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Elementary School Students' Science Learning Motivation through RADEC Model

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Abstract. This study aims to describe students' learning motivation through the RADEC (Read, Answer, Discussion, Explain, and Create) Model on Air material for fifth-grade elementary school students. This descriptive qualitative research analysis involved 38 fifth-grade students in one of the Sumedang public elementary schools. The research instrument in the form of a science learning motivation scale questionnaire consists of 15 statements with 4 answer choices, namely Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) which is based on 7 indicators, namely (1) Persevering in facing tasks, (2) being tenacious in facing difficulties (not giving up quickly), (3) Shows interest in various kinds of problems for adults, (4) Prefers independent learning, (5) Can defend his opinion, (6) It is not easy to let go of things that have been believed, and (7) Happy to find and solve problems. The data obtained from the questionnaire were nalysed through tabulation of data using a formula to determine the percentage of student answers. The results showed that the indicators of student learning motivation with the RADEC Model criteria were interrelated. In addition, based on the results of the average score of the overall statement on the questionnaire, all indicators of student learning motivation are included in the very good criteria, namely 81.22%. So it can be concluded that with the application of the RADEC Model there is a high learning motivation in science learning in fifth-grade elementary school students in the Sumedang area.

Keywords: RADEC, Learning Motivation, Natural Science, Elementary Science Learning, Air Material

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INTRODUCTION ~ Teaching and learning activities in schools are essentially teacher-student relationships or reciprocity in educational or learning environment. As a result, in the learning process, it must be able to achieve changes in student behavior that are better than before, in order to permanently improve the abilities or potentials of students (Sulthon, 2017). The role of the teacher in learning is very important, the teacher does not only conveys the material, but also acts as a facilitator, moderator and as an educator(Kirom, 2017). In order to improve the quality of education, teachers must have more abilities than others (Sujana A. , 2014). Aside from that, teachers must be creative and innovative when delivering teaching materials to students, one of them is aerial material in elementary school science classes.

IPA (Science) is a method of systematically learning about nature in order to master knowledges in the form of facts, concepts, principles, the discovery process, and a scientific mindset. (Rini, 2018). Science education is one of the tools to achieve an educational goal. This science education is directed to inquiry to help

studentsdeepen their understanding of the natural surroundings (Putri, 2021). Learning science in elementary schools is aimed at improving students' abilities related to concepts in science, high-level skills, problem-solving abilities, and students' scientific mindset. Therefore, the learning carried out should be related to daily life and emphasize all aspects contained in learning (Sujana, 2017). Science learning activities emphasize in providing students with hands-on experience in order to help them develop their potential and gain a better understanding of the natural world around them (Azizah, 2018).

Student's activity has an important role in encouraging students in learning activities in the classroom, especially in science learning activities that able to develop and strengthen students' understanding in science material(Rambe, 2018). The student's activity can be encouraged by the motivation to learn. Motivation comes from the word "motive" means a driving force that active. Another opinion also argued that A condition that exists within students that encourages and directs behavior to participate in an educational activity and achieve a goal is known as learning motivation.(Irmalia, 2001). Other than that, motivation and learning are two things that affecting each other in the science learning process in the classroom. Learning motivation is a process by which a person generates enthusiasm for learning, which leads to a change in behavior, and it is characterized by several indicators such as a desire to succeed, engaging activities, and a conducive environment (Rini, 2018).

Motivation in the learning process is needed in order to achieve a specific educational and learning goal (Handayani L. , 2020). Many factors affect student learning motivation, one of them is internal and external factors. Internal factors are factors that come from within students that include physical factors, psychology, and fatigue factors. While external factors are factors that come from outside the student which includes family, school and community(Sarinadi, 2014). Naturally, student motivation is closely related to the desire of students to be involved in the learning process in the classroom. Motivation is needed to create an effective learning process in the classroom, where motivation has a very important role in learning both in the process and the outcomes. (Sumiati, 2013).Thus, the lack of enthusiasm of students in the learning process can affect student learning outcomes and also in achieving learning objectives, this is due to the low activeness of students in the learning process related to the student's learning motivation. When students have the motivation to learn, Students will be motivated to participate in the learning process in an active and enthusiastic manner. Therefore,To study well, you need good motivation. Students who attend classes without self-motivation will not benefit from the teaching and learning process (Romlah, 2019). Conventional learning used by teachers so far is teacher-centered and seems to be detrimental to students, especially for students who have low abilities (Emda, 2017).

Based on the teacher's experience regarding science learning activities in the classroom students tend to be bored in learning and lack of motivation to learn.

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One of the things that can be noticed by the teacher in planning and implementing a learning process is by making an innovation in the learning process. There are various ways that teachers can try to innovate in learning, one of them is the use of innovative learning models, whereas the model can develop the abilities and skills needed by students. One of them is by using the RADEC learning model.

The RADEC (Read, Answer, Discuss, Explain, and Create) model is claimed to be one of the alternative learning models that is appropriate to the conditions of Indonesia in the 21st century. This model was first introduced at an international conference in Kuala Lumpur, Malaysia by Sopandi (2017). The name of this model is adjusted to its syntax to make it easier for teachers to use the RADEC model, (1)Read (Reading), students read information from various sources such as books and other printed information sources as well as electronic information sources such as the internet. In order to guide the teacher in giving students pre-learning questions so that students understand the information provided, these questions are given before the lesson begins, (2) Answer, students answer pre-teaching questions based on the knowledge gained in the Read activity. Pre-teaching questions are arranged in the form of a worksheet (worksheet). Then, these questions are answered outside the classroom or at home independently before the classroom learning is carried out. Students identify independently which part of the teaching material is considered easy or difficult. Other than that, students can ask themselves whether they are lazy or diligent in reading, easy or difficult to understand written teaching materials, like or dislike reading textbooks, and so on. Therefore, the teacher can know about the condition of all students. (3) Discuss (Discussion), Students learn in groups to discuss their answers to the questions in pre-teaching. Students who are successful in answering certain tasks from the Worksheet can provide guidance to their friends who have not mastered the material. The teacher motivates students who are struggled to ask for guidance from their friends. This stage gives students to discuss their answers with other members in one group and the teacher must ensure there is communication between students in each group to get the correct answer. (4) Explain in presentation activities with teaching materials that include all cognitive aspects of learning indicators that have been formulated in the lesson plan. The order of presentation is adjusted to the order of the learning indicators formulated in the lesson plan. Student's representative from groups who have mastered the learning indicators to explain important concepts. In this activity the teacher can ensure that the presenter explains scientifically correct and other students understand the explanation. In addition, the teacher can encourage other students to ask questions, argue, or add their opinion to what their friends from other groups have said. The teacher can also explain important concepts that are not mastered by all students as observed at the discussion stage. Teachers can provide explanations with demonstrations, videos, power points or other things that are expected to overcome the difficulties of the participants, (5) Create, the teacher facilitates students to learn to use the knowledge that has been mastered to

produce creative ideas or thoughts. Creative thinking can be formulated with productive questions, problems, or thoughts to create other creative works. When teachers find students who have difficulty in generating creative ideas, teachers need to inspire the students this can be done in the form of research example, problem solving or other work that has been done by people. Then students discuss other creative ideas that can be planned and realized. The realization of ideas can be done independently or in groups depending on the character to be developed. Theoretically, this work is more difficult for students because it generates original ideas from students' thoughts, which are then realized either successfully or unsuccessfully. Students can learn how to generate creative ideas, select ideas that will be realized, plan the realization, and carry out the plan at this stage(Pratama, 2019).

The RADEC learning model has characteristics including: (1) encourage students to be actively involved in learning; (2) encourage students to learn independently; (3) connect prior knowledge with the material being studied; (4) connecting the material studied with everyday life and contemporary issues; (5) provide opportunities to be active in asking a question, discussing and proposing an investigation plan, as well as concluding the material studied; (6) provide opportunities to study the material in depth through pre-learning assignments (Handayani L. , 2020). In addition, the basic principle of the RADEC model is that all students in their learning have the potential and capacity to learn independently and learn higher in mastering their knowledge and skills.(Sopandi, 2017) Based on the results of research conducted by(August, 2021) which means that the RADEC model can be used as an alternative model that can improve and accommodate other substantial issues in the problems that exist in Indonesia.

Based on the explanation above, the researchers conducted a study on increasing motivation to learn science through the RADEC learning model in Grade V Elementary School students.

METHOD

This research used descriptive qualitative research analytical. Qualitative research essentially expects the discovery of something that can later be raised as a hypothesis for further research(Zainal Aqib, 2018).

In this study, the main instrument (key instrument) in collecting data and interpreting data is the researcher himself (Khotimah Nurul, 2017). Thus, researchers must be accepted by informants and their environment in order to be able to reveal hidden data through speech, body language, behavior and expressions that develop in the world and the environment around the informants.(Mulyadi, 2013).

This study aims to analyze the learning motivation of elementary school students by using the RADEC learning model on the aerial material whichwhich is determined by whether or not the indicators of student motivation to learn are fulfilled. The subjects in this study were 38 students of class V of the elementary schools in the Sumedang area Data collection in the study used a learning motivation scale questionnaeriale

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consisting of 15 questions and 7 indicators to be achieved according to Sadirman: (1) Persevering in doing tasks, (2) being tenacious in facing difficulties (not giving up quickly), (3) Showing interest to various kinds adult problem, (4) prefers to learn independently, (5) Able to defend his opinion, (6) It is difficult to let go of beliefs that have already been formed, and (7) likes to find and solve problems. (Nasrah, A. Muafiah, 2020).

The instrument is used to collect primary data in the learning motivation of fifth grade students at the of the elementary schools in the Sumedang area. In the questionnaeriale, the researcher used 4 answer choices: strongly agree, agree, disagree, and strongly disagree. Since the research was conducted during the Covid-19 pandemic, the questionnaeriale was distributed via a google form. The material presented by the researcher before giving the questionnaeriale was aerial material be achieved. Then, the score per indicator and the overall score using the RADEC model in the online learning process (on the network) through Zoom Meeting. The scoring of student test results is based on the indicators to of students are converted in the form of a scale value (1-100) and interpret the data according to Arikunto's understanding.(Sunnah Buwono, 2013) as follows.

Table 1. Data Criteria

Percentage	Criteria
81-100	Very Good
61-80	Good
41-60	Enough Good
21-40	Less enough
0-20	Not Enough

RESULTS

This study uses a science learning motivation questionnaeriale consisting of 7 indicators along with 15 statement scales that are associated between learning motivation and learning using the RADEC model which uses four answer choices: Strongly Agree (A), Agree (A), Disagree (D), and Strongly Disagree (SD). Because learning is done by online (on a network), a questionnaeriale was given to 38 fifth grade students at one of the Sumedang regional public elementary schools via google forms, but before being given a questionnaeriale, students carried out learning activities related to aerial material first using the RADEC learning model through Zoom Meeting. Each statement in the questionnaeriale has been linked to the criteria for the RADEC learning model: 1) encourage them to be actively involved in learning; (2) encourage them to learn independently; (3) Connect prior knowledge with the material being studied; (4) connect the material studied with everyday life and contemporary issues; (5) provide opportunities to be active in asking a question, discussing and proposing an investigation plan, as well as concluding the material studied; (6) provide opportunities to study the material in depth through pre-learning assignments. this is done to be more accurate in

analyzing students' learning motivation when using the RADEC model in the learning process.

Processing and analysis of the data obtained from the questionnaeriale was carried out through tabulating the data and determining the percentage of students' answers. The formula for determining the percentage of students is as follows:

$$\text{Percentage (\%)} = \frac{(\text{number of parts})}{(\text{Total})} \text{X } 100\%$$

Table 2. Percentage of Learning Motivation Questionnaeriale Results for Class V Students in one of the Sumedang Regional Public Elementary Schools

No	Statement	Response (%)			
A.	**Indicators: Persevere in doing a task**	**SA**	**A**	**D**	**SD**
1.	I do my own science assignments seriously (+)	68.4	31.57	0.00	0.00
2.	For me, the most important thing is to do the questions or assignments on time without caring about the results I will get. (-)	7.89	13.15	26.31	52.63
B	**Indicator: tenacious in the facing difficulties (not quickly discouraged)**	**SS**	**S**	**TS**	**STS**
3.	If my Science score is bad, I don't want to study anymore. (-)	0.00	0.00	47.36	52.63
4.	If I encounter a difficult question then I will try to work on it until I find the answer. (+)	42.10	31.57	15.78	10.52
C.	**Indicator: Shows interest in various kinds of problems**	**SS**	**S**	**TS**	**STS**
5.	I never asked the teacher about aerial material that I didn't understand. (-)	0.00	7.89	18.42	73.68
6.	the way of learning that the teacher just did makes me enthusiastic in learning aerial material in sience (+)	86.84	13.15	0.00	0.00
7.	the teacher's way of teaching makes me want to know more about the aerial material that being studied (+)	21.05	73.68	5.26	0.00
D.	**Indicator: Happy to learn independently**	**SS**	**S**	**TS**	**STS**
8.	I do pre-learning assignments independently (+)	60.52	23.68	7.89	2.63
9.	I am not looking for other suitable sources to complete the pre-learning assignments that I do (-)	2.63	5.26	21.05	71.05
E.	**Indicator: able to defend an opinion**	**SS**	**S**	**TS**	**STS**
10.	I just kept quiet and never gave an opinion during the discussion. (-)	0.00	21.05	26.31	52.63
11.	I try to defend my opinion during the discussion. (+)	26.31	47.36	13.15	10.52
F.	**Indicator: it's not easy to let go of things you already believe in**	**SS**	**S**	**TS**	**STS**

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12.	Every time I work on science questions, I have the highest minimum target value above the average because I believe I can do all the questions correctly (+)	34.21	44.73	13.15	7.89
13.	If my answer is different from my friend's then I will change my answer so that it is the same as my friend's answer. (-)	7.89	18.42	23.68	50.00
G.	**Indicators: happy to find and solve problems or questions**	**SS**	**S**	**TS**	**STS**
14.	I don't feel challenged to do science questions about aerial which are considered difficult by friends (-)	10.52	15.78	42.10	31.57
15.	I will be enthusiastic about learning and happy when making an experiment / work / video in aerial learning (+)	92.10	5.26	2.63	0.00

DISCUSSION

Based on the results collected from the questionnaeriale that has been distributed to students via google forms, the following will be discussed regarding Student Motivation Through the RADEC Learning Model. In the first indicator, being diligent in dealing with the tasks contained in numbers 1 and 2 where statement number 1 is positive, students at most give a total percentage value of 100% from 68.4% (Strongly Agree) and 31.57 (Agree). The statement is "I work on science assignments independently and earnestly", so it can be concluded that students can work on science assignments independently and seriously belong to the very good category.

In the second indicator regarding tenacious in facing difficulties (not quickly discouraged) in statement number 3 has a negative value, the most students give a disagree response (47.36%) and strongly disagree (52.63%) with a total percentage of the two responses that is 100 %. The statement is "If my science score is bad, I don't want to study anymore". Therefore it can be concluded that if students' science scores are bad, students will be motivated to study again including in the Very Good category.

In the third indicator regarding Showing interest in various kinds of problems in statement number 6 has positive value, most students give an agree response with 13.15% and a strongly agree response with 86.84% with a total percentage of the two responses that is 100%. The statement in number 6 is "The way of learning that the teacher just did makes me enthusiastic in learning the science of aerial." Therefore, it can be concluded in the third indicator that the RADEC learning model can make students enthusiastic in learning science on aerial material which is included in the Very Good category.

In the fourth indicator regarding Happy in independent learning in number 9 has a negative value, the most students gave a disagree response with 21.05% and strongly disagree with 71.05% with a total percentage of the two responses, 92.1% of the statement "I don't look for other suitable sources to complete the pre-learning assignments that I do". So it can be concluded that in doing pre-

learning assignments students look for other sources to be able to complete their assignments so students can read more information from various sources such as the Read stage in the RADEC model which is included in the Very Good category.

In the fifth indicator regarding students are able to maintain the opinion in number 10 has negative value, the most students give a response disagreeing with 26.31% and strongly disagreeing with 52.63% with a total percentage of the two responses which is 78.94% of the statement "I kept quiet and never gave an opinion during the discussion." So it can be concluded that when discussing students not only silent but students participate in giving their opinions including in the Good category.

In the sixth indicator regarding It is not easy to let go of things that are already believed to be contained in number 13 has negative value, the most students give a disagree response with 23.68% and strongly disagree with 50.00% with a total of the two percentages of the response or 73.68% of the statement. "If my answer is different from a friend's, I will change my answer so it is the same as a friend's answer. So, it can be concluded that students on the indicators are not easy to let go of what they have believed by not changing or changing their answers if the student's answer turns out to be different from the answer of their friend, including in the Good category.

In the seventh indicator regarding happy to find and solve problems or the questions contained in number 15 have positive values, the most students give an agree response with 92.10% and a strongly agree response with 5.26% with a total of both responses 97.36% of the statement "I will be enthusiastic about learning and happy when making an experiment / work / video in aerial learning". So it can be concluded that students will be enthusiastic when learning by making an experiment / work / video in aerial learning, because then students can find and solve a problem through experiments which in the RADEC syntax on Create students are instructed to make a work including the very good category.

Based on the explanation of the seven statements of each of the indicators above, it can be concluded that the use of the RADEC learning model in science learning for Class V aerial material has high learning motivation. This is because the RADEC learning model requires students to be able to learn independently. In the process of learning activities students are positioned as the subject of the center of learning activities. In addition, the implementation of the RADEC learning model has implications to change the habits of both teachers and students in order to do better learning(Praptono, 2020).

Apart from the results of the questionnaeriale, according to the theory, the criteria for the RADEC learning model were found to be appropriate and related to indicators of learning motivation such as criteria encourage students to be actively involved in the learning process and encourage students to be able to learn independently with regard to indicators that prefer independent learning. The criteria for connecting the material studied with everyday life as well as contemporary issues are related to indicators. Shows interest in various

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kinds of problems for adults and indicators are happy to find and solve problems. The criteria provide opportunities to study the material in depth through pre-learning assignments related to the indicators of being diligent in doing tasks and being tenacious in facing difficulties (not giving up quickly). The criteria provide opportunities to be active in asking a question, discussing and submitting an investigation plan, and conclude that the material studied related to indicators can defend their opinions and it is not easy to let go of what they already believe when students discuss. So that apart from being seen from the results of the questionnaeriale, the correlation between the criteria of the RADEC model and students' learning motivation can be said that with the application of the RADEC learning model there is a high learning motivation in science learning in fifth grade elementary school students in the Sumedang area.

CONCLUSION

Based on the results and discussions that have been presented, it can be concluded that the average score of the overall statements on the questionnaeriale with all indicators of learning motivation, students are included in the very good criteria with 81.22%. In addition, based on the theory regarding the criteria for the RADEC model, there is a relationship with indicators of student learning motivation. So it can be concluded that with the application of the RADEC learning model (Read, Answer, Discuss, Explain, and Create), there is a high learning motivation in science learning in fifth grade students of Public Elementary School in Sumedang area.

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