Student Response to Rulisca Learning Media Implementation Toward Science Learning in IV Class Elementary School

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Abstract: This study aims to determine the response of students to Rulisca learning media with the Problem Based Learning learning model at Muntilan Elementary School. This study uses a descriptive approach to analysis of student responses in the study of the implementation of learning media. The subjects of the study were grade IV students totaling 18 students through purposive sampling techniques. The results of the study were obtained from the questionnaire sheet of student responses in learning related to energy change material. Based on the results of a study consisting of 10 statements, it shows that Rulisca's learning media received a Considerably Interested. This is influenced because the media used uses the application of renewable technology to the concept of energy change. Rulisca makes students have a high curiosity to build their thinking constructions. Learning media used in energy change by involving solar cell technology and assembling supporting devices make students understand and are excited to understand energy changes contextually, besides that the use of Problem Based Learning learning models also makes students to think critically and logically in understanding problems. Stages in the learning model also make students feel more enthusiastic in the learning process.

Abstrak: Penelitian ini bertujuan untuk mengetahui respon siswa terhadap media pembelajaran Rulisca dengan model pembelajaran Problem Based Learning di Sekolah Dasar Muntilan. Penelitian ini menggunakan pendekatan diskriptif analisis terhadap respon siswa dalam kajian implementasi media pembelajaran. Subjek penelitian adalah siswa kelas IV berjumlah 18 siswa melalui teknik purposive sampling. Hasil penelitian diperoleh dari lembar angket respon siswa dalam pembelajaran terkait materi perubahan energi. Berdasarkan hasil penelitian yang terdiri dari 10 pernyataan menunjukkan media pembelajarn Rulisca mendapatkan respon yang baik. Hal ini dipengaruhi karena media yang digunakan menggunakan aplikasi teknologi terbarukan pada konsep perubahan energi. Rulisca membuat siswa memiliki rasa ingin tahu yang tinggi untuk membangun konstruksi berfikirnya. Media pembelajaran yang digunakan dalam perubahan energi dengan melibatkan teknologi solar cell dan merakit perangkat pendukung membuat siswa paham dan bersemangat untuk memahami perubahan energi secara kontekstual, selain itu penggunaan model pembelajaran Problem Based Learning juga membuat siswa untuk berfikir kritis dan logis dalam memahami permasalahan. Tahapan dalam model pembelajaran juga membuat siswa lebih merasa antusias dalam proses pembelajaran.

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A. Introduction

The era of the 21st century provides demands for change, such as changes in habits in society and the environment. This era is related to the industrial revolution 4.0, where later the development process will accelerate and of course require qualified quality workers (Dewanti & Santoso, 2020). This means that the quality of human resources needs to be changed and improved from now on. This change certainly requires good knowledge, one of which is obtained from education. In Indonesia, education ranks 64th out of 120 countries in the world based on the UNESCO Education for All Global Monitoring Report 2012 annual report. Meanwhile, based on the Education Development Index for All (Education for All Development Index, EDI) Indonesia is ranked 57th out of 115 countries in 2015. In the latest report on the UN development program for 2015, Indonesia ranks 110 out of 187 countries in the Human Development Index (IPM) with a score of 0.684. Based on these data, Indonesia is still lagging behind its two ASEAN neighbors, namely Malaysia (ranked 62nd) and Singapore (ranked 11th). Based on this, educational goals will also form the basis of the government's efforts to encourage the achievement of sustainable development goals and targets in the era of Sustainable Development Goals (SDGs) up to 2030 based on directions from the United Nations Forum.

Efforts to improve quality in Indonesia are experiencing various obstacles, one of which is the impact of the Covid-19 pandemic. According to UNICEF (2020) there are 463 million children whose schools have been closed due to this pandemic. Thus, learning at school stopped for months. This certainly has an impact on the quality of education as well. Based on the results of a study from home survey by the Ministry of Education and Culture together with UNICEF, there were 45 million school children who carried out distance learning activities during the Covid-19 pandemic, both offline and from. However, in this case there are still obstacles, such as 35% of students experiencing bad network problems, 73% of students experiencing a lack of focus, distraction from the surrounding environment and an uncomfortable place to study.

After the pandemic, the opening of schools and the return of in-person learning also created new problems for efforts to improve the quality of education. This problem is evidenced by learning in the classroom where students experience loss learning. Learning loss is learning that has an impact on the student learning process caused by the absence of interaction from teachers and students during learning (Munawaroh & Nurmalasari, 2021). That is, during learning, students and teachers cannot conduct question and answer and transfer knowledge directly. When learning is done at home, the teacher cannot monitor student activities directly. Even so, there are efforts in the form of parental assistance. However, not 100% of parents can accompany their children to study at home due to work and household issues. This is what makes the lack of learning assistance to students so that during study hours, they instead play gadgets, watch television, and even play with friends at home, so students don't concentrate on studying. The ineffectiveness of learning during this pandemic, was carried over when entering school face to face. This results in learning

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loss as evidenced when the teacher explains that students are not concentrating, want to go home immediately, and even when given questions they cannot answer.

The Indonesian government has also provided various efforts to address the problem of the quality of education in Indonesia. One of them is the post-pandemic curriculum, namely the independent learning curriculum. Independent learning curriculum means learning with freedom of thought which means students can process their thoughts to convey an idea, opinion, response to something received. This curriculum contains the principle of independence which also applies the student profile of Pancasila. This is of course in line with the demands of 21st century skills which include 4 things, namely critical thinking, creative, communicative, and collaborative. The application of this independent curriculum certainly adjusts the learning needs and also the interests of students in learning. This has also been regulated according to the Decree of the Ministry of Education and Culture Number 025/H/KR 2022 concerning Education Units Executing the Implementation of the Independent Curriculum Through Independent Pathways in 2022/2023 Stage 1 which in Elementary School students is used in grades 1 and 4 (Kemendikbudristek, 2022).

Efforts to improve the quality of education to deal with 21st century abilities through an independent curriculum can be implemented in science learning. According Nurhayati et al (2022), in science learning using natural events related to everyday life. In addition, science learning also uses its logic in thinking and responding scientifically. Therefore, efforts to improve the quality of education to face these challenges are suitable if applied to science subjects.

Based on the results of pre-research observations, it was found that out of 50 teachers in the City and District of Magelang, 75% had expected a science learning model that could change student learning behavior and also to cope with the demands of 21st century abilities. In addition, as many as 65 % of teachers also need appropriate learning models to increase the demands of 4C (communicative, corelative, critical thinking, and collaboration). Learning that is carried out in schools certainly requires greater readiness. Even so, the school has made efforts to overcome these problems. However, this is still limited to the use of student books obtained from the government. In addition, according to the teacher's statement, they rarely use the media because the teacher is burdened with a lot of administration. Therefore, this quality improvement effort has not been realized properly.

Based on the efforts that have been made by the school, of course there are still weaknesses that make students' abilities in learning imperfect. The weakness of this effort is that learning only uses textbooks from the government, which of course cannot develop creativity. In addition, the use of media is still rare. This makes students less interested in learning and less able to capture information clearly. In addition, elementary school age students also have an interest in learning if they use models or media that activate students and are also interesting.

Based on the explanation above, the researcher wanted to test student responses to the test subjects of the Problem Based Learning model assisted by RULISCA media (Light

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Electric Houses) in the science subject matter of energy changes in grade IV students. Of course, this test must be adjusted to the needs of grade IV students. The advantages of this test subject are using a fun learning model and can improve students' ideas. Then use media that is interesting in terms of form and use because it is equipped with miniatures and is also project-based. That is what can make the enthusiasm level of students higher in participating in learning in an effort to improve students' critical thinking skills which will be implemented.

The success of the Problem Base Learning learning model is shown by the use of learning models that use various problems that can hone students' thinking skills. This certainly can increase students' interest in learning. This is in accordance with the results of research conducted by (Risnawati et al., 2022) and (Desvianti et al., 2020). In this study, the results were obtained in the form of a significant difference between before and after using the Problem Based Learning model, this occurred due to increased motivation and interest in learning. Before the Problem Based Learning model was applied, the majority of students had low scores due to a lack of motivation and interest in carrying out learning, but with the implementation of the Problem Based Learning model, student grades and achievements increased which was due to increased student motivation and interest in learning.

This research needs to be done to find out student responses to learning models and media which will later influence student learning interests. This research also had to adjust to the needs of students in grade IV and also the existing resources. That way, the results of the research will be in accordance with what is expected by the researcher. The results to be achieved in this study are to increase students' interest in learning in grade IV students. Therefore, it is very necessary to conduct research in overcoming this problem.

Based on the research above, it is necessary to carry out quantitative research using experimental methods in the form of updating models and media in learning to increase students' interest in learning through models and media in class IV students. Therefore, a research title was obtained in the form of "Student Responses to the Implementation of RULISCA Learning Media". In this case, learning will apply a fun learning model and use interesting media for fourth grade students. Therefore, it is hoped that the learning interest of grade IV students can increase perfectly.

B. Method

This research is a descriptive research with a qualitative approach. This research is descriptive in nature because it aims to make a description, a systematic or detailed picture of students' responses to the Rulisca learning media. The data collected in this study used a questionnaire technique. The questionnaire technique is a technique or method of collecting data indirectly (Sugiyono, 2014). Researchers used a questionnaire in the form of 10 questions that were used to identify student responses to the use of the learning media used. This study was conducted with 18 students in grade 4 at Muntilan Elementary School. The methode and analyisis shows the figure 1.

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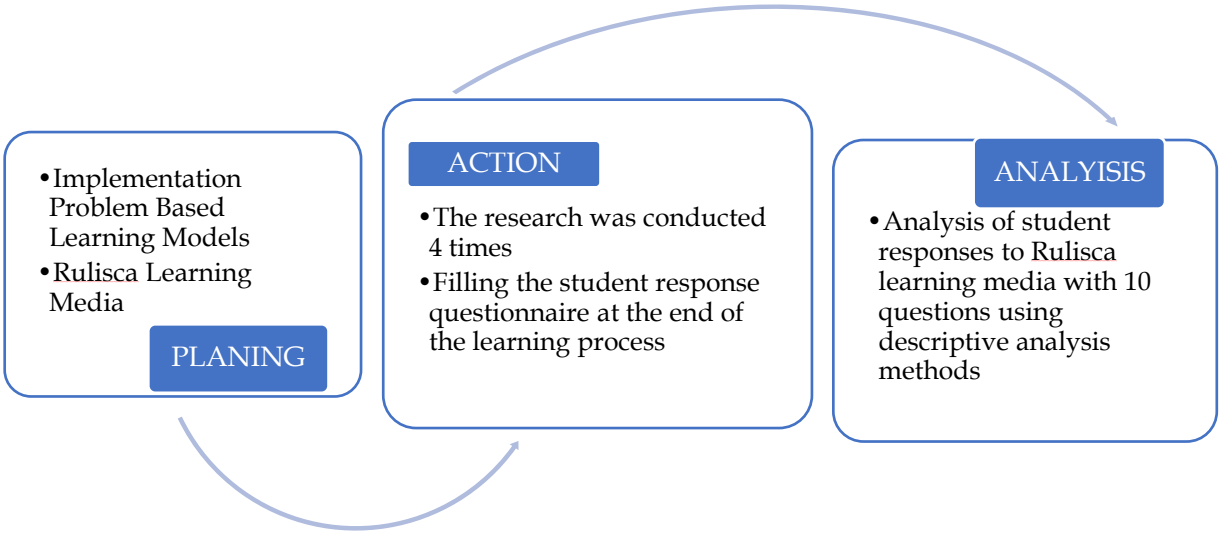

Figure 1. Method stape and analyisis

C. Result and Discussion

Result

The name "Rulisca" is an acronym for "Light Electric House," which is the central idea behind this medium. The solar panel draws power from the main device, and that current is measured by the voltmeter. The voltmeter is helpful for checking the output of the solar panel's electric current. The volt meter is the most reliable device for measuring the output voltage of an electric circuit. Once the electricity has been generated, it is stored in a battery and then recirculated to the LED light source, where it is converted back into usable light. In fourth grade, students learn about the process of energy transformation. There is a general lack of comprehension amongst today's youth concerning the conversion of luminous energy into electrical energy. Rulisca's accessibility makes it a useful tool for teaching students about photovoltaics (the conversion of light energy into usable electricity). As an added bonus, the generated electricity can be stored in batteries and used whenever there is a decrease in illumination. Students need to see this transition primarily as a form of renewable energy. Due to the high initial investment required to set up solar panels, the number of homes in the student community that utilize this concept is low. Energy from fossil fuels is now a new problem and is running low; therefore, it is crucial that elementary school students learn this concept so that they can think about saving energy and using renewable energy in the future.

Using Rulisca's learning media on the material for detecting energy shifts was a pleasant experiment with positive outcomes. Students' reactions to the Rulisca learning media implemented at Muntilan Elementary School were positive when the process of learning was guided by the Problem Based Learning learning model. The tools and the processes of experimentation are of great interest to students. Because it adds a new dimension to science education, the learning process that takes place outside the classroom also makes students more enthusiastic. Participation and engagement during activities with

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Rulisca learning media are indicators of students' reactions. Figure 2 shows some of the students' ideas and projects.

Figure 2. Display of Rulisca Learning Media

To investigate how students felt about the educational experience, a questionnaire was developed and distributed to them. The questionnaire can also be viewed as a means of evaluating educational progress (Sugiyono, 2014). Learner progress in the affective domain is frequently evaluated through the use of questionnaires. The instrument may take the form of a likert scale or a more traditional multiple-choice questionnaire. The Likert scale is widely used to reveal students' attitudes because of its reliability and validity as a measurement tool. Students' reactions to lessons can be gauged with the help of a questionnaire like this one. According to the results of a questionnaire, students' satisfaction with Rulisca learning media falls into one of four categories: Not interested, Slightly Interested, Considerably Interested and Extremely Interested. The following table displays the aggregated responses of the students.

Tabel 1. Student Responses and Description of Findings

Number	Statement	Findings Description
1	I enjoy studying about materials that convert light energy using Rulisca's media.	When utilizing RULISCA learning material to study science, students exhibit happiness. The collected data revealed that, out of 18 pupils, 12 Considerably Interested and 6 were Extremely Interested.
2	The prospect of conducting an	Constructing RULISCA learning media allows students to have hands-on experimentation experience while learning

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Number	Statement	Findings Description
	experiment with Rulisca media piques my interest.	about the substance for energy transformation in scientific classes. Two students were Not interested, one student was Slightly Interested, nine students were Considerably Interested with the experiment, and six students were Extremely Interested with the experiment.
3	Rulisca media is one of the technological media, in my perception.	RULISCA learning media has several sets of technologies such as solar panels which have a series of solar cells that can absorb sunlight. The data obtained showed that there were 3 students who were Slightly Interested, namely they did not agree with the statement, 9 students were Considerably Interested, namely they agreed with the statement, and 6 students were Extremely Interested, namely they strongly agreed with the statement.
4	Media Rulisca presents an illustration of an initiative to utilize solar energy sources.	This RULISCA media illustrates that in order to make good use of sunlight as a source of electricity, you can use a tool in the form of a solar panel which is useful for absorbing sunlight. As for the data, it was found that 2 students were Slightly Interested, namely they did not agree with the statement, 13 students were Considerably Interested, namely they agreed with the statement and 3 students were Extremely Interested, namely they strongly agreed with the statement.
5	Rulisca media can be utilized for an extended period of time.	The materials used in making RULISCA learning media can last a long time so that they can be used as learning aids many times when conveying material on changing energy in Science subjects. As for the data, it was found that 6 students were Slightly Interested, namely they did not agree with the statement, 7 students were Considerably Interested, namely they agreed with the statement and 5 students were Extremely Interested, namely they strongly agreed with the statement.
6	Media Rulisca made me more skilled and think critically.	Material learning changes energy in science subjects by using RULISCA learning media so that students can think critically and skillfully because problems are presented in accordance with the conditions of the surrounding environment so as to open students' minds to solve problems properly in accordance with their understanding. The data found that 5 students were Slightly Interested with direct activities, 9 students were Considerably Interested with doing learning activities directly and 4 students were Extremely Interested to do activities directly.
7	Media Rulisca increases my motivation in learning science	Learning using RULISCA media can increase students' interest in learning, because it can create a fun and non-stressful learning atmosphere. The data obtained 2 students were Slightly Interested, namely less motivated to learn using RULISCA media, 12 students were Considerably Interested, namely motivated to learn using RULISCA media and 3 students were Extremely Interested, namely very motivated to learn using RULISCA media.
8	Media Rulisca has an attractive appearance.	RULISCA media has a miniature physical form of the house and there are technological tools in the form of solar panels as a tool to absorb sunlight, and batteries as storage of sunlight

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Number	Statement	Findings Description
		energy and lamps as evidence that sunlight can be an alternative energy in the form of producing electricity. The data found that 2 students were Not Interested with the form of RULISCA learning media, 7 students were Considerably Interested with RULISCA learning media and 9 students were Extremely Interested with RULISCA learning media.
9	Media Rulisca allows me to explore myself.	Learning activities using RULISCA media are not only carried out in the classroom, but also outside the classroom with direct activities in the RULISCA media experiment so that it can provide a learning experience full of meaning. The data found that 5 students were Slightly Interested, namely not being able to explore themselves, 9 students were Considerably Interested that they could explore themselves and 4 students were Extremely Interested, namely very happy to explore themselves.
10	I can properly report the results of the experiment using Rulisca media.	Through experiments using RULISCA media which is carried out directly when learning is related to material changes the energy of science subjects, students can solve problems appropriately. The data obtained 1 student was Not Interested, namely unable to compile the results of the report, 3 students were Slightly Interested, namely not being able to compile the report, 13 students were Considerably Interested that they could compile the report well and 1 student was Extremely Interested, which was very able to compile the report correctly.

From these findings, it shows the results that, the majority of shivas think that the student's response is Considerably Interested to the learning media used. Of the 18 students in grade 4, the majority were at Considerably Interested and Extremely Interested level. For more details, please see the details of the data distribution below,

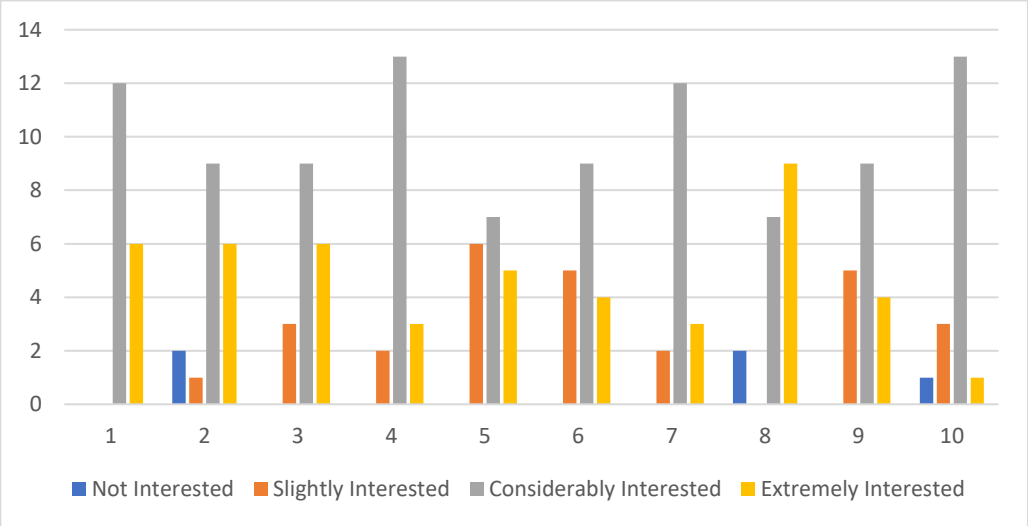

Figure 3. Distributing Data of Questionnaire

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Discussion

The role of teachers in developing learning media is very influential in carrying out a meaningful learning process because basically the main task of a teacher is to provide information that is easily understood by students. Competence to teach and concern for student skills can also affect the learning process, especially in the use of learning media (Akrim, 2018). Learningby using technology, for example with learning media that has the following functions (1) Portability; (2) connectivity; (3) social inactivity; (4) context sensitivity; and (5) Individual or adaptable for individual learners [6], so that it will increase students' curiosity (Sahronih et al., 2019). Media functions as the main learning in the learning process, where when viewed from the understanding of learning there are humans in it, objects or everything that allows students to obtain information and knowledge that is useful for themselves in learning, especially media that uses technological advances, especially in elementary schools. From the response given by students to technological advances, students are enthusiastic, especially in the process of how electric current can be generated from sunlight processed from solar panels. Therefore, the purpose of science media is to assist students in expressing natural phenomena and instilling concepts with treatment.

Learning media has a big role in learning activities because it can help the process of conveying information from teachers to students or vice versa. Learning media also affects the learning motivation of students, that's why teachers are expected to be creative in choosing learning media, Rulisca Media which is used in this learning, makes students more enthusiastic in exploring themselves in terms of observing natural events in real time, with voltmeter measuring instruments helping students to clearly understand that electricity can be generated from solar heat. With experiments involving Rulisca learning media, it makes students to think more scientifically and be able to compile reports well, make presentations appropriately based on data obtained from observation sheets and read available measuring instruments.

Thepurpose of science media is to assist students in expressing natural phenomena and instilling concepts with treatment (treatment). The IPA media used can be in the form of real objects and can also be in the form of imitation objects. Media can be obtained or created from second-hand items, from contextual direct objects, from materials that are easily accessible and that are around the school or student environment. The use of learning media in the learning process can increase understanding of concepts and creativity, so that students are interested in paying attention to the teacher's explanation and helping students receive information with all indra. Learning media has a very important function, namely as a carrier of information and preventing obstacles to the learning process so that information or messages from the communicator can reach the communicant effectively and efficiently and learning media is an integral medium of learning. Learning media has an important role in a learning process. The use of learning media can help educators in delivering learning materials (Juhardi & Amirullah, 2022).

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Theuse of learning media can have an influence on the quality of learning. Therefore, teachers should use and develop learning media that are in accordance with the learning situation that will be implemented as an effort to improve the quality of learning (Hanikah, 2022). Learningis a forum for conveying and distributing information to recipients, so that it can produce effectively and efficiently planned teaching and learning activities in order to create a conducive learning environment, which makes it easier for students to understand the subject matter and increases students' interest in learning further (Wulandari & Mudinillah, 2022). The role of media in learning can be said to be important because it supports teachers in providing learning in the classroom and helps learning success. This is in line with the opinion (Yunita et al., 2019) that the media is an integral part of teaching and learning activities and not only makes it a tool in teaching. In addition, there is a need for more interesting modifications of learning media such as learning media that are adaptive to user characteristics (Surahman, 2019).

The use of science media has a very important function to explain and instill concepts that are difficult for students to understand. There are six main functions of learning media in the teaching and learning process that are stated (Sudjana, 2022) namely: (1) tools to realize an effective teaching and learning situation, (2) are an integral part of the overall teaching situation, (3) are integral to the objectives and content of the lesson, (4) not merely a lat entertainment or complementary, (5) is more intended to speed up the learning process and assist students in capturing the understanding given by the teacher, and (7) is prioritized to improve the quality of teaching and learning. Thus, science media helps students to find out about nature systematically, so that science is not just a mastery of knowledge in the form of facts, concepts or principles, but also a process of discovery (Wahyu et al., 2020). From the above opinion, Rulisca fulfills all aspects so that learning is very meaningful and can make students permanently store information in their memory. This is shown by the students' fairly high response to the aspects of improving their abilities and thinking critically comprehensively. Pentingnya media learning as alat to stimulate the learning process (Asyhari & Silvia, 2016). Media also plays a role in the psychological stage when many develop their motor skills that are useful for balancing the body (Trianingsih, 2016).

If the learning process utilizes the media, there are many positive contributions, among them saving time in explanations, increasing interest in learning, attracting attention, clearing ideas, clarifying concepts, and strengthening students' memory. The use of media is expected to increase maximum learning outcomes. Media intervention, if followed by appropriate methods, is beneficial to student competence and learning interactions and influence on the way students process information from teachers (Taufiq et al., 2014). In relation to science subjects, the use of media should be carried out. First, the structure and content of science is loaded with abstract concepts and principles, so that the media is able to concretize those abstractions according to the cognitive capacities of elementary school children which are still operational-concrete; Second, by looking at the cognitive capacity of elementary school children and that natural phenomena are elementary science platforms,

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science materials should be simple and practical, which can only be stated if assisted by the media.

Learningservices also serve to convey a learning material in order to arrive at the goal or objectives so that by using learning media it is hoped that students will be able to gain various real experiences so that the subject matter delivered can be easily absorbed properly and the media must also stimulate students to remember what has been learned in addition to providing learning stimuli. Good media will also activate students in providing feedback, responses, and can also encourage students to be active in the learning process (Maimunah, 2016). So that the integrated learning media technology created as a solution is offered to help overcome problems encountered by both teachers and students during the learning process (Saregar, 2016).

D. Conclusion

Science learning in elementary schools using Rulisca learning media (Rumah Listrik Cahaya) is very useful for teachers or students, because the role of learning media is to assist teachers in explaining the material to be delivered in accordance with the material described. On the other hand, the students will get the ease of learning starting from the observation stage, processing information to the stage of communicating the findings. Based on the results of this study and observing the response of students, it can be concluded that the learning media Rulisca (*Light Electric House*) makes learning more enjoyable and meaningful for students, especially grade 4 on energy change materials. Rulisca media as the main media in the learning process combined with the problem-based learning model shows maximum results. The response of students from the 10 questions given said that it is good, likes the media, can make it easier not to get bored.

For other researchers, in science learning in elementary schools, they must use learning media that use technology in order to attract students' attention. The use of technology-based learning media can shape students' understanding to use energy wisely and in the future will use renewable technology to reduce pollution. The use of appropriate media will make the information received by students meaningfully understood to be developed in the future. Learning media is also very helpful for students to think concretely towards thinking abstractly, especially in elementary school students.

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