JPPS (Jurnal Penelitian Pendidikan Sains) *Vol 10, No 01, November 2020*
e-ISSN: 2549-1597 *https://journal.unesa.ac.id/index.php/jpps*
p-ISSN: 2089-1776 *jpps@unesa.ac.id*

ENHANCING STUDENTS' SCIENCE COMMUNICATION SKILLS THROUGH MORE LEARNING MODEL

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Abstract

A This study aims to analyze students' science communication skills in the physics learning process especially in the Work and Energy concept using (Model-Observe-Reflect-Explain) MORE learning models. The research used a mixed method by utilizing test, questionnaires, and interviews with 10^{th} and 11^{st} grade students majoring in science, physics teachers and headmaster. The data was obtained by taking the physics scores of students in the work and energy concept who have received learning with the MORE learning model, then provides a questionnaire containing the obstacles faced by students in learning physics and interviews with students and teachers regarding learning constraints and science communication skills after learning using the MORE learning model. The findings indicated the MORE learning model helps students in practising science communication skills in learning with good student science communication skills will increase students' understanding of Work and Energy concepts as seen from the students' scores in the work and energy concept.

Keywords: *Science communication skill, MORE learning model, mixed methods, physics, cognitive ability*

Abstrak

Penelitian ini bertujuan untuk menganalisis keterampilan komunikasi sains siswa dalam proses pembelajaran fisika khususnya pada materi pembelajaran Usaha dan Energi dengan menggunakan model pembelajaran (Model-Observe-Reflect-Explain) MORE. Penelitian ini menggunakan mixed method dengan menggunakan tes, angket, dan wawancara yang diberikan pada siswa kelas 10 dan 11 jurusan IPA, guru-guru fisika dan kepala sekolah. Pengumpulan data dilakukan dengan cara mengambil nilai fisika siswa yang telah mendapatkan pembelajaran pada materi Usaha dan Energi dengan model pembelajaran MORE, kemudian memberikan angket yang diisikan kendala-kendala yang dihadapi siswa selama proses pembelajaran fisika dan wawancara dengan siswa dan guru mengenai kendala-kendala selama proses pembelajaran untuk melatihkan keterampilan komunikasi sains dengan menggunakan model pembelajaran MORE. Hasil penelitian yang diperoleh, menunjukkan bahwa model pembelajaran MORE dapat membantu siswa dalam melatihkan keterampilan komunikasi sains dalam pembelajaran fisika. Meningkatnya keterampilan komunikasi sains siswa maka akan meningkatkan pula pemahaman siswa pada materi Usaha dan Energi yang terlihat dari nilai yang diperoleh siswa.

Kata Kunci: *Keterampilan komunikasi sains, model pembelajaran MORE, mixed methods, fisika, kemampuan kognitif*

Article History
Received: 09-08-2020 **Final Revision:** 16-11-2020 **Accepted:** 19-11-2020 **Published:** 30-11-2020

INTRODUCTION

Most of the high school students consider learning physics difficult although they have received physics learning since they were in middle school. For example, in the topic of work and energy, students sometimes find it difficult to understand why if someone pushes a train with a lot of energy, he does not work. They think that if someone makes an activity with energy, he makes an effort. Students also have difficult to understand that the work made must cause the object to experience the displacement. Working in physics as well as in everyday life has different meanings. According to (Muchoyimah et al., 2016) state that it can make students experience a misconception of business learning work and energy. Thinking the concept is one of the important things that must be owned by students. Learning physics by memorizing concepts, laws or principles can make students difficulty in applying the knowledge in daily life (Jufrida et al., 2019). Mastery of physics concepts will affect how students explain the phenomena that surround and draw conclusions (Brookes & Etkina, 2015). The mastery of concepts possessed by students is influenced by the initial concepts and learning received by students (Docktor & Mestre, 2014). In learning physics there are science communication skills to understand and learn scientific language through the principles of learning.

In addition, science communication skills are able to link facts to conceptual frameworks, metacognitive monitoring, determine performance and provide feedback, of course, this will also greatly help students in mastering concepts. Science communication skills can also facilitate students in carrying out science learning activities where in science learning students can develop various other skills such as critical thinking skills (Pradana et al., 2020), mastery of concepts, observation skills, discussion, problem-solving and oral presentation (Sugito et al., 2017). (Iksan et al., 2012) added that communication skills are one of the generic skills that students must have because generic skills can also be interpreted as cognitive strategies related to cognitive, affective and psychomotor aspects that exist in students.

Communication in science will allow scientists to share the insight to know the nature of the world. To strengthen the relationship between science, society and the public opinion, continually contributing to the creation of true scientific citizenship, indispensable for understanding the modern world is science centres (Suprapto & Pai, 2015). Science societies and organisations have had a major influence on science communication with the public; they have also had a similar influence upon science taught in schools. In other words, the synergies between science communication with the public and science in schools were indispensable (Suprapto & Ku, 2016). There is a lot of understanding and definition of communication that develops in society because science communication is a developing branch of science. Science communication is defined as the use of appropriate skills, activities, media and dialogue to produce responses from people to science. In contrast, according to SAASTA (*South African Agency for Science and Technology Advancement*) science communication is how to make science a part of science every day, bridge the gap between science and society and make science accessible and attractive to young and non-researchers.

The effectiveness and success of science communication is with their *feedback*. Communication will run efficiently if there is *feedback* and also interaction between actors. Indication of effective scientific communication is the presence of AEIOU responses (*awareness, enjoyment, interest, opinion,* and *undestanding*) from someone we want to reach. There are several "communication tools" of science, one of which is expertise or skill.

Science communication skills are communication related to research or inquiry activities in the academic environment (Kartika et al., 2016). Science communication skill is divided into science communication skills in written and verbal communication skills science. Students' written science communication skills can be seen when they make simple reports about the experiments they are doing. The report will formulate their problems and hypotheses, which are their initial understanding of the material. It contains the experimental design that they make in accordance with the directions and instructions of the teacher. It contains the analysis where

when making an analyses student will reflect on their initial knowledge with the results of the experiment and the theoretical basis in accordance with the experiment and then they make their conclusions. Oral science communication skills can be seen when they express their opinions, give advice to their peers, group discussions and when delivering the results of experiments in front of the class. The indicators of scientific communication skills both in written and oral, it can be seen in Table 1.

Research conducted by (Istiqamah, 2019) states that students show a fairly good response at each meeting and student communication skills also increase each meeting, however, the journal are not discussed how the influence of science communication skills on students' cognitive development.

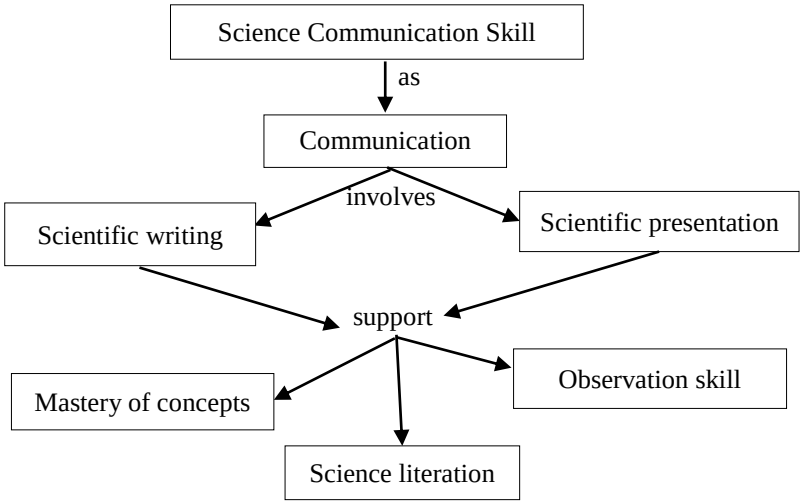

Figure 1. State of The Art of This Research

In communicative conceptions, science communication in physics education is a continuous transfer of physics knowledge and methods into (Fadly, 2017). The use of science communication in learning physics is also referred to as communicative physics learning. In communicative physics learning, students are required to engage in interpersonal interaction activities, critical assessment and dialogue. Through communicative physics learning students will be given space to transfer knowledge so that it can realize physics knowledge that was originally abstract to become more easily digestible. Science communication has several functions, including to: 1) communicate research results, 2) assist in research, teaching, decision making activities, 3) convey feelings. Science communication skills are also very important for scientists in their research activities. If between scientists and the public have effective scientific communication, it will foster an active role of the community in scientific activities and scientific attitudes. Someone can be classified scientific communication skills to be: 1) searching for information, 2) scientific reading, 3) listening and observing, 4) scientific writing, 5) representing knowledge (Fadly, 2017).

Science communication skills are also divided into written science communication skills and oral science communication skills. The indicators of written and oral science communication are presented in Table 1.

Table 1. Indicators of Written and Oral Science Communication Skills

Verbal	Written
Asking question	Make a table of observational trial results
Answer the question	Analyze the data table of the results of experiments / observations
Express ideas	
Respond to ideas	Make a conclusion
Oral presentation	

Students at school need learning to practice science communication skills. This required strategies and appropriate learning models to practice science communication skills. Teachers or pre-service teacher must have skills to determine the learning model and strategy that fits the conditions. In line with research conducted by (Lestari et al., 2018) that pre-service teachers must have a good basic teaching skills that are opening lesson, use of learning model, use of learning media, mastery of teaching materials, submission of teaching materials, classroom management, and closes lesson ability. The teacher as the manager of learning must change the mindset, from being originally teacher-centered to innovative student-centered learning so student so that students find and build their own knowledge from various learning sources (Wasis, 2015).

One of the ways to increase students' motivation and understanding of learning material is the use of appropriate learning models (Darkasyi et al., 2014). (Wardani & Suharto, 2013) added that to apply a learning model that is in accordance with the situation and the material to be delivered so that learning takes place effectively and efficiently by making students active, thinking more, easily interacting with teachers and with friends, able to express their opinions and respond to questions. One learning model that can train science communication skills is the MORE learning model (Model, Observe, Reflect, Explain) because at the learning stage with the MORE model students are trained to build their own thoughts and communicate the results of their thoughts.

The MORE learning model has important aspects to increase students' understanding. There are three aspects contained in the MORE learning model including (1) involving reflection; (2) connecting macroscopic and microscopic observations; (3) improving the model based on real evidence obtained when conducting investigations or experiments (Cooper et al., 2013). The MORE learning model directs students to be able to reflect on their knowledge through scientific activities they do and train students to be able to communicate the results of their experiments through discussion forums in front of the class. So that students will be able to understand scientific terms in physics learning that will support the ability to master the concepts. Thus it will make students experience improvement in physics learning outcomes in class.

There are four steps of the MORE learning model; the following are the steps in the MORE learning process:

1. Model, at this step students are asked to describe their initial knowledge about a material that can be in the form of writing, drawing or explanation directly. In scientific activities or experiments at this stage students are asked to make problem formulations and hypotheses.
2. Observe, at this step students are asked to make observations using their sense devices. In scientific activities or experiments, students will be asked to conduct experiments and then make summary the results of experiments in the table that has been made.
3. Reflect, at this step students are asked to reflect their initial knowledge with the knowledge they have after conducting an experiment. Then compare and make a conclusion which among the initial or final knowledge is more in accordance with the theories that support the experiment.
4. Explain, The final step in the MORE learning model is the *explain* step. At this step students are asked to present the results of the experiment in the form of written (practical reports) and orally by presenting at the discussion forum in class.

The syntax or steps of the MORE learning model are shown in Table 2 as follows:

Table 2. MORE Learning Model Syntax

Syntax	Student activities
Model	Learners illustrate initial understanding of the material that will be studied in the form of text or images .
Observe	Learners make observations or observations that have been described in worksheet.

Syntax	Student activities
Reflect	Learners discuss and compare information that has just been received through observation with initial information that has been held.
Explain	Learners explain the final understanding that was agreed upon by all group members.

The MORE learning model is suitable for practicing science communication skills because in this learning model students are asked to reflect on their initial thinking with knowledge after students have done scientific activities and communicate the results of their scientific activities in written and oral form. So students will be able to easily practice scientific terms in physics. From the above explanation and from the studies that have been done, this study uses MORE learning models to practice communication skills that are expected to be able to practice the mastery of concepts in students viewed from the results of the analysis conducted on cognitive values obtained by students after learning with the model MORE learning. To this end, the research questions are: could the MORE learning model train science communication skills?; and to what extent does the relationship between science communication skills and student cognitive skills?.

RESEARCH METHOD

The research used a mixed-method research design. The quantitative data obtained from science communication skills assessment sheets in accordance with indicators in table 1. The instruments have been validated by three science education expert in regards to the value of cognitive learning outcomes of students and a questionnaire given to students at the end of the lesson, while the qualitative data obtained through interviews to students concerned to support quantitative data. From fifteen students studied, six students were randomly selected for interviews. Interviews were conducted before and after learning while the assessment of students' scientific communication skills was carried out during the learning activities. The results of the assessment of science communication skills will be drawn to the understanding of the concept through cognitive values obtained by students. There are six questions used to measure students' cognitive values. Indicators of cognitive assessment of students can be seen in Table 3 as follows:

Table 3. Indicators of Cognitive Assessment

Indicator	Cognitive Domains
Analyzing he work made by someone.	C4
Analyzing the energy possessed by an object.	C4
Analyzing relationships work with energy changes.	C4
Proving the existence of conservation of mechanical energy in everyday life.	C4
Proving the existence of conservation of mechanical energy in everyday life.	C4
Analyzing power that a thing has.	C4

To analyze the correlation between students' written and oral science communication skills with their cognitive partially, a simple linear regression test is used while to test the correlation simultaneously using multiple linear regression tests with prerequisite tests, namely: 1) normality test; and 2) linearity test. Normality test is conducted to determine whether the data obtained by researchers comes from normally distributed pollutants or not, while the linearity test is carried out to determine and prove that the relationship between the variables studied has a linear relationship (Ningsih & Nurrahmah, 2016).

The questionnaire used was adapted from the research of (Kartika et al., 2016). There are six items regarding oral science communication skills and eight items regarding written science communication skills. From the questionnaire, students will be able to know the communication skills of science after learning by using the MORE learning model. In the

interview activity, the questions are about the obstacles students face in learning to use the MORE model, the indicators of science communication most difficult, the improvement experienced by students after learning to use the MORE learning model.

RESULT AND DISCUSSION

The researchers assume there is a positive influence between written and oral science communication skills on students' cognitive abilities. We can clearly see the effect through the data that has been obtained from the students who participated in the MORE model of learning activities, six of them were interviewed with several questions and one physics teacher was also interviewed. The results are as follows:

Identify students' difficulties in physics learning

Based on questionnaires and interviews conducted, understanding the definitions of terms on work and energy materials (87%), understanding concepts (93%), working on problems (87%), making observational trial results tables (93%), analyzing data on experimental results tables/observations (93%), making conclusions (80%), asking questions (87%), answer questions (93%), expressing ideas (93%), responding to ideas (80%), presenting experimental results verbally (93%) it is influenced by various factors such as students' preference for learning physics, the material they are learning, learning activities experienced, the teacher's teaching style (Azizah et al., 2015) material understanding, ability to solve problems, teacher clarity in explaining learning material (Arief et al., 2012) lack of practical activities in the laboratory, and teachers rarely use learning media. Based on research conducted (Istyowati et al., 2017) states that the expectations of students to overcome their difficulties while learning physics is 43.33% using practicum, 33.33% using discussion, 31.11% using questions and answers, 3.33% using assignments, 0% using lecture.

Students' response to the MORE learning model

Based on questionnaires and interviews conducted, learning physics became easy when using the MORE learning model (84%), the MORE learning model made it easier for students to learn to communicate science both verbally and in writing (77%), the MORE learning model was more interesting so it was easier to learning (82%) is supported by research conducted by (Sukarjo & Purnomo, 2017) which states that the research conducted obtained good responses from students.

Cognitive assessment

Validity of cognitive assessment instruments are very valid and suitable for use with the medium reliability category according to Guilford's criteria and the results of the sensitivity analysis of the questions show that the six questions used are in the sensitive category.

The following example is an illustrative problem given that students are asked to determine the amount of total work by the gravity from a height of 2 m as in Figure 2.

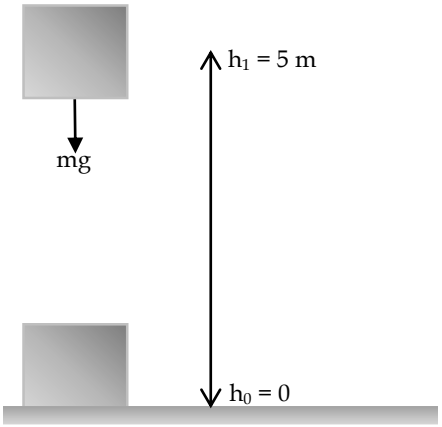

Figure 2. Illustration of Problem

One of student does using the following method:
Settlement:

$$\Delta E_p = mg\ (h_2 - h_1) \quad (1)$$
$$\Delta E_p = (2)(10)\ (0 - 5)$$
$$\Delta E_p = -100\ Joule$$

The work by gravity:

$$W = -mg\ (h_2 - h_1) \quad (2)$$
$$W = -(2)(10)\ (0 - 5)$$
$$W = 100\ Joule$$

The results of cognitive assessment of students after students get physics learning using the MORE learning model can be seen in Table 4.

Table 4. Student Cognitive Learning Outcomes

No.	Name	Score	Completeness	No.	Name	Score	Completeness
1	A1	88	Complete	9	A9	75	Complete
2	A2	92	Complete	10	A10	88	Complete
3	A3	88	Complete	11	A11	88	Complete
4	A4	83	Complete	12	A12	88	Complete
5	A5	96	Complete	13	A13	92	Complete
6	A6	92	Complete	14	A14	88	Complete
7	A7	92	Complete	15	A15	83	Complete
8	A8	80	Complete				

Table 5. Cognitive Students' Interview Results

Indicator	Response (%)	Students and Teacher Responses
Understand the definition of terms	87	"... there are too many terms in physics." "Many terms are similar so sometimes they are confused and like to reverse", "Students lack interest in reading and working on problems so the vocabulary is lacking. So, this MORE learning model makes it easy to learn".
Understand the concept	93	"... the most common mistake is to distinguish between those which are business and those which are not, but by looking at experiments by directly understanding the concept of effort becomes easier", "... differentiating when an object has maximum kinetic energy and maximum potential energy ... ".
Working on problems	87	"Interpreting questions in the form of pictures to make it easier to do the problems", "... by teaching students the concept will facilitate students in working on problems".

From the results above, it can be seen by applying the MORE learning model can improve understanding of concepts also can improve students' cognitive in accordance with research conducted by (Matreo, 2015) that students prefer learning using the MORE learning model and the score of students after using the MORE learning model increases compared to before using the MORE learning model. (Culsum et al., 2013) added that the MORE learning model can be used to develop students' ability to connect three levels of representation as much as 41% to the concept of salt hydrolysis.

Communication Skills of Written and Oral Science

The results of observations of students' science communication skills after students get physics learning using the MORE learning model can be seen as follows:

Table 6.a. Results of Written Science Communication Skills

No.	Name	Score	Completeness
1	A1	75.00	Complete
2	A2	71.43	Complete
3	A3	71.43	Complete
4	A4	78.57	Complete
5	A5	85.71	Complete
6	A6	78.57	Complete
7	A7	85.71	Complete
8	A8	82.14	Complete
9	A9	67.86	Complete
10	A10	82.14	Complete
11	A11	82.14	Complete
12	A12	85.71	Complete
13	A13	85.71	Complete
14	A14	78.57	Complete
15	A15	85.71	Complete

Table 6.b. Results of Oral Science Communication Skills

No.	Name	Score	Completeness
1	A1	75	Complete
2	A2	80	Complete
3	A3	75	Complete
4	A4	70	Complete
5	A5	75	Complete
6	A6	80	Complete
7	A7	75	Complete
8	A8	85	Complete
9	A9	80	Complete
10	A10	75	Complete
11	A11	80	Complete
12	A12	85	Complete
13	A13	85	Complete
14	A14	80	Complete
15	A15	75	Complete

Based on interviews conducted with students was obtained some information related to students' science communication skills. Observation of students' science communication skills is carried out twice. Interviews were conducted at each meeting with the following results:

Table 7.a. Students' Written Science Communication Interview Results

Indicator	Response (%)	Student and Teacher Responses
Make an observation experiment results table.	93	"Previously, I had never made my own experiment table ....", "... Initially, after the experiment, I was confused about how to write the results, but now I can ...", "... actually it is easy, just because I never made it, difficult ..." "Students have never been invited to make experiment table so this is a very new experience for them ".
Analyzing the data table of the results of experiments / observations.	93	"If count the results of an experiment I think I can, but if to analyze it, I am still confused ...", "... matching theory with the results of the most difficult experiments, but it has begun, but I still have to slow down ."
Make a conclusion.	80	" ... because I have made the analysis so as to make the conclusions easier " , "I make the conclusions of the experiment from my analysis", ".... connected the formulation of the problem with the analysis that was made ..."

Table 7.b. Interview Results of Students' Oral Science Communication Skills

Indicator	Response (%)	Student and Teacher Responses
Asking questions	87	" ... before I felt less confident to ask because I was afraid that what I was asking did not fit or out of the topic ... ".
Answer the question	93	" ... when there are questions that are given to me the first step I take is to identify what problem is being asked and then look for the theory that underlies the problem and provide examples or data relating to the problem. ".
Express ideas	93	"... looking for data or theories that support my idea first, then I express my idea ... ".
Respond to Ideas	80	"If the idea given by my friend in my opinion is in accordance with the existing theory then I will approve it ... ".
Present test results verbally	93	" In making a presentation in front of the class I first make a summary and important points that I will read ... "

To find out the relationship between students' cognitive learning outcomes and their written and oral science communication skills, the prerequisite analysis test used the normality test and linearity test (Artikawati, 2016) as follows:

Normality test

The significance value of the normality test between students' cognitive learning outcomes with written and oral science communication skills is [0.173> 0.05] (Kadir et al., 2020), so the data can be said to be normally distributed and further tests can be done.

Linearity Test

Sig. value *deviation from linearity* for cognitive learning outcomes with written and oral science communication skills of [0.480 > 0.05] and [0.162 > 0.05] (Kadir et al., 2020), it is concluded that there is an influence between cognitive learning outcomes and written and oral science communication skills. If the data has been tested for normality and linearity, then the data can be tested further, namely simple and multiple linear regression tests. Simple and multiple linear regression tests were conducted to determine the effect of the independent variable (X) on the dependent variable (Y) (Pratiwi & Supardiyono, 2018).

Simple Linear Regression Analysis

The following explanation is the results of a simple linear regression analysis:

Table 8.a. Simplified Linear Regression Test Results between Cognitive Learning Outcomes and Written Science Communication Skills

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	43.308	25.027		1.730	.107
	X	.417	.285	.375	1.459	.168
a. Dependent Variable: Y						

Table 8.b. Simple Linear Regression Test Results between Cognitive Learning Outcomes and Oral Science Communication Skills

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	81.911	20.249		4.045	.001
	X	-.041	.231	-.049	-.177	.862
a. Dependent Variable: Y						

Then, the regression equation for both in sequence is as follows:

$$Y' = a + bX \quad (3)$$

$$Y_1' = 43.308 + 0.375\,X$$

$$Y_2' = 81.911 - 0.049\,X$$

A constant of 43.308 can mean that if cognitive learning outcomes are zero then written science communication skills (Y_1') are 43.308. The regression coefficient of the independent variable (X) is known to be 0.375, so it can be interpreted that if the independent variable has a fixed value and the variable of cognitive learning outcomes of the product has increased 1% then the meaning (Y_1') will increase by 0.375. A positive coefficient can be interpreted as a positive relationship between (X) and (Y_1'), so the higher the variable (X), the higher the value (Y_1'). Meanwhile, a constant of 81.911 can be interpreted that if cognitive learning outcomes are zero then the oral science communication skills (Y_2') are 81,911. The regression coefficient of the independent variable (X) is known to be -0.049, it can be interpreted that if the independent variable has a fixed value and the variable of cognitive learning outcomes of the product has decreased 1% then the meaning (Y_2') will decrease by 0.049. A negative coefficient can be interpreted as a negative relationship between (X) and (Y_2'), therefore, the higher of the variable (X), the variable (Y_2') will decrease.

Multiple Regression Analysis

The following table 9. is the results of a simple linear regression analysis.

Table 9. Simple Linear Regression Test Results between Cognitive Learning Outcomes and Written and Oral Science Communication Skills

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	T	Sig.
1	(Constant)	68.865	29.783		2.312	.039
	X1	.349	.242	.387	1.444	.174
	X2	-.117	.322	-.098	-.364	.722
a. Dependent Variable: Y						

Then, the regression equation is as follows:

$$Y' = a + b_1X_1 + b_2X_2 \quad (4)$$

$$Y' = 68.865 + 0.349X_1 - 0.117X_2$$

A constant of 68.865 can be interpreted that if the science written communication skills (X_1) and oral scientific communication skills (X_2) are both zero then the learners 'cognitive achievement (Y') amounted to 68.865. The regression coefficient of the variable (X_1) is known to be 0.349, it can be interpreted that if the variable (X_2) has a fixed value and the variable (X_1) has increased by 1%, it means (Y') will increase by 0.349. The positive value coefficient can be interpreted that there is a positive relationship between (X_1) and (Y') where the more improved their written science communication skills, the higher their cognitive learning outcomes. The regression coefficient of the variable (X_2) is known to be -0.117, it can be interpreted that if the variable (X_1) has a fixed value and the variable (X_2) has increased by 1% then the meaning (Y') will decrease by 0.117. A negative coefficient can be interpreted that there is a negative relationship between (X_2) and (Y') where the increasing their oral science communication skills will be inversely proportional to their cognitive learning outcomes. Increased student cognitive abilities can be interpreted that the ability to master the concept of students also increases because there is a positive correlation between communication skills with the mastery of student concepts (Oktaviani & Nugroho, 2015).

From the results, it can also be seen that not all students who have good written communication skills also have good oral communication skills too (Yusefni & Sriyati, 2015). Students who are good at writing reports may not be able to identify that students are also good at communicating the results of their investigations to others. That is because there are various inhibiting factors in students such as psychological, physical, semantic, and process barriers (Urwani et al., 2018). In addition to internal factors there are also external factors that affect students' scientific communication skills such as learning strategies, academic abilities and the interaction between learning strategies and academic abilities (Dipalaya et al., 2016).

Constraints faced by students in implementing learning using the MORE learning model

In the implementation of learning using the MORE learning model which is still very new for students there are certainly obstacles encountered, including the following:

Table 10. Constraints Faced by Students in Implementing MORE Model Learning

Obstacles	Alternative Solution
Students are not used to doing physics experiments using the PhET application.	First, explain how the PhET simulation works.
Most of students have low motivation.	Motivate students before learning begins.
Students are less used to doing experiments.	Students are less accustomed to conducting experiments.

CONCLUSION

The MORE learning model is able to train science communication skill because it has learning steps that can help student practice science communication and deepen the concept of learning because in the MORE learning model, there are stages of reflection where at this stage student are invited to reflect on their initial knowledge with their knowledge to get a conclusion. When students are introduced to concepts based on their experiences in daily life, the concepts will be more easily understood by students. Involving students in simple experiments and communicating them together in front of the class can also strengthen their concepts and practice students' science communication skills. By practicing science communication skills students are expected to make students easier to learn physics.

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