Journal of Educational Sciences Vol. 4 No. 3 (July, 2020) 643-656

Journal of Educational Sciences

Journal homepage: https://jes.ejournal.unri.ac.id/index.php/JES

P-ISSN 2581-1657

E-ISSN 2581-2203

Application of Relating, Experiencing, Applying, Cooperating, Transferring (REACT) Learning Models Based on Riau Malay Culture on the Ability to Use Mathematical Problems of Junior High School Students

Suraji*, Zulkarnain, Sehatta Saragih

Postgraduate Mathematics Education Program, FKIP-Universitas Riau, Pekanbaru, 28293, Indonesia

ARTICLE INFO

Article history:

Received: 17 Dec 2019
Revised: 30 June 2020
Accepted: 30 June 2020
Published online: 24 July 2020

Keywords:

Malay Culture
Problem Solving
REACT learning model

A B S T R A C T

This study aimed to examine comprehensively the effect of the application of REACT learning models based on the Malay cultural context of Riau on students' mathematical problem-solving abilities. The research was a quasi-experimental research with Pretest-post-test control group design. The sample of this study was all students of class VII SMP 12 Pekanbaru. The results of data analysis were: (1) There was a difference of the mathematical problem-solving ability of Pekanbaru junior high school students between who learned to use REACT learning models based on the Malay cultural context of Riau and students who studied with conventional learning; (2) There was a difference of the mathematical problem-solving ability of Pekanbaru junior high school students between who learned to use REACT learning models based on the Malay cultural context of Riau and students who studied with conventional learning in terms of aspects of student ability levels, (3) There was no interaction between the learning model and the level of students' ability to the ability to solve mathematical problems; (4) There was a difference in the mathematical problem-solving ability of Pekanbaru junior high school students who learned to use the REACT learning model based on the Malay Malay cultural context in terms of aspects of student ability levels.

1. Introduction

The demand of education in the current global era is education that can support progress and development in the future. Realizing these demands requires education that can develop students' potential. In developing students' potential, it is necessary to equip students' abilities in the form of subjects with several

* Corresponding author.
E-mail: suraji6276@grad.unri.ac.id

Doi: https://doi.org/10.31258/jes.4.3.p.643-656

disciplines that students must master. One of the compulsory subjects in the 2013 curriculum that students must master at the junior secondary level is mathematics (Kemendikbud, 2014).

Mathematics is one of the most important parts in science and technological development. The importance of mathematics lessons according to Cornelius (Abdurrahman, 2012) is to solve problems in everyday life. According to Rianti, et al. (2020), one important aspect of mathematical thinking is the ability to solve mathematical problems. The ability to solve problems is one goal of mathematics learning in the 2013 curriculum.

The purpose of learning mathematics is strengthened by international mathematics education organizations through the National Council of Teachers of Mathematics (NCTM) (2000) which states about the principles and standards of mathematics in schools, one of which is that students have mathematical problem-solving abilities. From these objectives, the importance of students having mathematical problem solving ability is seen, because after all the problem-solving ability will affect student mathematics learning outcomes in Indonesia. This is reinforced by Nahor's statement (Guswinda, et al., 2019) that the ability to solve mathematical problems is the most important part in learning mathematics. However, the facts on the ground state that the ability to solve mathematical problems in Indonesia is still low.

In line with Rahmawati's research (2016), she stated that the 2015 Trends in International Mathematics and Science Study (TIMSS) survey of Indonesian students' mathematical achievements ranked 45th out of 50 countries with a score of 397. Besides, Indriani (Astuti and Nurita, 2018) stated that the 2015 Program for International Student Assessment (PISA) survey found that Indonesia's mathematics achievement was in the rank of 64th out of 72 countries. The data shows that mathematics is still very low in Indonesia. Based on the latest data taken from TIMSS and PISA in 2015, it can be a measure of students' mathematical problem-solving abilities, one of which is the questions tested more measure about the ability to solve mathematical problems.

Symptoms of low mathematical problem-solving abilities of students in junior high can also be seen from the results of previous studies. Husna's research results (2013) that students' mathematical problem-solving abilities, especially junior high school students, were still low. Rahayu and Afriansyah (2015) also stated the low mathematical problem solving ability of junior high school students. Suryadi et al. (Suherman et al., 2003) in their survey found that mathematical problem solving was one of the mathematical activities considered important by both teachers and students at all levels from elementary to high school.

Understanding the importance of building and developing students' mathematical problem-solving abilities, it is necessary for teachers to conduct learning that support the students' mathematical problem-solving abilities. This is in line with the opinions of Posamentier and Stepelmen (Danoebroto; 2008) that teacher should efforts to improve students' mathematical problem-solving abilities in learning and provide a learning environment that encourages students' freedom of expression, appreciates students' questions and ideas, provides opportunities for students to look for students and find solutions in its own way and encourage cooperative learning. Whereas based on the results of research Murnaka, et al. (2018) that efforts that can improve the ability to solve mathematical problems are with real or contextual learning.

One learning that emphasizes the importance of using learning experiences through authentic things is the REACT learning model. REACT is an acronym for Relating, Experiencing, Applying, Cooperating and Transferring. According to Crawford (2001), a model that can optimize students' potential in learning is the REACT learning model. This REACT learning model focuses on teaching and learning contexts, which are the core of the principles of constructivism. This REACT learning model is suitable to be applied in mathematics. Therefore, in learning in the classroom the teacher should apply the REACT learning model as an alternative learning model so that student learning outcomes are better.

Besides the learning process in influencing learning outcomes, REACT learning models can also affect the interaction between REACT learning models and learning outcomes. As the results of research conducted by Fortuna, et al. (2014) stated that there was a significant interaction effect between the REACT learning model and learning activities on mathematics learning outcomes.

The REACT learning model comprises five stages, as explained by Lia Yuliati (2008). Relating is learning that links concepts learned in the material knowledge students possess in real-life contexts or authentic experiences. Experiencing is learning in exploration, discovery, and creation. This means knowledge got by students through active learning. Applying is students necessary to apply concepts learned into the context of their use in real-life. Cooperating is learning in the form of sharing information and experiences, responding to each other, and communicating with other students. This form of learning is also consistent with the emphasis on contextual learning in real-life. Transferring is knowledge by students based on the knowledge they have.

These reasons make REACT learning model can be one solution in improving students' mathematical problem-solving abilities. Based on the description above, the five stages play an important role in improving students' ability to solve mathematical problems, relating, experiencing, cooperating.

The stage of relating learning material links with everyday life familiar to students, so learning becomes more meaningful and authentics. The experiencing phase (discovery), in the learning process, directs students to find mathematical concepts independently, thus encouraging students to be free to express themselves. Syahlan (2017) stated that exploration or discovery is a strategy in solving mathematical problems. The cooperating stage, students discuss, collaborate, and share information in groups to solve mathematical problems.

REACT learning models can be a solution in improving mathematical problem-solving skills. This is in line with the statement by Yuliati (2008), that the REACT learning model is a learning model that makes students easier to solve problems, because students are invited to discover the concepts they learn, work together and apply mathematical concepts in everyday life.

The nature of problem solving is to carry out procedural operations in a sequence of actions, systematically step by step, as a novice to solve problems. According to Syafri, et al. (2020) the ability to solve problems is the ability to solve routine problems, non routine, applied routine, non-applied routine, non routine applied in mathematics.

Santrok (2011) stated that problem solving is finding the right way to achieve a goal. Meanwhile, according to Ormrod (2009), defining problem solving is using (ie transferring) existing knowledge and skills to answer unanswered questions or hard situations. Based on this opinion, it can be concluded that the mathematical problem solving ability is the ability possessed by students in using knowledge and skills already possessed to problem-solving to find answers to problems that students face in learning mathematics.

The steps in solving problems according to Polya (Hadi and Radiyatul, 2014) include four stages:

1. Understanding the problem. The things that need to be in this stage are: What is unknown? What is the condition of the data? Are these conditions sufficient to determine what is unknown? Are these conditions related or contradictory?
2. Devising a plan. This activity can be identified through questions such as Have you ever found that problem before? Have you ever seen the same problem and a minor differencece? Watch what is asked, what theorem can be used?
3. Carrying out the plan. These activities include: Implementing a plan or strategy that has been planned, checking each step is correct or not, how to prove that the step is correct?
4. Looking back. This activity is identified through the question: Can you check the results? Is the resulting solution acceptable? Can the answers be obtained in different ways?

In addition to the steps in mathematical problem solving ability, there are indicators of mathematical problem solving ability. Indicators of mathematical problem solving ability according to Sumarmo (Ariawan and Nufus; 2017) are: 1) Identifying the adequacy of data for problem solving, 2) Creating a mathematical model of a situation or problem every day and solving it, 3) Selecting and implementing strategies to solve mathematical problems or outside mathematics, 4) Explain or interpret the results according to the original problem, and check the correctness of the results or answers, 5) Apply mathematics significantly. Whereas Sumarmo (Muhsin, et al; 2013) stated indicators of problem solving ability are: 1) Identifying elements that are known, asked, element adequacy, 2)

Making mathematical models, 3) Implementing strategies to solve problems in / outside mathematics, 4) Explaining / interpreting results, 5) Solving mathematical models and real problems, and 6) Using mathematics in a meaningful way.

Speaking of mathematical problem-solving abilities, students have varying degrees of ability, some have high, moderate and low level abilities. The diversity of abilities will affect some students' development, so it is necessary to group high-level, moderate and low-level student abilities to optimize student abilities development. Similarly, Imron (2015) stated that it is necessary to group students according to their ability level so that students can develop their potential optimally. In addition, grouping students based on their level of ability can also make it easier for teachers to take action in developing students’ potential.

According to Adodo and Agbaweya (2011) stated that grouping students based on their ability level can provide benefits, improving student achievement, facilitating teachers to teach in class, making it easier for teachers to provide reinforcement to students, making it easier for teachers to control the process of giving instructions, and making it easier for teachers to adjust teaching materials and methods. Based on this description, it is necessary to analyze the ability of students based on their ability level. Therefore, it is important for researchers to analyze students’ abilities based on high, moderate and low levels of student ability to see the effect of the REACT model on mathematical problem-solving abilities at each level.

As for its relationship with Malay culture, the REACT learning model is a contextual learning model. Showing contextuality in learning must be familiar with students to build good interactions. The familiar one to students is culture (Nuh and Dardiri, 2016). The association of mathematics must be really explored based on local cultural wisdom possessed by the holder of the cultural community (Hasanuddin, 2017). Minister of Education and Culture Regulation number 68 of 2013 concerning the basic framework and structure of the SMP / MTs curriculum stated that the 2013 curriculum was developed based on the diverse cultures of the Indonesian people, directed to build life today and to build a foundation for a better national life. One culture of the Indonesian people is Malay culture. Therefore, by making Malay culture contextual in mathematics learning in the REACT learning model, good interactions can occur among students.

Referring to the REACT teaching model based on Riau’s local Malay culture has expectation to be the right model in developing student competencies in solving mathematical problems. Therefore, the researchers are interested in conducting research on the Effect of Application of REACT Learning Model Based on the Context of Riau Malay Culture on the Mathematical Problem Solving Ability of SMP students in Pekanbaru. The problem formulations in this study are (1) Is there a difference between the mathematical problem-solving abilities of SMP students in Pekanbaru who learn to use REACT learning models based on the Malay cultural context of Riau and students who study with conventional learning, (2) Is there a difference between the ability of solving Mathematical problems of Pekanbaru city students studying using the REACT learning model based on the Malay cultural context of Riau and students with conventional learning are reviewed based on aspects of student ability levels (high, moderate, and low), (3) Is there an interaction between learning models and levels students' ability to solve mathematical problem-solving abilities, (4) Is there a difference in the mathematical problem-solving abilities of Pekanbaru city junior high school students who learn to use REACT learning models in the context of Malay culture in terms of aspects of student ability levels (high, moderate, and low).

2. Methodology

This research was a quasi-experimental study because the treatment did not use random placement. The research design used was a pretest - posttest control group design with the research design stated by Sugiono (2012). In brief, the research design is illustrated in Table 1.

Table 1. Pretest-Posttest Control Group Design

Eksperimental Group	O_1	X	O_2
Control Group	O_1	_	O_2

Information:

- O_1 : *Pretest* (Students' problem-solving abilities)
- O_2 : *Post-test* (Students' problem-solving abilities)
- X : REACT learning model

The population of this study was all VII grade junior high school students in Pekanbaru in the 2018/2019 school year, comprising 156 students. To determine the research sample, the study population is grouped into three levels, high, moderate, and low based on UN data for the academic year 2017/2018, using intervals with the following criteria:

High school: total UN score $\geq \bar{X} + 0.5$ SB
Moderate school: $\bar{X} - 0.5$ SB $\leq$ Total UN scores $< \bar{X} + 0.5$ SB
Low-level schools: total UN score $< \bar{X} - 0.5$ SB
Note: SB = Standard Deviation

Based on data of national examination of Junior High School students, at 2017/2018 school year in Pekanbaru, the research found that the mean score (X) of four subjects presented was 50.42 with a standard deviation (SB) was 11.02. By using the above rules got a high level of students' national examination with mean score ≥ 55.93, moderate level with mean score was $44.91 \leq$ UN < 55.93, and low level with mean score < 44.91.

After knowing the level of the school level, a purposive sampling technique used at a moderate level to determine the research sample. The purpose of purposive sampling technique was to get the samples based the appropriate criteria designed by this research. With this technique, the Pekanbaru 12 SMP was selected. All VII grade of SMP 12 Pekanbaru acted as the research samples, 4 experimental and 4 control groups. The class selection for both the experimental and control groups also used a purposive sampling technique.

The data of this study are quantitative data got through written tests in class for both pretest and posttest data. This description test was used to get data about the influence of the Malay-based REACT cultural learning model of Riau on students' mathematical problem-solving abilities.

The indicators of mathematical problem-solving abilities measured in this study were modified from Jawahir (Kusumawati and Rizki; 2014), 1) the ability of students to write what they know, the ability of students to write what was asked on the questions, 2) the ability of students in planning strategies by writing formulas, 3) the ability of students to carry out problem-solving plans with the correct procedures, the ability of students to carry out the process calculation with the correct procedures, 4) the ability of students to make conclusions with words under the questions.

The data analysis technique began by checking normality test of pretest data. If the pretest data was normally distributed, then to test the research hypothesis used posttest data, but if the data were not normal, then to test the research hypothesis used the difference between the post-test data and the pretest data. The data used to test the hypothesis were prerequisite, normality and homogeneity test. After conducting the prerequisite tests, the data were tested according to the needs of each hypothesis, using the t test, one-way ANOVA test, and two-way ANOVA test.

3. Results and Discussion

The following describes the results of research related to the formulation of research problems.

a. The results of data analysis of students' mathematical problem-solving abilitie.

The data analyzed were all data about students' mathematical problem-solving abilities. The purpose of the data analysis was to find out whether there was a difference between the mathematical problem-solving abilities of junior high school students in Pekanaru who learned tby using REACT learning models based on the Malay cultural context of Riau and students who studied with conventional learning. Data were analyzed by using t test, where the results were illustrated in Table 2.

Table 2. Results of T test of Students’ Problem-Solving Abilities

Group	N	Mean	Std. Deviation	t	Sig. (2-Tailed)	Information
Experimental	143	73,04	13,32	11,94	0,000	H_0 is rejected
Control	144	55,04	12,19			

Based on the results in Table 2, the significance value of p = 0,000 <α = 0.05. This meant that H_0 was rejected. This meant that there were differences of the mean scores of students’ mathematical problem-solving abilities with the REACT learning model and conventional learning. Because the mean score of the experimental group was greater than the control group, it can be concluded that the mathematical problem solving ability of Junior High School students in Pekanbaru who learned by using REACT learning models based on the Malay Malay cultural context was better than that students who studied with conventional learning.

b. The results of data analysis of students’ mathematical problem-solving abilities based on aspects of student ability levels (high, moderate, and low).

The data analyzed were all data of students' mathematical problem-solving abilities throughout the experimental and the control groups based on the students’ level of ability (high, moderate, and low). The purpose of the data analysis was to find out whether there was a significant difference between the mathematical problem-solving abilities of junior high school students in Pekanbaru who learned by using REACT learning models based on the Malay cultural context of Riau and students who studied with conventional learning in terms of aspects of student ability level (high, moderate, and low)or not. Data were analyzed by using t test, where the results were in Table 3.

Tabel 3. Results of T Test of Posttest Data of Students’ Prolem-Solving Abilities (High, Moderate, and Low)

Data		N	Mean	Std. Deviation	t	Sig. (2-Tailed)	Decision
High	Eksperimental group	39	85,95	8,71	8,68	0,000	H_0 is rejected
	Control group	39	63,79	13,35			
Moderate	Eksperimental group	53	71,32	9,76	8,29	0,000	H_0 is rejected
	Control group	55	55,96	9,50			
Low	Eksperimental group	51	64,94	12,13	8,52	0,000	H_0 is rejected
	Control group	50	47,20	8,44			

Based on Table 3, the results showed that the significance value of mathematical problem solving ability of high level students p = 0,000 <α = 0.05, moderate level p = 0,000 <α = 0.05, and low level p = 0,000 <α = 0.05. This meant that H_0 was rejected. This meant that there were significant differences in the mean score of mathematical problem-solving abilities with the REACT learning model and conventional learning in terms of high, moderate, and low. Because the experimental class mean value of each level was greater than the control class, it can be concluded that the mathematical problem solving ability of Junior High School students in Pekanbaru who learned by using REACT learning models based on the Malay Malay cultural context was better than students who studied with conventional learning in terms of level aspects ability (high, moderate, and low).

c. Data analysis results of students' mathematical problem-solving abilities related to interactions.

The data analyzed were all the data of students' mathematical problem-solving abilities based on the level of student ability. The purpose of data analysis was to find out whether there was an interaction between the learning model and the level of students' ability to the ability to solve mathematical problems. Data were analyzed by using the two-way ANOVA test, where results were in Table 4.

Table 4. Resutls of Two-ways Anova of Posttest Data of Students' Problem-Solving Ability

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	39339.432[a]	5	7867.886	72.878	0.000
Intercept	1183781.949	1	1183781.949	1.097E4	0.000
Group	23861.245	1	23861.245	221.021	0.000
Level	15582.658	2	7791.329	72.169	0.000
Group * Level	526.542	2	263.271	2.439	0.089
Error	30336.554	281	107.959		
Total	1245484.000	287			
Corrected Total	69675.986	286			

Based on the results in Table 4, the significance value of $p = 0.089 > \alpha = 0.05$. This meant that H_0 was accepted, meaning that there was no interaction between the learning model and the level of ability with mathematical problem-solving abilities. So it can be concluded that the learning model and the ability level of students did not interact together on mathematical problem-solving abilities. The results of the interaction analysis can be illustrated in the next graph as given in the Figure 1.

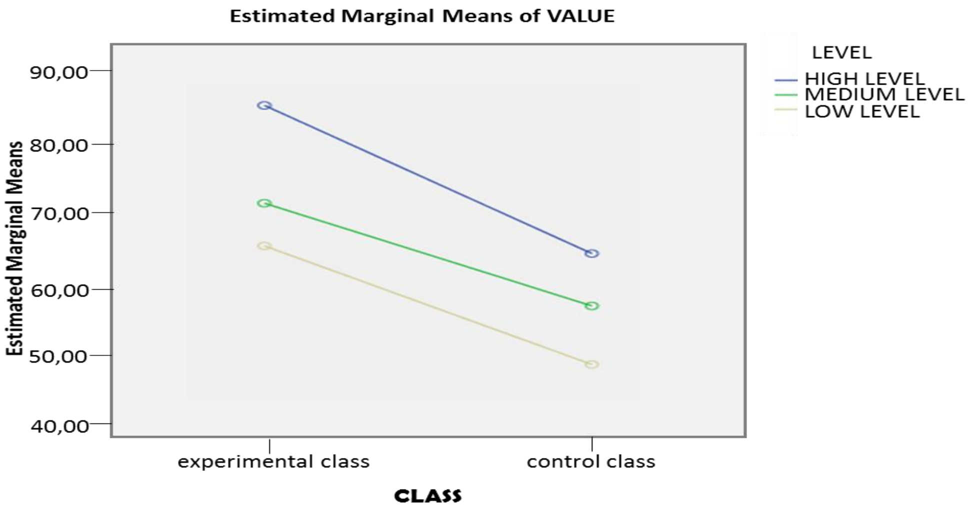

Figure 1. Mean Score of Experiement and Control Group

In the graph, mean score of the experimental and control groups showed the low level and the moderate level and the moderate level and the high level occured unequal increase, so that the lines representing the low level and the moderate level and the lines that stated the moderate and high levels were not parallel (intersect). This meant that there was an interaction between the learning model and the level of ability to the ability to solve mathematical problems at low level with moderate level and moderate level with high level. Meanwhile the mean score of the experimental and the control group showed low and high level and there was an equivalent increase, so the lines that indicated the low level and high level were parallel (did not intersect). This meant that there was no interaction between the learning model and the level of ability with the ability to solve mathematical problems at a low level with a high level. Because there was one line that did not occur interact, so it can be concluded as a whole there was no interaction between the learning model and the level of ability of students' mathematical problem-solving abilities.

d. The results of data analysis of mathematical problem-solving abilities of experimental group based on aspects of student ability levels (high, moderate, and low).

The analyzed data were all the mathematical problem solving ability of students of the experimental class based on the level of student ability (high, moderate, and low). The purpose of the data analysis was to find out whether there were significant differences between the mathematical problem-solving abilities of Junior High School students in Pekanbaru who learned by using the REACT learning model based on the Malay Malay cultural context in terms of aspects of student ability level (high, moderate, and low). Data were analyzed by using the one-way ANOVA test, where the results were in the Table 5.

Table 5. Results of One-way Anova of Posttest Data of Experimental Group about Students' Problem-Solving Abilities

Data		N	Mean	Std. Deviation	Sig. (2-Tailed)	Decision
Post-test	High	39	5,95	8,71		H_0 is rejected
	Moderate	53	71,32	9,76	0,000	
	Low	51	64,94	12,13		

Based on the results in Table 5, the significance value of the post-test data mathematical problem solving ability of students of the experimental class based on the level of student ability was p = 0,000 <α = 0.05. This meant that H_0 was rejected, meaning that there was a significant difference between the mean score of students' mathematical problem solving abilities and the REACT learning model of the experimental class in terms of student ability levels (high, moderate, and low). Because the mean value of the high experimental group was greater than the moderate, and the mean score of the high level was lower than the low level, it can be concluded that the mathematical problem solving ability of junior high school students in Pekanbaru by using REACT learning models based on the Malay cultural context of Riau, that high level students was better than moderate and low level students, and moderate level students were better than low level students.

Discussion

The learning process in the REACT learning model that begins with giving initial problems to students associated with daily life makes students more quick to respond and understand the problems given. The next stage of the REACT learning model, students need to find their own mathematical concepts, this makes the learning process meaningful, so that students remember the mathematical concepts learned longer and help students more easy in solving mathematical problems given. It is seen that most students can solve problems correctly. Next, students sit in groups transfering knowledge got previously and discuss in solving problems. In groups, students can be seen transferring knowledge and discussing issues related to LAS, so that the problems in LAS can be solved.

These results apply to the results of research conducted by Fauziah (2010) and Halimatussaidah (2017), the ability to solve mathematical and motivational problems using the REACT learning model was better than those using conventional learning. In line with the results of research conducted by Kusumawati and Rizki (2014) which concluded that increasing the mathematical problem solving ability of students who learned by using REACT strategies was higher than students who learned with conventional learning.

Based on the results of data analysis, it was found that there was no interaction between the learning model and the level of students' ability to the ability to solve mathematical problems. There was no interaction because there was one variable that was more dominant than other variables so that interaction did not occur together, but each variable interacted directly.

4. Conclusion

Based on the results of research and discussion, it can be concluded that the REACT learning model based on the Malay cultural context of Riau can improve the low mathematical problem solving ability of junior high school students. These results are in line with research by Kusumawati and Rizki (2014), that students’ mathematical problem-solving abilities improved through the REACT learning model. However, the cultural content associated with the REACT model, gives its own positive value for students. This can be input for other researchers to link culture in learning.

References

Abdurrahman, M. (2012). *Education for Children with Learning Difficulties: Theory, Diagnosis, and Remediation.* Jakarta : PT. Rineka Cipta.

Adodo, S. O., & Agbaweya, J. O. (2011). Effect of Homogenous and Heterogeneous Ability Grouping Class Teaching in Student’s Interest, Attitude and Achievement in Integrated Science. *International Juornal Of Psychology And Counselling, 3(3),* 48-54.

Ariawan, R & Nufus, N. (2017). The Relationship of Mathematical Problem-Solving Capabilities with Students' Mathematical Communication Capabilities. *Jurnal THEOREMS (The Original Research of Mathematics), 1(2),* 82-91.

Astuti, Z. S., & Nurita, T. (2018). Application of Student Worksheets to Practice Students' Science Process Skills. Pensa *E-Journal*, *6(2)*, 204-207.

Crawford, L. M. (2001). *Teaching Contextually: Research, Rationale, and Techniques for Improving Student Motivation and Achievement in Mathematics and science*. Texas: CCI Publishing, INC.

Danoebroto, W. S. (2008). Improving Problem-Solving Capabilities through the PMRI Approach and Metacognitive Training. *Journal of Educational Research and Evaluation, 11(1)*, 73-87.

Fauziah, A. (2010). Improving the Ability to Understand and Solve Mathematical Problems of Middle School Students through the REACT Strategy. *Educational Forum, 30(1)*, 1-13.

Fortuna, D., Dantes, & Sariyasa. (2014). The Effect of REACT Strategies on Mathematical Learning Outcomes based on the Learning Activities of Grade V Elementary Students. *Journal of Ganesha University Postgraduate Program in Primary Education Study Program,4*, 1-12.

Guswinda, Yuanita, P., & Hutapea, M. N. (2019). Improvement of Mathematical Problem Solving and Disposition Ability of MTs Students through StrategiesThink Talk Write in Cooperative Learning in Kuantan Singingi Regency. *Journal of Educational Sciences, 3(3),* 377-389.

Hadi, S., & Radiyatul. (2014). Problem Solving Methods According to Polya to Develop Students' Abilities in Mathematical Problem Solving in Middle School. *Edu-Mat Journal of Mathematics Education,2(1)*, 53-61.

Halimatussadiah, A. M. A. (2017). The Effect of REACT's Contextual Approach on Mathematical Understanding and Learning Motivation. *Primary School Forut Journal, 4(3)*, 791-800.

Hasanuddin. (2017). Malay Ethnomatematics: The Linkage between Mathematics and Culture in Riau Malay Community. *Journal of Social Culture*, *14(2)*, 136-149.

Imron, A. (2015). *Management of School Based Students.* Jakarta: Bumi Aksara.

Kusumawati, E. & Rizki, D. N. (2014). Mathematics Learning through REACT Strategies to Improve Mathematical Problem Solving Ability of Vocational Students. *Journal of Mathematics Education*, *2(3)*, 260-270.

Muhsin, Johar, R., & Nurlaedah, E. (2013). Improving the Ability to Understand and Solve Mathematical Problems through Learning with a Contextual Approach. Probability *Journal*, *2(1)*, 13-24.

Murnaka, P. N., Anggraini, B., & Surgandini, A. (2018). The Effectiveness of Learning with a Contextual Teaching and Learning Approach to Improve Mathematical Problem Solving Ability. *Derivation Journal*, *5(1)*, 30-36.

NCTM. (2000). *Principles and Standards for School Mathematics*. Reston VA: NCTM.

Nuh, M. Z., & Dardiri. (2016). Ethnomatematics in the Numbering System of Riau Malay Communities. *Religious Social Research Journal, 19(2)*, 220-238.

Ormrod, & Ellis, J. (2009). *Educational Psychology Helps Students Grow and Develop.* 1 Ed. Jakarta : Erlangga.

Permendikbud. (2014). *Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 58 of 2014 concerning Junior High School Mathematics.* Jakarta: Kemendikbud.

Rahayu, V. D., & Afriansyah, A. E. (2015). Improving Students' Mathematical Problem Solving Ability through the Rainbow Mathematics Learning Model. *Mosharafa: Journal of Mathematics Education, 5(1)*, 29-37.

Rahmawati. (2016). *TIMSS Results 2015 of Diagnose Results for Quality Improvement and Improving Results. Presented at Seminar on Educational Assessment Results for Policy, December 14*. Jakarta: puspendik-kemendikbud.

Rianti, R., Saragih, S., & Zulkarnain. (2020). Development of Mathematics Learning Tools in the Context of Riau Malay Culture to Improve Students' Mathematical Problem Solving Ability. *Journal of Educational Sciences, 4(1)*, 73-82.

Santrock & John, W. (2011). *Child Development Issue 7 Volume 22*. (Translation: Sarah Genis B). Jakarta: Erlangga.

Sugiyono. (2012). *Qualitative and Quantitative Research Methods and R&D*. Bandung: Alfabeta.

Suherman, E., et al. (2003). *Contemporary Mathematical Learning Strategies*. Bandung : Indonesia University of Education.

Syafri, M., Zulkarnain, & Maimunah. (2020). The Effect of SSCS Learning Model on the Mathematical Problem Solving Ability of Junior High

School Students, Kampar Regency. *Journal of Educational Sciences, 4(2),* 309-317.

Syahlan. (2017). Ten Strategies in Solving Mathematical Problems. *Indonesia Digital Journal of Mathematics and Education*, *4(6)*, 358-369.

Yuliati, L. (2008). *"Theory and Practice" Physics Learning Models.* Malang: State University of Malang.

How to cite this article:

Suraji, Zulkarnain, & Saragih, S. (2020). Application of Relating, Experiencing, Applying, Cooperating, Transferring (REACT) Learning Models Based on Riau Malay Culture on the Ability to Use Mathematical Problems of Junior High School Students. *Journal of Educational Sciences, 4(3)*, 643-656.