Islamic Journal of Integrated Science Education (IJISE), Vol. 1 No. 1, March 2022, pp. 33-52
DOI: https://doi.org/ 10.30762/ijise.v1i1.279

Islamic Journal of Integrated Science Education (IJISE)

Program Studi Tadris IPA
Institut Agama Islam Negeri Kediri
e-ISSN : 2986-0865
https://jurnalfaktarbiyah.iainkediri.ac.id/index.php/ijise

Application of React Learning Model to Increase Students' Physics Learning Activities and Achievements

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Abstract: This study was attempted to solve the problem of the problem using the aim of increasing the activities and learning achievement of physics students in class VIII D MTsN 7 Kediri using the REACT learning model. The type of research used is classroom action research using two cycles. Each cycle consists of planning, application of activities, observation, and reflection. The action given is the application of REACT learning model. The study was conducted at the MTsN 7 Kediri using class VIIID research subjects using a total of 37 students, all of whom were female students. The research instrument used was an observation sheet on the implementation of education, an observation sheet for student learning activities, and a test. Physics learning activities and achievements are said to be successful if the mastery of learning both has reached 75% of all students. The results of the study show that the application of REACT learning model can improve the activities and learning achievements of students in class VIIID MTsN 7 Kediri. Overall student learning activities face an increase in cycle I to cycle II as much as 14.92%. Students' physics learning achievement faces an increase in the time before the action to cycle I and cycle II which is as much as 10.46% and the class can be said to have completed learning.

Keywords: learning activities, learning achievement, react learning model

Article History:
Received: 02 January 2022; Revised: 20 January 2022; Accepted: 21 February 2022; Published: 30 March 2022

Citation (APA Style):
Wulandari, R. W., & Rochana, S. (2022). Application of React Learning Model to Increase Students' Physics Learning Activities and Achievements. *Islamic Journal of Integrated Science Education (IJISE)*, *1*(1), 33–52. https://doi.org/10.30762/ijise.v1i1.279

INTRODUCTION

The quality of a nation's resources is determined by the quality of education. The quality of Indonesia's resources is ranked 111th out of 173 countries. This fact shows how low the quality of education in Indonesia is compared to ASEAN countries. The Philippines is in 85th place, Brunei Darussalam at 31st, and Singapore at 28th.

Muslich (2014) argues that in order to achieve competency standards, planned and concrete efforts are needed in the form of learning activities for students. Competency-based learning with a contextual approach is the main option in Educational Unit Level Curriculum for 2 reasons. First, the arrival of Educational Unit Level Curriculum is inspired by the spirit of competence. to be achieved through learning. Second, competence will be achieved more quickly if the learning is supported by the context or reality experienced by students in everyday life.

According to Suyanto (2018), contextual education is a conception that supports teachers linking the content of lessons with real world conditions. The teacher brings the real world into the classroom as much as possible with the hope that students can easily accept the lesson modules. Therefore contextual learning needs to be applied in learning activities in the classroom, through various learning models that are created with contextual nuances (Firdaus and Isnaeni, 2018).

According to the results of observations the test that was tried at MTsN 7 Kediri and interviews with teachers, it was found that the average student test scores for the previous chapter were 63.78 and student activities in education were still categorized as low. Communication in education that took place was still one-way. Students are not entirely active in the educational process. When the lesson takes place, the teacher explains the lesson module after that the students do the practice questions. When the teacher explains many students are busy and do not pay attention to the teacher. When the teacher gave the opportunity to ask questions, all were silent and when the students were asked if they had understood everything, everyone responded "yes" but when the test was held the score did not match what was expected. Students are less enthusiastic about the module being taught. Such conditions are caused by students not being interested in physics because the teacher delivers lesson modules using lecture procedures and students receive the data while making notes.

Students also think that learning physics is difficult because they only do questions and also the teacher's lack of knowledge and experience with regard to physics. Innovative learning strategies. REACT learning model has never been applied in physics learning at

MTsN 7 Kediri. These facts motivate teachers and researchers to carry out learning the REACT learning model in order to explore learning strategies that are contextual, innovative, arouse emotions and motivation by utilizing available facilities and infrastructure.

One method to overcome these problems is by applying contextual educational models, such as the REACT learning model to improve student activities and achievement (Bílgín, Yürükel and Yígít, 2017). The REACT learning model was first introduced by the Center of Occupational Research and Development. CORD enhances contextual education to improve student skills and learning outcomes (Tosti, et al., 2014). This model was chosen because it gives high hopes for increasing student activity and learning outcomes because the REACT learning model not only describes a series of activities that highlight the concepts of physics being studied, but also relates the new concepts to existing concepts or those that have been obtained and also concept application through REACT stages (*relating, experiencing, applying, cooperating, transferring*) (Musyadad and Avip, 2020).

In *the Relating session*, students learn a lesson module that relates to the context of real-life experiences. In the experiencing session, students' activities are more emphasized on exploration, innovation and the creation of their own concepts by students. With the active activities of students and the willingness to think in mastering a dispute, they want to urge students to learn independently so that concepts will be easy to understand. In *the Applying session*, students are required to be able to apply the concepts they have learned into the context of their use in real life. In practice, students apply concepts and information to related problems using imagined future lives (Muslich, 2014). In *the Cooperating session*, students are shown to be able to learn in groups to be able to continue to develop knowledge, in this case students are trained to be able to work well with others. In the Transferring session, students are required to be able to solve different problems but are still adrift using the modules discussed (Özbay and Kayaoglu, 2015).

This allegation of success is supported by the results of research obtained by Wulandari and Maulana (2019), namely an increase in the thinking ability of students who are taught using the REACT learning model, and Kaliantin's research (2014) which shows an increase in the scientific work of students who are taught using the REACT learning model. The allegation of success was not only obtained by researchers from classroom action research but also from the results of a quasi-experimental research that was tried by Karima and Supardi (2015) which was based on data on student learning outcomes in the experimental class having an average score of 29.57, in contrast to the control class having an average score of 29.57. The average score is 17.86.

The implementation of the REACT learning model for researchers has advantages compared to other learning (Marlan, 2017). The REACT learning model of education is able to provide real, contextual learning experiences, engage students actively in education, improve concepts and remember them longer because students master it through implementation (Putri & Saputro, 2019). The REACT learning model of education has been compared with conventional methods (Miftahul Jannah, Z. A. Imam Supardi and Prabowo, 2020).

Facts previous research that showed an increase in learning achievement using the REACT learning model was in the Geography subject for class XI SMA Negeri 7 Malang, from the results of the study it showed that there was a comparison between the implementation of the REACT learning model with conventional procedures. The REACT learning model has been proven to increase the average gain score for student learning achievement to 29.57 from 17.86.

Based on the explanation above, as researchers try to improve activities and learning achievement of physics, therefore it is necessary to do research with the title: "Application of React Learning Model To Increase Students' Physics Learning Activities And Achievements" (Hwang and Chen, 2017).

This study uses a qualitative research type. The procedures and steps follow the basic principles of classroom action research. Following work procedures that are spiral cycles, including phases: planning, implementing actions, observing, and reflecting followed by re-planning. Schematically, the action research model adapted from Kemmis & Taggart is presented in **Figure 1**.

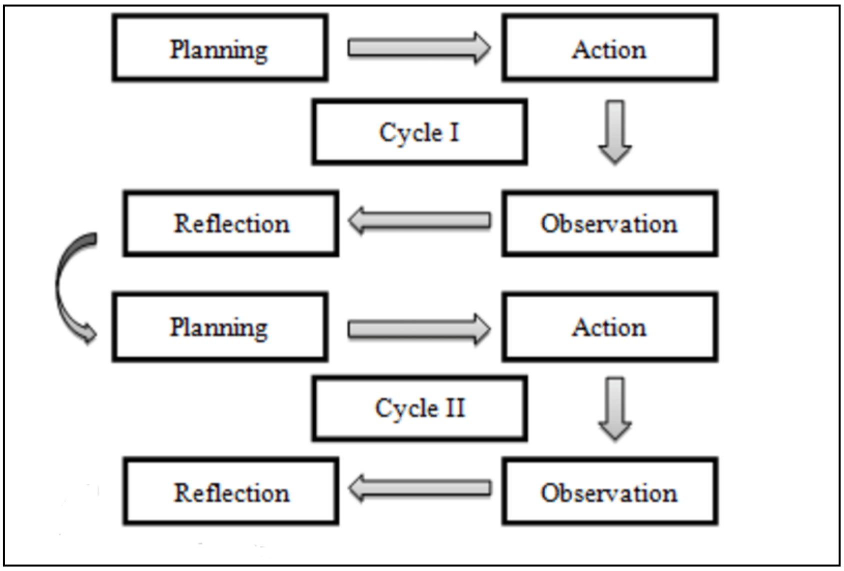

Figure 1. Spiral class action (Kemmis & Taggart, 2010)

The implementation of the actions carried out in this study was 2 cycles. Cycle I is applied in the Light learning material. The learning process in cycle I was carried out in three meetings with the time allocation for each meeting of 3x40 minutes. Cycle II is applied in the same learning material, namely Light. The learning process in cycle II is 3x 40 minutes.

In qualitative research, the researcher is the primary instrument because the researcher will plan, design, collect data, analyze data, draw conclusions and create reports. In implementing classroom action research, the researcher also acts as the executor of the action. The role of the teacher in this study is to become an observer and contribute before the researcher who acts as a teacher conducts learning. The role of the teacher in this study is to become an observer and contribute before the researcher who acts as a teacher conducts learning. This study was assisted by two observers who helped in measuring the ability of students' learning activities and observing the learning process.

This research was conducted at MTsN 7 Kediri, Indonesia which is located on the Raya Betet route. The research subjects in this study were class VIIID students in the even semester of the 2018/2019 academic year totaling 37 students, all of whom were female students. The research time was in the even semester of the 2018/2019 academic year with data collection in February–March 2019.

In this research, the sources of information were obtained from students and teachers. There is also information taken from this research is data on learning achievement and learning activities. The instruments used to collect the required information include: (1) action instruments; (2) learning activity observation formats; (3) test questions; (4) field notes formats; and (5) the format of the implementation of education. On the other hand, the information collection procedure used in this research is based on the achievement variables and learning activities are observations, field notes, tests, and student worksheet answers. The information analysis method used is a qualitative analysis method, namely by collecting information obtained through results, tests, interviews, field notes and observation sheets after which the information is presented, discussed and concluded.

Classroom Action Research (CAR) was conducted in 2 cycles. The first cycle was assessed in 3 meetings and the second cycle was assessed in 3 meetings. Each cycle is tried with an allocation for each meeting, which is 2 x 40 minutes. In each cycle consisting of 4 sessions, there are action plans, action implementations, observation actions, and reflection implementations.

Students are said to have completed learning if at the time of the test they obtained a score of 70 based on the SKM (Minimum Completeness Standard) and the number of students who achieved learning completeness was 75%. Skills in learning activities are said to be successful if all aspects observed include applying *Visual activities, Oral activities, Listening activities, Writing activities, Drawing activities, Motor activities, Mental activities, Emotional activities* have increased from cycle I to cycle II. The increase is declared successful if each aspect is in the sufficient category. If learning achievement and learning activities have met the success markers, the cycle can be stopped.

FINDING AND DISCUSSION

Cycle I

Action Planning Cycle I

Based on the results of initial observations, finally an action was formulated, namely education with the REACT learning model. In this session the researchers created educational features, including: (1) Arrangement of the Education Implementation Plan; (2) Arrangement of observation formats for assessing student learning activities; (3) Arrangement of test questions; (4) Worksheet); (5) Prepare the tools used in the experiment; (6) Prepare to study the format of field notes and observations for their application; (7) Control the division of tasks between researchers and observers.

Implementation of Actions and Observations Cycle I

This session is the application of actions that are carried out by researchers and observations or observations from equipment. The realization of action I includes the description of light, reflection of light, glass and concave surfaces, and the implementation of the REACT learning model. In the implementation action, educational performance is measured by testing at the end of the first cycle of application, and educational activities are observed throughout the education process. All modules are tested within 6 hours, with a time allocation of 1x40 minutes.

Research Findings Cycle I

From the results of observations and analysis in cycle I, the following findings were obtained. The implementation of the first cycle with the implementation of education with the REACT learning model strategy obtained an average student achievement class of 68, 57. In this cycle, there were 12 students out of 37 students who had not finished studying, and if presented, it was 32.43%.

The details can be seen in **Table 1** below. This result does not show the achievement of learning mastery, because the indicator of learning mastery achievement is if 75% of the students score is in position ≥ 70.

Table 1. Distribution of test scores cycle I

Values Range	**Student Values**	
	Number of Students	**Percentage**
81-100	6	16.22%
61- 80	24	64.68%
41-60	7	18.92%
20-40	0	0.00%
<20	0	0.00%

The implementation of learning in cycle 1 has been carried out, with an implementation rate of 88.78% at meeting 1, 81.57% at meeting 2 and 86.48% at meeting 3. From the three meetings, the level of implementation of learning cycle I was 85.61%. The data is presented in **Table 2.**

Table 2. Implementation of learning implementation of REACT model

Phase	**Meeting I (%)**	**Meeting II (%)**	**Meeting III (%)**	**Average (%)**	**Level of Implementation**
Relating	80.00	73.33	80.00	77.78	Good

Experiencing	88.89	76.19	85.71	83.60	Good
Applying	83.33	83.33	83.33	83.33	Very Good
Cooperating	100.00	83.33	100.00	94.44	Very Good
Transferring	91.67	91.67	83.33	88.89	Good
Implementation Learning	88.78	81.57	86.48	85.61	Very Good

Student learning activities in the *oral, drawing, motor, and emotional activities* are still on a less scale. This shows that student learning activities have not been maximized. The results percentage of student learning activity cycle I students in the Table 3.

Table 3. Percentage of student learning activities cycle I student

Learning Activities	**Meeting (%)**			**Average**	**Level of Achievement**
	1	2	3		
Visual activities	58.11	58.78	59.46	59.12	Enough
Oral activities	46.62	49.32	50.68	50.00	Less
Listening activities	58.78	55.41	60.81	58.11	Enough
Writing activities	57.43	56.76	56.08	56.42	Enough
Drawing activities	47.30	47.97	50.68	48.65	Less
Motor activities	52.03	54.05	56.08	55.07	Enough
Mental activities	48.65	51.35	52.03	51.69	Less
Emotional activities	52.11	52.70	56.76	54.73	Poor Other

Findings include: (1) Students are not used to practicum activities, so the practicum has not run smoothly. Students are still confused about assembling the tools used in the practicum, for example assembling the position of the concave mirror experimental instrument; (2) Most of the groups have not been able to understand the experimental steps in the worksheet as indicated by the number of students who still often ask the teacher; and (3) Some students do not understand in drawing conclusions through previous analysis questions, so it seems that conclusions are not based on the analysis of previous questions.

Reflection on Cycle I

Based on the findings in cycle I, things that need to be improved and improved are as follows: (1) Data on learning achievement shows that in cycle I the percentage of student learning completeness is 67.57%. These results have not reached the minimum standard of learning completeness that has been determined, namely 75%. Therefore, researchers as teachers must design cycle II actions by increasing the consolidation of concepts in students by asking questions about the material that has been studied and providing more practice questions about the material discussed as well as providing deepening of the material when explaining questions to student worksheet so that student achievement in cycle II increased; (2) Student learning activities in cycle I were not maximized, this was indicated by the low scores obtained in the aspects of *Oral activities, Drawing activities, Mental activities caused* by students not being used to doing practicum. To improve oral activities, the teacher gives more interesting questions and appoints students to express their opinions in an experiment so that students are trained to express their opinions. To improve aspects of *drawing activities*, the teacher provides worksheet that require students to practice drawing image formation. *Mental activities*, the teacher gives directions on how to draw conclusions from the analysis of previous questions and answers on the worksheet. In order to *emotional activities*, the teacher introduces demonstrations and interesting tools to create a sense of interest in students to learn physics; (3) Before carrying out the experiment, the teacher first introduces the tools that will be used in the experiment so that it can run smoothly; (4) The teacher guides students when conducting experiments and the teacher must be firm in dealing with busy students and not experimenting so that they work together with their group members and obtain experimental results based on observations; and (5) the language used in the worksheets, especially the experimental steps, uses simple language and is easily understood by students.

Cycle II

Action Planning Cycle II Action

Planning II includes preparation for the implementation of actions and observations to obtain data in cycle II which consists of convex mirror material, refraction, concave and convex lenses. The plans carried out by researchers who act as teachers are: (1) designing a more mature lesson plan; (2) compiling worksheet in simple language and easy to understand by students; (3) maintaining the experiment at the *experiencing* in cycle II; (4) monitor student activities when conducting experiments to ask students' difficulties in conducting experiments. This is intended so that the teacher guides students when they experience difficulties in carrying out practicum or worksheets while at the same time attracting students who like to joke when doing experiments can become active with them.

Implementation of Action and Observation Cycle II

This stage is to carry out the operation and observation of equipment by researchers. The implementation of Action II includes the material for convex mirrors, concave and convex lenses as well as the application of REACT learning model. Four face-to-face meetings were held. Before the class starts, the teacher greets the students. Then start learning from the relevant stage. The teacher will demonstrate with the help of students, ask students questions, and start discussing the material on convex mirrors.

To better understand the properties of a convex mirror, the teacher invites students to do a simple practical at *the experiencing stage*. At this stage, students will do an image formation practice on a convex mirror by following the instructions from the worksheet and answering the questions in the worksheet to be used as a basis for drawing conclusions. After the practicum students will present the answers to the questions and draw conclusions from the results of the practicum. Group III and group VIII were appointed to present their conclusions.

At *the applying stage*, the teacher invites students to use the concept of the essence of a convex mirror in everyday life. Ask students questions about the concept of a convex mirror. At this stage, the teacher guides students to interact with other students and ask questions to explore students' new ideas.

At *the cooperative stage*, the teacher provides opportunities for students to discuss problems at the application stage. After discussing, the teacher appoints three representatives of the students in their group to answer each question, and the other friend’s answer.

At *the transferring stage*, the teacher provides confirmation of the concept and continues the explanation about drawing the image formation on a convex mirror and its formulation. The teacher provides practice questions to find out students' understanding of the material that has been given by the teacher. The teacher gives some questions to students related to the concepts that have been studied and invites students to make conclusions from the material that has been studied. The teacher gives homework, and the next meeting must be collected.

Research Findings Cycle II

Based on observations in cycle II, the following findings were obtained: The implementation of learning in cycle 2 had been carried out very well, with an implementation rate of 93.14% at meeting 1, 93.78% at meeting 2 and 86.72% at meeting meeting 3. From the

DOI: https://doi.org/ 10.30762/ijise.v1i1.279

three meetings, the level of implementation of the first cycle of learning was 90.68%. The data is presented in **Table 4**.

Table 4. Percentage of implementation of REACT learning model

Phase	Meeting I (%)	Meeting II (%)	Meeting III (%)	Average (%)	Level of Implementation
Relating	86.67	93.33	80	86.6	Very Good
Experiencing	85.71	80.95	71.43	79.36	Very Good
Applying	100	100	100	100	Very Good
Cooperating	100	100	88.83	96.28	Very Good
Transferring	93.33	93.33	91.11	86.67	Very Good
Implementation Learning	93.14	93.52	85.38	90.68	Very Good

Implementation of the second cycle of learning using the REACT learning model achieved an average student score of 74.27. In this cycle, 8 out of 37 students did not finish their studies, the ratio is 21.62%. See **Table 5** for details. These results indicate the achievement of learning mastery, because the learning mastery index is if 75% of students get a score of 70. As can be seen from the table above, there are 30 students who get a score of 70 for the learning master, which means they have reached 75% of the total number of students. The data is presented in **Table 5**.

Table 5. Distribution of cycle II test

Scores Values Range	Student Values	
	Number of Students	Percentage
81-100	10	27.03%
61-80	27	72.97%
41-60	0	0.00%
20-40	0	0.00%
<20	0	0.00 %

Students' learning activities in the oral, writing, and drawing sections have increased to a sufficient level. this is in line with the results of the reflection in the first cycle which provides many inputs in improving student learning activities. The data is presented in **Table 6.**

Table 6. Percentage of learning activities cycle II

Student learning activities	Meeting (%)			Average (%)	Level of Achievement
	1	2	3		
Visual activities	71.62	67.57	69.14	68.24	Enough
Oral activities	67.57	66.89	61.49	65.32	Enough
Listening activities	72.30	73.65	66.89	70.95	Good
Writing activities	73.65	74.32	68.92	72.23	Good
Drawing activities	65.54	66.89	74.32	68.92	Enough
Motor activities	74.32	73.65	62.84	70.27	Good
Mental activities	63.51	65.54	70.27	66.44	Enough
Emotional activities	69.59	74.32	68.24	70.72	Good

Findings others include: (1) Students are getting used to the experimental activities so that the experiment in cycle II can run smoothly. Most of the students were able to carry out the experimental activities, but there were still some students who had not been able to fully carry out the activities, so the teachers or researchers helped them; (2) Students have begun to understand in drawing conclusions through previous analytical questions; (3) students have begun to be enthusiastic in conducting experiments, desire to come forward to present the results of their discussions, and be more daring in expressing their opinions; and (4) The teacher provides guidance in helping to solve problems faced by students when conducting experiments.

Reflection on Cycle II

Based on the findings in cycle II, it can be seen that education with the REACT learning model has been implemented well. In the first cycle, the average achievement value of all students was 68.22, whereas in the second cycle it was 74.97. The results in the first cycle had not reached the minimum SKM limit set by the school was 70, but in the second cycle the results had reached the minimum SKM limit that has been set by the school is 70. In the first cycle, the learning completeness is 67.57%, whereas in the second cycle, the learning mastery is 78.38%. The percentage of student learning completeness has not met the minimum standard that has been inaugurated, which is 75%, so it still needs to be revised in cycle II. Student activity has also experienced an increase in all aspects. But in the aspect of oral activities, drawing activities, and mental activities, the indicator of success has not yet reached 70%.

Thus, education with the REACT learning model can improve student achievement and learning activities even though the results obtained are not optimal. The results of this research are not optimal because in its application the researcher finds obstacles that need attention **Table 7**. The obstacles experienced by researchers are the lack of existing facilities and infrastructure, especially laboratory equipment. Students do not prepare for the lesson they want to learn, so it seems that there are some students who have not been able to carry out the experiment independently, meanwhile the worksheet already has instructions for carrying out the experiment.

Table 7. Data on the average value of student learning achievement in cycle I and cycle II

Student Learning Achievement		
Before the Action	**Cycle I**	**Cycle II**
63.78	68.57	74.27

Based on the results of observations, the data obtained on the average value of student learning achievement in cycle I and cycle II. The data on the comparison of the average value of student learning achievement in cycle I and cycle II is presented in full in **Table 8.**

Table 8. Data on the percentage of student learning completeness in cycle I and cycle II

Student Score	Before Research	Cycle I	Cycle II
Score 70 (unfinished)	15 students (59.46%)	12 students (32.43%)	8 students (21.62%)
Score 70 (completed)	22 students (40.54%)	25 students (67.57%)	29 students (78.38 %)

In the first cycle of learning, the average class test score was 68.57. In Table 8, the data on students who have not completed their studies are 12 students or 32.43 of 37 students, and 67.57% of students have completed their physics studies. Based on the results of the analysis of cycle 2, it was obtained data that the average test score of students in this class was 74.21, and there were 8 students who had not completed, the ratio was 21.62%.

Based on Table 1, it can be seen that student learning achievement in cycle I was not higher than the SKM, but student learning achievement in cycle II was higher than the SKM set by the school, which was 70. In cycle I, 12 students did not complete their studies (32.43%) and in the second cycle there were 8 students (21.62%). This shows that student achievement in mastery has increased.

Before the action, there was no student learning activity score, so the researchers chose their own indicators of success, which were in the relatively good category. After the action, the score of student learning activities observed in cycle I and cycle II as a whole also increased when it was presented that student learning activities in cycle I were 54.22% while in cycle II it was 69.57%. Student learning activities have increased in all aspects **Table 9**.

Table 9. Percentage of student learning activities in cycle I and cycle II

Aspect observed in	Cycle I (%)	Cycle II (%)	Cycle III (%)
Visual activities	59.12	69.14	10.02
Oral activities	50.00	65.32	15.32
Listening activities	58.11	70.95	12.84
Writing activities	56.42	72.23	15.81
Drawing activities	48.65	68.92	20.27
Motor activities	55.07	70.27	15.20
Mental activities	51.69	66.44	14.75
Emotional activities	54.73	70.72	15.99
Average	54.22	69.57	15.34

Based on the description above, the implementation of learning using the REACT learning model in cycle II was better than in cycle I. Thus, learning using the REACT learning model had a positive impact on increasing student achievement and learning activities, especially in learning physics **Figure 1**.

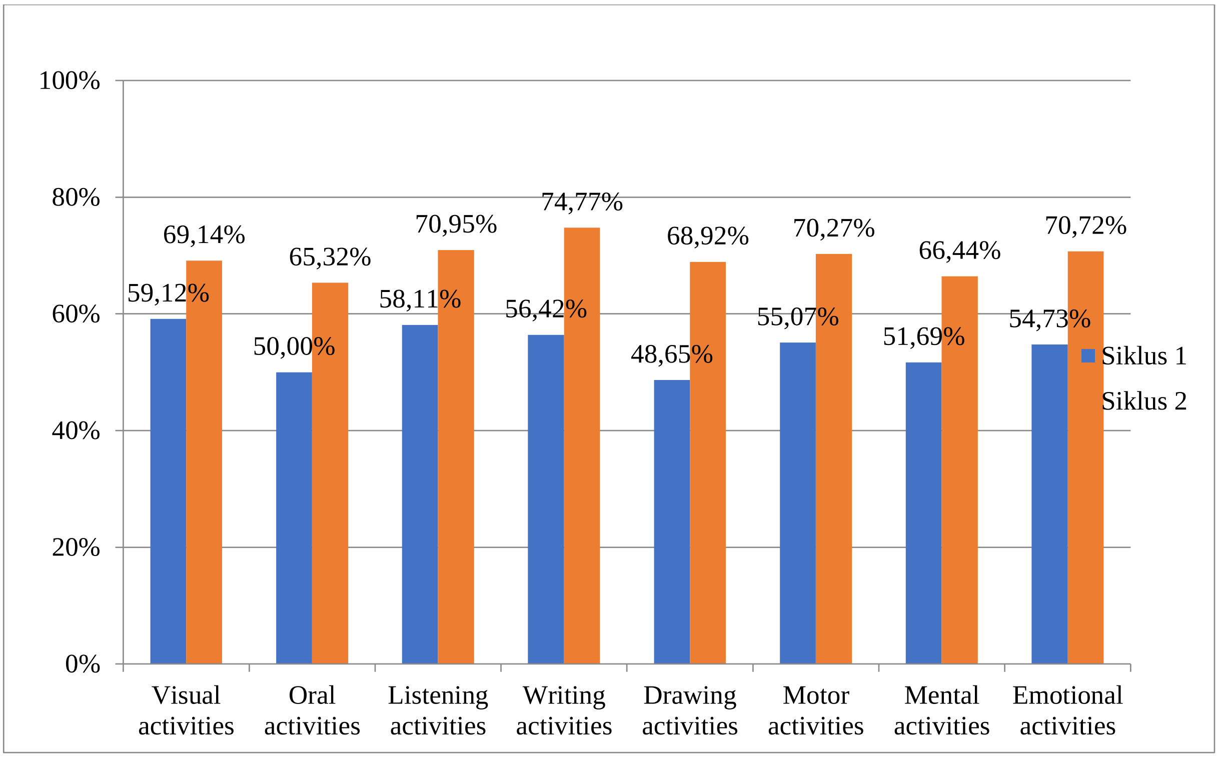

Figure 1. Student’s activities

Student Learning Achievement Learning

Achievement achieved by students is not only influenced by talent, but also influenced by learning opportunities, skills in mastering materials and quality of education (Mulyasa, 2015). This shows that learning achievement is not something that stands alone, but is the result of various aspects behind it.

From Cycle I to Cycle II, the grades of students in class VIII D MTsN 7 Kediri seem to have increased. The average student test scores in the first cycle were 68.57, and in the second cycle was 74.27 This is because the use of the REACT learning model improves the quality of education.

In the first cycle the student's academic achievement increased by 63.78 compared to before the action and 68.57 after the action, in the second cycle the student's learning achievement increased by 63.78 compared to before the action, on the contrary after the action 74.27, the academic achievement of the first cycle increased by 4.79, and the second cycle by 10.49. The application of REACT learning model has been applied to geography subjects to compare the learning outcomes of the application of the REACT learning model. In class XI SMA Negeri 7 Malang received traditional education. The average value of the experimental class is 29.57, while the average value of the control class is 17.86. Therefore, research in this effort can increase the value of learning physics for class VIII D MTsN 7 Kediri students.

This study shows that the application of learning with the REACT learning model can improve student achievement in accordance with the results of previous studies (Putri, . and Saputro, 2019; Quainoo, Otami and Owusu, 2021). The increase in student physics learning achievement is due to the REACT learning model that adheres to contextual learning can provide better benefits to students because it connects new information with students' prior knowledge because what students learn is influenced by previous thinking (Cahyaningrum, R., & Febriana, B. W., 2019). The learning experience provided by the REACT learning model through the experiencing stage (real activities) provides a better ability for students to understand new information because at this stage it emphasizes learning by doing (learning by doing) through exploration, discovery, *discovery* and Invention (*invention*). Practical class activities can be done by means of manipulation, problem-solving activities, and laboratories. The application of concepts after carrying out activities (practicum) in story questions has the aim of making students accustomed to analyzing problems using concepts obtained previously. Analyzing problems together provides a better advantage because by listening and sharing with each other in groups, students will revaluate and reformulate their understanding abilities.

By using the REACT learning model, students can learn more meaningfully and in context, because students seem more active in the learning process and students are more motivated to take physics lessons (Bílgín, Yürükel and Yígít, 2017; Jelatu, Sariyasa and Made Ardana, 2018). An important factor that makes learning physics more interesting and results in high student achievement is enabling students to actively participate in the learning process (Meita, 2016).

Student Learning Activities

During the implementation of teaching and learning activities using the REACT learning model, it shows that there is an increasing number of student activities. In the Relating cycle when the teacher starts learning using questions about interesting facts, many students are interested in answering questions and expressing their opinions so that at this stage the students' oral and visual activities are higher. Visual activities in cycle 1 were in the relatively good category (59.12%) the increase occurred in the 3rd meeting. Oral activities in cycle 1 increased at each meeting even though they were still in the low category, triggered by questions at the relating stage so that students were enthusiastic about answering questions. In the second cycle, oral activities achieved the highest increase of 67.57% in the 1st meeting because students were very interested in presenting the results of their practicum. In cycle two, the visual activities achieved the highest score in the second meeting because here the teacher did a lot of demonstrations to show the refraction of light and bring LUP.

The *experiencing* when students are invited to do a practicum. *experiencing* focuses on learning by doing (*learning by doing*) through *exploration*, discovery, invention (Crowford, 2001:5). Students are very enthusiastic when invited to do the practicum to the practicum process. Students do practicum happily because previously they rarely did practicum. Many students want to be involved in presenting the results of their experiments. Giving new things such as practicum is very interesting for students. Phase *experiencing*, students can increase 7 activities, namely *Oral activities* through formulating experiments and reporting results. *Listening activities* in cycle 2 experienced the highest increase in the second meeting because students listened to the teacher's explanation/guidance about the concave mirror they had not seen and the presentation of their friends. *Writing activities* are getting higher through writing down the results of their work during practicum. *Drawing activities* experienced the highest increase at the 3rd meeting of cycle 2 because students were asked to form images in a concave lens in the worksheet. *Motor activities* are getting higher with the activity of conducting experiments and presenting the results of these experiments. Highest increase was obtained at the first meeting of cycle 2. *Mental activities* were higher because students were trained to analyze and conclude the interaction between the variables of decline. *Emotional activities* can be seen based on enthusiasm and joy when doing practicum and presenting the results. So that they are interested in participating and in learning the highest increase is obtained at meeting 2 cycle 2.

At the *applying*, questions have 2 important objectives, confront students in real situations, and explain the need for academic concepts in life. Both are important to apply the problem as motivation (Crawford, 2001). From the purpose of giving these questions, it has an effect on increasing students' mental activities by training them to solve problems.

Students who work individually often do not make progress in problem solving. They will become frustrated and bored. On the other hand, students who work together in small groups tend to be able to overcome these complex problems with a little help from the teacher (Crawford, 2001). Seeing this phenomenon, the cooperative stage in the REACT learning model is a powerful strategy in answering this phenomenon (Bílgín, Yürükel and Yígít, 2017; Quainoo, Otami and Owusu, 2021). Working together with peers in small groups, will make you feel confident in asking questions without feeling embarrassed. They will also be more prepared to express their understanding of the concept to others or provide input on problem solving in their group. By listening to others in the group, students will revaluate and reformulate their understanding (Crawford, 2001). This makes *listening* and *oral activities* increase with confidence in expressing and listening to their ideas in groups.

The *transferring* is learning in the context of presenting or transferring knowledge, using and building on the knowledge already known to students. Therefore, the transferring stage increases listening activities because students actively pay attention to reinforcement about the material.

Based on the data on student learning activities, the increase in oral activities, Drawing activities and Mental activities are in the sufficient category. For oral activities, this is because some students still feel a little embarrassed in expressing their opinions and ideas and carried away by a feeling of fear of being wrong in answering questions. Drawing activities did not increase to a good category because students still found it difficult to draw shadows of objects. It is from these data it can be concluded that the application of the learning model.

Obstacles in analyzing answers to find relationships and conclude relationships make *' mental activities* not increase to a good level. However, the REACT learning model was able to increase student learning activities which were carried out in 2 cycles to achieve a minimum percentage of 70%, although an increase in 8 kinds of activities was not obtained in 1 meeting. An important factor to be able to make learning physics more interesting and produce high learning activities and achievement is to actively involve students in observing, operating tools and practicing using concrete objects as part of the lesson (Nurmala, Tripalupi, & Suharsono, 2014).

Based on this explanation, it can be concluded that the application of learning with the REACT (*relating, experiencing, applying, cooperating,* and *transferring*) learning model can increase the learning activities of class VIII D students of MTsN 7 Kediri.

CONCLUSION

Based on the statistical presentation and discussion of the implementation of learning with the REACT learning model in class VIII D MTsN 7 Kediri, it can be concluded as follows: (1) Implementation of the REACT learning model can improve student achievement in class VIII D MTsN 7 Kediri. The implementation of learning that relates the learning modules to the real world through the REACT learning model which consists of 5 stages, namely *relating, experiencing, applying, cooperating,* and *transferring*. REACT learning model invites students to directly relate, face, practice, work together and transfer knowledge that can improve their understanding of physics concepts so that student learning achievement increases; (2) Implementation of learning with the REACT learning model can improve student learning activities VIII D MTsN 7 Kediri. One of the important aspects is to make physics learning more interesting and create great student learning activities by engaging students actively in the learning process, for example by carrying out experiments in *the experiencing session*; and (3) Implementation of REACT learning model.

Through REACT learning model which consists of 5 stages, namely *relating, experiencing, applying, cooperating,* and *transferring* able to improve the activities and learning achievements of VIIID students at MTsN 7 Kediri. The percentage of the implementation of the REACT learning model in the first cycle was 85.61%, whereas in the second cycle it was 92.11%. So there is an increase in the percentage of learning implementation of the REACT learning model from cycle I to cycle II of 6.5%. The learning quality of the REACT learning model can be seen in the lesson plan implementation.

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