Correlation Between Learning Motivation and Students' Responses on the Implementation of the ADERiC Learning Model

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Abstract

The learning model is determined and selected by teachers to stimulate students' learning motivation and responses, which play an important role in the learning process. The purposes of the study are to identify a correlation between students' learning motivation and their responses o non the implementation of the ADERiC model. The study was conducted at the University of Muhammadiyah Sorong, involving ten students. Data were analyzed using Pearson correlation and covariance techniques. The research findings show that based on the questionnaire students' responses, each item of the implementation of the ADERiC learning model was in the high classification, and the highest was the observation of persistence in learning. Besides that, there is a correlation between students' learning motivation and responses to implementing the ADERiC model. Therefore, implementing the learning model should stimulate and push students' understanding.

Keywords: Motivation, Learning, ADERiC Model, Students' Responses.

1. Introduction

Education is a learning process carried out and planned consciously by a person or a group of persons, which involves various activities, including teaching and training. Learning aims to improve morality and habituate people to innovate, create, and show good character [7]. The components of the learning process are students, teachers, active learning, target goals, learning material, learning techniques, and learning environment. Physics is an important subject from elementary school to university. [22] mentioned the important points in learning, including knowledge that is arranged consistently and deductively logically and mathematics becoming the core of science and the source of other disciplines. It discusses a solution to daily life problems, which is an inhibition of an improvement or challenge or a question that should be solved.

Materials in science classes do not holistically cover real-life problems, so students must be trained to analyze and solve problems, create ideas, and modify them [10]. The ability to solve problems, according to [9], refers to 1) problem-solving skill is the goal of mathematics education. 2) the solution involves the main process of curriculum, and 3) basic mathematic skills. The ability of a teacher to manage a class by implementing various learning models is the external factor influencing students' success in learning. [28] stated that teachers' skill in selecting a learning model supports them in achieving learning goals. Besides that, the success of learning is determined by how well it is planned [11][27].

Problem-Based Learning is a potential model to be developed. This learning model places students as the learning center. The special character of this model is that it starts the class by presenting daily live problems relevant to the material, active group learning, formulating problems, and identifying their knowledge gap, learning independently, like searching relevant materials [1][6]. The problem-based learning (PBL) model only focuses on students' ability to solve a problem. They are invited to actively find the solution to the problem presented by the teacher [16].

Learning focuses on students developing knowledge and changing attitudes through the learning experience, which enables students to build constructivism theory [17][19]. Theories of mathematics or science learning mostly refer to the developmental theory of Piaget and Vygotsky's culture-social development theory. [23][21] suggested learning theory designs categorized into four groups, including

behaviorist, cognitive, constructivist, and social approaches. According to him, the theories of Piaget and Vygotsky are categorized as constructivist but related to social and cognitive theories. Constructivism is considered similar to the social approach and cognitivism. Piaget and Vygotsky's theories became the roots of the development of constructivism, but Vygotsky emphasized the influence of the social environment on the development of children's knowledge.

Motivation is an internal and external stimulant to achieve a target. [15] stated that motivation is the process of human attitude formation, which determines a goal. Thus, motivation is the transformation of energy starting from feeling and preceded by a goal. Therefore, students with high motivation will study more persistently, accelerating their learning development. [4] stated that students with high motivation have some main characteristics, namely: (1) Persistent in processing information and skillful in learning; (2) persistent in completing a difficult task and facing few managerial problems; (3) behave positively toward school and satisfied with it. The levels of students' motivation are affected by internal and external factors [8].

Students' responses is the attitude triggered by the stimulus from the learning process between students and lecturer in the classroom or response more enthusiastically to learn something. Therefore, students' responses is one of the factors determining the success of learning. A learning model is selected by the educator to stimulate students' learning motivation and response, which plays an important role in the learning process. A teacher should not only deliver the material. Indeed, they should also support their independency to develop their ideas. In learning activities, [15] argued that learning is a mutual interaction between two parties in the classroom leading to intensive communication and focusing on a target. In this case, ADERiC is a learning model which was developed to improve student's learning motivation.

The learning model is based on *Problem-Based Learning* and *the Accelerated Learning* approach, as well as a constructivist learning theory. The problem-Based Learning model raises a new definition of learning, namely activity-based learning [13][14]. The model attracts students to be more motivated to learn. ADERiC learning model has five phases, namely: Accumulation, Demonstration, Exercise (discussion), Reflection (Reviews or feedback), and Creation. ADERiC learning strategy activities students in learning so that they can more easily understand the materials compared to teacher-centred learning. The novelty of the current study is how the students interpret knowledge through the implementation of the ADERiC model.

2. Literature Review

2.1 Learning Motivation

In a learning context, motivation can be defined as the whole power driving students to do activities for learning and directing them so that the goals can be achieved. The word 'whole' indicates that, in general, motives driving a student to study are more than one. Learning motivation is a non-intellectual psychic factor. It has a special role in growing the interest, happiness, and spirit to learn. Students with high motivation will have more energy to carry out the learning activities [25]. [24] argued that learning motivation is the overall force driving children to learn and supports the continuity of the learning activities, and directs them to achieve their goals. Thus, based on the conclusion above, learning motivation is a condition that triggers energy to grow interest, happiness, and eagerness to learn to achieve a set goal.

2.2 Responses

Respons is a psychological term that refers to a reaction toward stimulation received by the senses. The response is supported by attitude, perception, and participation. Response to the process is preceded by attitude because it indicates the tendency or the will to behave in facing particular stimuli. The response is also interpreted as the manifested attitude or behavior before understanding something in detail, researching, and accepting or rejecting particular phenomena [26]. According to [20] in general, there are three factors influencing responses, namely: a) People who have interest, in looking at and trying to interpret what they see, are influenced by attitudes, motives, interests, and expectations. b) The targets of the response can be a person, object, or event. The characteristics of the target generally affect the response of the people who see it. In other words, the response target's movement, sound, size, action, and other characteristics also determine how people perceive something. c) Situation factors, the response can be perceived contextually, which means that the situation where the response occurs gets attention. The situation is a factor influencing how someone is trained or how the response

3. Methods

This study implemented a descriptive method. We described the correlation between students' learning motivation and responses to the implementation of the ADERiC learning model. Thus, the research objects were ten (10) students of the Mathematics Education Department of the Universitas Muhammadiyah Sorong. The instrument was a questionnaire containing statements about the learning activities and an observation sheet. Data from the questionnaire were processed using the Likert scale and analyzed using a correlation test with SPSS.

4. Results

The questionnaires were distributed to 10 students of the mathematics program. They had eight questions with four answer options (1-4). The questionnaire was then analyzed to identify the students' responses classification on the implementation of the ADERiC model. Data from students' responses are presented in the following table:
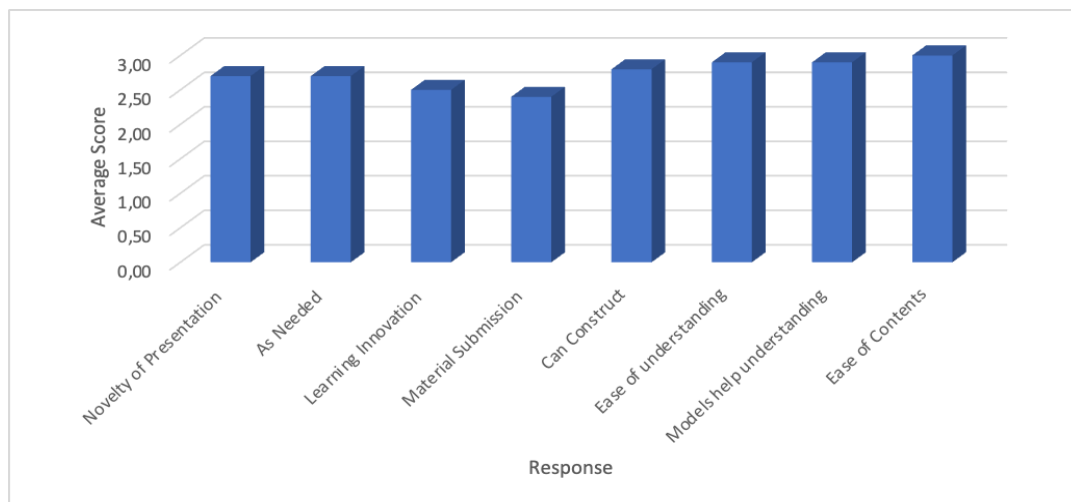
Fig 1. The Average Scores of Students' Responses

Based on the questionnaire, students' responses on the implementation of the ADERiC model were in the Very High category, with an average score of above 2,00. The item which got the lowest score was the way lecturers delivered the material. It is because the students considered it as a very important aspect. It is in line with [12] that as social creatures, students consider the importance of the treatment they receive; thus, when lecturers perform less optimally, it will influence their learning motivation. Then, the highest score was obtained by the easiness of the content. It proves that the ADERiC learning model is effective for learning activities. The study confirms [18] that students' response in mathematics class is positive. Based on the study, students are happy and motivated to learn.

In this case, we observed students' learning motivation to identify if there is a correlation between students' responses and learning motivation. Data from the observation we arranged in the classroom are presented below:
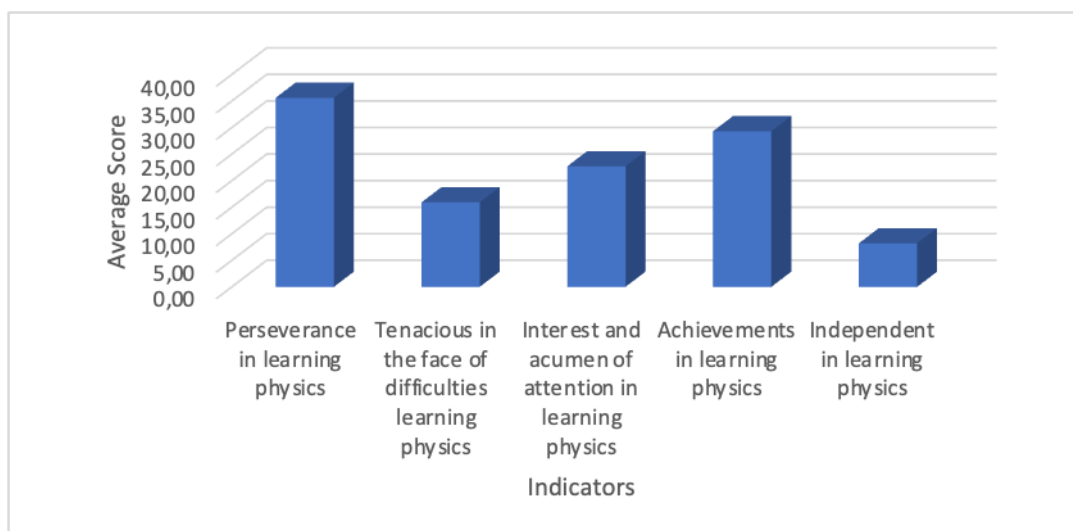

Fig 2. The Average Scores of Students' Learning Motivation

As per the observation, persistence in learning got the highest score (35,00). Persistence in learning has a strong impact on the learning process, and it is affected by motivation [3]. Then, the learning independency got the lowest score (<5,00). The finding of [5] indicated that there is a substantial correlation between learning motivation and learning independency. Still, according to the correlation degree, they are not perfectly correlated. The present finding does not confirm the study because there was a limitation on the instruments we made, and the populations were not controlled.

Furthermore, to research the correlation between students' learning motivation and their responses, we conducted statistical tests, including *Pearson correlation* and *covariance* with SPSS. The hypothesis formulated in this study is that H_0: there is no correlation between students' learning motivation and responses, and H_a: there is a correlation between students' learning motivation and responses. The output of the analysis is as below:

Table 1. Correlation Test

		Response	Motivation
Response	Pearson Correlation	1	-0,047
	Sig. (1-tailed)	0,261	0,448
	Covariance		-0,017
	N	10	10
Motivation	Pearson Correlation	-0,047	1
	Sig. (1-tailed)	0,448	40,324
	Covariance	-0,017	
	N	10	10

Based on table 1, the significant scores of students' response and motivation are 0,448, respectively. It means that the increased score of an aspect can or cannot improve the scores of other aspects. Meaning that the influence of motivation on response is high, Then, the sig value (1-tailed) of motivation and response is 0.448. If the sig value > (0.05), the H_a is accepted while the H_0 is rejected. The finding confirmed [2], which also found a significant correlation between students' motivation and response.

The study shows a correlation between students' learning motivation and their response to the ADERiC learning model. High learning motivation and response indicate that the ADERiC learning model can improve learning motivation and receives a positive response. In Mathematics class, creativity is an important factor that should be implemented by lecturers. They should allow students to be innovative and creative in learning. ADERic is one of the learning models that can be implemented in learning activities to help students solve a problem and think innovatively. It has been proved that the implementation of ADERiC model in learning could improve students' motivation and responses. It has been found a correlation between students' learning motivation and their motivation.

5. Conclusion

This study concluded that: (1) the learning motivation had a high average score; (2) there is a relevant correlation between students' learning motivation and the responses. These findings indicate that the implementation of the ADERiC learning model can improve students' motivation in learning and is responded to positively by students. There is also a correlation between learning motivation and responses so that the ADERiC model can be implemented in the learning activities. This study should be developed by further researchers to stimulate students to achieve a more satisfying outcome to maximize their learning goals.

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