump in the profession as a teacher of Teaching Indonesian for Speaker of Other Language (TISOL). However, It needs to be emphasized that Teaching Indonesian for Speaker of Other Language (TISOL) is different from teaching Indonesian for native speakers. Thus Indonesian Education Study Program graduates may only jump in the profession if they have been really professional. The purposes of this study were (1) determine the correlation of the learning motivation and scientific writing skills. (2) Determine the correlation of the reasoning ability and scientific writing skills. (3) Determine the correlation of learning motivation and the reasoning ability simultaneously to the scientific writing skills.

## 2. Theoretical Review

Indonesian language learning has four aspects of skill that affect each other is listening, speaking, reading and writing. The writing is very important and useful for a student because the writing is a nature that should be done by a student. So, familiarize students to write can support education who can think critically and have extensive knowledge, because the writing cannot be separated from the reading activities. People can be great and famous because their opinions and thoughts was accepted and admired another people as a opinion and ideas that true and noble thoughts (Buckley, 2006: 145).

A good writer is not a well-known people but one that is able to express their opinions accompanied by a logical argument that can be accepted by other people. Hamied (2012: 27) stated that the essay or writing is a form of communication systems as visual symbol. In order to communication through writing symbol can be understood as expected, the authors let pour their ideas into precise language, orderly, and complete, that's why he/she should be able to think logically. In this case often heard that regular language is a manifestation of the regularly mind.

Hegelhud and Kock (2003: 75) found that low levels of students' writing skills beside caused by learning in schools factors, also caused by factors within the students and environment factors. The factor of interest and readiness in students themselves has a significant effect in determining the writing success. If students have an interest in the problem of writing course, students will be easier mastering these skills.

Related to this study, the low scientific writing skills of students, suspected relation to learning motivation of the students. This concurs with the statement Koorki & Sheikh (2008: 59-63), the main factor that is not interested in scientific writing. Students are not interested in learning scientific writing in the Indonesian language due to the lack of motivation to learn. Motivation to learn is a very important factor in language learning, including learning Indonesian. Especially scientific writing.

In TISOL students who have a good understanding of aspects of the exact composition of the student's writing can write regularly or well in accordance with the criteria of good science writing. In contrast to Fairbairn (2011: 5) According to him, Shared Live Editing in the group is a good tool for the development of writing skills

Another aspect was related to scientific writing skills is the students' reasoning ability. Students who have good reasoning ability would more able to well write too. In line with the above statement (Stern, 2003: 241) argued that the reasoning activities directly related to the language using in the scientific literature, the role of reasoning is very important. Furthermore, he asserts that any shape, scientific writing is characterized by good reasoning. This is explained Richards (2012 : 17) argues that the logic is the science of reasoning quickly. Furthermore, he argues that the science of reasoning helps people to think straight, efficient, precise, and in order to get the truth and avoid mistakes.

Another explanation put forward by Krashen & Terrel (1997:137) formulates reasoning as a process of human thought to the connection between the data and some of the facts or existing evidensithus arrive at a conclusion. Sodium absorption ratio would undeniably, to write an article topic, one must think, link the various facts and data. This reasoning activity expressed in structured sentences in the paragraph which is developing a topic sentence. Students who have the ability to reason that both will make the students can make writing that is easily understood by others.

### 3. Research Methods

The research was conducted in TISOL class of Sebelas Maret University, Solo, Central Java, Indonesia in 2015, for 3 months. The research method used is quantitative method. with correlational survey techniques. The number of study sampleis 104 students were taken by cluster random sampling. The data collecting instrument was used scientific writing skills test, learning motivation test and reasoning ability test. The instrument validity testing of learning motivation and the reasoning ability was used the biseral point correlation formula ( $r_{pbi}$ ). This is due to the research instrument in the form of test that has dichotomous scores (1 and 0). To validity test of scientific writing skills are not tested statistically, but only seen through the construct validity, namely by looking at aspects that are valued in scientific writing, while to measure the reliability level of students' scientific writing skills was used the statistical reliability ratings. The instrument reliability of learning motivation and reasoning ability was tested using KR-20 formula. The analysis technique was used the statistical technique of regression and correlation (simple and double).

### 4. Research Result

The descriptionof analysis results of the third research variable can seen in Table-1 below.

**Table 1: Descriptive Analysis Result**

Statistic Value	Y	X <sub>1</sub>	X <sub>2</sub>
N	104	104	104
Total	7983	2355	4716
Mean	76.76	22.64	22.67
Modus	74	23	21
Median	78	23	21
Variance	70.11	16.54	33.72
SD	8.37	4.07	5.81
Highest Score	90	33	33
Lowest Value	54	14	12
Range	36	19	12

where:

Y : Scientific Writing Skills

X<sub>1</sub> : Learning motivation

X<sub>2</sub> : Reasoning Ability

Tests were conducted regarding the data normality testing.

The data normality test done used *Lilliefors* test.

**Table 2: Resume of Normality Test Results**

Variables	L <sub>o</sub>	L <sub>t</sub>	Conclusion
Y	0.0620	0.0869	Normal
X <sub>1</sub>	0.0748	0.0869	Normal
X <sub>2</sub>	0.0791	0.0869	Normal

where:

Y : Scientific Writing Skills

X<sub>1</sub> : Learning motivation

X<sub>2</sub> : Reasoning Ability

L<sub>o</sub> : L Value of Research Results

L<sub>t</sub> : L value of table

## 5. Hypothesis Test Results

### *The correlation of the learning motivation and scientific writing skills*

Simple linear regression analysis of the learning motivation and scientific writing skills was obtained by regression of 1.07 on constants of 52.52. Thus, the correlation of the learning motivation and scientific writing skills can be described the regression line, namely:  $\hat{Y} = 52.52 + 1.07X_1$ , this meaning the constants of 52.52. Regression coefficient of 1.07 stated that every 1 unit increasing of learning motivation will improve scientific writing skills scores of 1.07. Conversely, if the learning motivation decreased of 1 unit, then the scientific writing skills scores will decrease of 1.07. This mean that the level of learning motivation in line with scientific writing skills.

After equation of simple regression line of Y on  $X_1$  was tested their significance and linearity with the F test or variance analysis was obtained results of (1) the significance testing regression  $F_0$  of 37.81 greater than the  $F_t$  of 3.92 so it is can be concluded that the regression equation of learning motivation and scientific writing skills are linear and means (significant). Simple correlation analysis of learning motivation and scientific writing skills gained coefficient ( $r_{y1}$ ) of 0.52.

Furthermore, to determine the significance of the correlation coefficient was done t-test. The test result was indicated that the strength of the correlation of learning motivation and scientific writing skills of 2.8371 is greater than  $t_{tab}$  of 1.66. Therefore, based on these results it can be said that there is a positive correlation between the learning motivation and scientific writing skills. Thus, the null hypothesis ( $H_0$ ) of "there is no positive correlation of learning motivation and scientific writing skills" was rejected. The alternative hypothesis ( $H_a$ ) of "there is a positive correlation of the learning motivation and scientific writing skills" was accepted. Based on ( $r_{y1}$ ) of 0.52 was gained determination coefficient of 0.27. In other words, the learning motivation contributed of 27.04% to the scientific writing skills.

### *The correlation of the reasoning ability and scientific writing skills*

The simple linear regression analysis of learning motivation and scientific writing skills was obtained the regression direction of 0.69 in constant of 61.09. Thus, the correlation of learning motivation and scientific writing skills can be described regression line, namely:  $\hat{Y} = 61.09 + 0.69X_2$ . This means that the constants of 61.09. Regression coefficient of 0.69 was stated that each 1 unit increasing of the reasoning ability will improved scientific writing skills scores of 0.69. Conversely, if the reasoning ability was decreased 1 unit, then the scientific writing skills score will decreased amount to 0.69. This means that the high and low of reasoning ability in line with scientific writing skills. After a simple regression line of Y on  $X_1$  tested significance and linearity with the F-test or variance analysis was obtained results of (1) the testing of regression significance  $F_0$  of 1.30 that is greater than the  $F_t$  of 1.75, so can be concluded that the regression equation of reasoning ability and scientific writing skills are linear and means (significant). The simple correlation analysis of reasoning

ability and scientific writing skills was gained coefficient ( $r_{y2}$ ) of 0.479.

Furthermore, to determine the significance of the correlation coefficient was done t-test. The test results were indicated that the strength of the correlation of learning motivation and scientific writing skills of 5.52 more than  $t_{tab}$  of 1.66. Therefore, based on these results it can be said that there is a positive correlation of the reasoning ability and scientific writing skills. Thus the null hypothesis ( $H_0$ ) of "there is no positive correlation of the reasoning ability and scientific writing skills" was rejected. The alternative hypothesis ( $H_a$ ) of "there is a positive correlation of the reasoning ability and scientific writing skills" was accepted. Based on ( $r_{y2}$ ) of 0.479 was gained determination coefficient of 0.229. In other word, the reasoning ability was contributed of 22.98% to the scientific writing skills.

This research is in line with the phrase Volpato stated in his article that the logical method for scientific writing . Every decision made in writing should be based on the logic of science and communication rules . In this case presents also some logical flaws in the process of publication includes ( on the classification of journals , texts and academic non academic , seta subjective conclusions ) and writing errors ( in the structure of scientific writing and style of writing ) which can damage the publication.

### *The Correlation of Learning Motivation and the Reasoning Ability Simultaneously to the Scientific Writing Skills*

Multiple linear regression analysis of the learning motivation and reasoning ability simultaneously to the scientific writing skills was resulted the direction of the regression coefficient  $b_1$  of 2.569;  $b_2$  of -1.071; and the constant  $b_0$  of 42.88. Thus, the correlation of the learning motivation and the reasoning ability simultaneously to the scientific writing skills can be described with a regression equation, i.e.  $\hat{Y} = 42.88 + 2.569X_1 + 1.071X_2$ . This means that the constant is 42.88. Regression coefficient of 2.569 was stated that every 1 unit increasing of learning motivation will increase scientific writing skills scores of 2.569. Regression coefficient of -1.071 was stated that every 1 unit increasing of the reasoning ability will increase scientific writing skills scores of -1.071. Conversely, if the learning motivation was decreased of 1 unit, then the scientific writing skills score will decrease to 2,569, if the reasoning ability was decreased of 1 unit, then the score scientific writing skills will decreased of -1.071. This means that the level of learning motivation and the reasoning ability simultaneously related the direction of scientific writing skills.

To determine the significance degree of multiple linear regression equation of learning motivation and the reasoning ability simultaneously to the scientific writing skills, then done F test. It was known the testing results  $F_0$  of 20.90 which is greater than the  $F_{table}$  of 3.93 so it can be concluded that the linear regression equation of learning motivation and reasoning ability simultaneously to the scientific writing skills is significant. Furthermore, from the results of multiple correlations analysis between learning motivation and reasoning ability simultaneously to the scientific writing skills was acquired correlation ( $R_{y,12}$ ) of 0.54. Furthermore,



to determine the significance of multiple correlation coefficients was done F-test. From the test results was obtained the  $F_0$  of 38.63 which is greater than the  $F_{table}$  of 3.08. Therefore, it can be concluded that there is a significant positive correlation between the learning motivation and the reasoning ability simultaneously to the scientific writing skill. Based on ( $R_{y12}$ ) of 0.54 the determination coefficient was obtained of 0.2916. In other words, the learning motivation and the reasoning ability simultaneously was given 29.16% contribution to the scientific writing skills.

After the discovery of a positive correlation between the learning motivation and reasoning ability to the scientific writing skills, either individually or simultaneously can given that, students' scientific writing skills cannot come up alone. However, it was determined by several factors that influence it that is students' learning motivation and reasoning ability.

### **1. The Efforts to Improve Learning Motivation for Improving Scientific Writing Skills**

The empirical findings were shown that learning motivation have positive correlation to the scientific writing skills. With these findings, it was known that the learning motivation provide determining for high and low students' writing skills. The higher of students' learning motivation, then scientific writing skill higher too. Vice versa, the lower the learning motivation, then the writing skills lower too. The learning motivation must be mastered by students in writing activities includes; (1) patterns of sentence structure, (2) diction, (3) the use of spelling, (4) punctuation, (5) cohesion, (6) coherence.

This is relevant to the research conducted by Volpato (2011) in his article entitled of "The Logic of Scientific Writing" discusses a logical method for scientific writing. Every decision made in writing should be based on the logic of science and communication rules. Some logical flaws in the process of publication that includes of (journals classification, academic and non-academic texts, and subjective conclusions) and writing errors (in the structure and style of scientific writing) which can damage the publication. Vieira (2011) also described that the scientific writing skills has a very important role in publishing a scientific paper. Scientific writing should be an integral part of the effort developed by students or researchers so that they can work more acceptable and useful for society as expected. In scientific writing should pay attention to language, form, style, and content for the text clearer, more logical and more understandable readers. So in scientific writing should be in accordance with the rules or procedures of writing.

Learning motivation is students' phenomenon that there is encouragement to students to study is taking seriously. It is affects to the ability or skills writing and learning scientific writing, first the teacher must provide an adequate explanation on the learning motivations, including how to generate a cohesive writing, coherent and can be understood by others or reader. After students felt able to understand the learning motivations, the teacher was given the task to make a good sentence, then, the task to combining sentences into a

paragraph and paragraphs combine into a paper, in this way the students will familiar to well write so the students are able to writing scientific papers by understanding the correct composition writing aspects.

In writing activities, students often feel tired because must write with limited theme, students will feel cramped in thinking then of the teacher gives freedom in deciding what to write. To overcome this, the classroom teacher can conduct observations in the environment or school environment these activities make students more creative in construct the observations findings. With so students will be interest to make scientific papers as well as possible.

A teacher should be able to use a fun learning model in presenting the material, e.g. to test the students' learning motivation, students are asked to make a card or a box according to the need and filled with a specified number. Teachers were read randomly and students write answers in card or box according to the number mentioned teachers. After reading the questions and students answers have written in the card or box, teachers and students was discussed the matter that had been given earlier. For the right, the students give a check list (✓) and then sing their slogans. Student scores were calculated from the correct answer. In addition there are many other fun learning models to enhance the students' learning motivation. With the use of fun learning model were expected the TISOL's students was not bored in the following study, in addition to the material provided to be more easily captured by the students.

There are several things that can be done by teachers to improve the motivation students' learning. (1) Students are given a sufficient understanding of the benefits of learning to write well; (2) Students are given adequate knowledge about how to easily learn; (3) Students are tasked with instructions that are easy to understand; (4) Students are given intensive training with appropriate methods.

### **2. The Effort to Improve the Reasoning Ability to Improve Scientific Writing Skills**

Empirical findings were indicated that understanding of reasoning ability has a positive correlation to the writing skills. With these findings, suggests that to improve writing skills, the reasoning ability should also be considered. The students' reasoning ability needs to be improved so that the students' writing skills can be maximized.

For some TISOL's students, think is a boring to do. Scientific writing activities were required logical thinking activities and the need for the good ability. It is only owned a few people have TISOL's students in school. As a result, the reasoning ability in writing TISOL's students are very limited, the ability to make good and correct paragraphs become slow, and even the ability stringing words too low. It should be used as a sign and a warning to the teacher, that "the reasoning ability" must be nurtured and developed. If the students' reasoning ability is high, especially in the reasoning of scientific writing activities, the students will be easier to create a scientific work.

In relation to the increasing in scientific writing skills, reasoning ability has been proven to make a significant contribution. Therefore, the effort to improved students' reasoning ability needs to be done. Increasing reasoning ability is the responsibility shared between the family and the school. Teachers have an important role to improve the students' reasoning ability, especially in writing skills. There are some efforts that can be done by teachers in improving the students' reasoning ability.

*First*, students were given the opportunity to stringing words that are considered true and the other students concluded that. If other students are not able to conclude then the sentence maker explaining and the teacher was straighten if there is a mistake. This is so that the students helped in live readings mean not the result of his writings that in later readers know their shortage. If students do not know or do not understand the sentence in question, the teacher was explained to replace another sentence that is true and can be illogical. But if it is caused by another possibility, teachers were expected to show a clearer example with the image, or demonstrate by action.

*Second*, the teacher should be able to use a fun learning model in presenting the material, e.g. to test the student's reasoning ability, students are asked to use a walking stick or pencil designated teacher. Teachers read randomly and after completion teachers give marks to the students run a stick or pencil to the right after the teacher gave students holding a stop sign the students should answer questions. With the use of fun learning model were expected TISOL's students not to get bored in the following study, in addition to the material provided to be more easily captured by the students.

Furthermore, from the theoretical implications emerge the practical implications is the principal policy-shaped real effort how to students' scientific writing skills can be improved. These efforts were improved the learning motivation and the scientific ability. In detail some policy implications or real efforts are described as follows.

There are some other things that can be done to improve the students reasoning ability. Some of things you can do include: (1) Give encouragement to students' self-confidence to be able to deduce the problem; (2) Convince the student that he has the ability to match with other students so that the resulting trust himself; (3) Give praise (*reward*) to each student who has successfully done a good job; (4) Realize to the students that every feeling, desire and their behavior is not entirely approved by the community; (5) Provide opportunities for students to be able to repair if it turns out he made a mistake.

## 6. Conclusion

Based on the data analysis results and hypothesis testing that have been raised in advance, it can gained some of the conclusions: (1) The results of the simple correlation analysis between understanding aspects of learning motivation and scientific writing skills showed that significant positive correlation between the learning motivation and scientific. By writing skills so that the first

hypothesis for this study has tested positive correlation. There is a meaning that the better understanding of the aspects of the student composition, then the better the scientific writing skills (2) The analysis results by simple correlation between the reasoning ability and scientific writing skills also showed that significant positive correlation between the reasoning ability and scientific writing skills. Thus the second hypothesis for this study has also been verified. There is a positive correlation of the student's reasoning ability, then the better of their scientific writing skills (3) The results of the multiple correlation analysis of learning motivation and the reasoning ability together with the skills scientific writing shows that significant positive correlation between the learning motivation and the reasoning ability together with scientific writing skills. Thus, the third hypothesis of this study was also tested positive correlation. There is understood that the better learning motivation and the student's reasoning ability, then the better the writing skills of their scientific.

## 7. Suggestions

To improve the scientific writing skills in Indonesian in Teaching Indonesian for Speaker of Other Language (TISOL) it is suggested to conduct scientific writing competition periodically and continuously. The students need to motivate to follow the competition. The competition organization, there is prize. The consequence from that action is Indonesian language teacher need to give more than time to give intensive to the foreign students.

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