



**Improve the Activities and Learning Outcomes of Geometry Transformation Through ICARE Learning Model Assisted by Smart Apps Creator for Class IX-F Students of Jekulo 1 Middle School Semester 1 Academic Year 2022/2023**

**Rodhi<sup>1</sup>**

<sup>1</sup> (SMP 1 Jekulo Kudus)

\* Corresponding Author. E-mail: [1rodhidanendrsa@gmail.com](mailto:1rodhidanendrsa@gmail.com)

Receive: 17/01/2023	Accepted: 20/02/2023	Published: 01/03/2023
---------------------	----------------------	-----------------------

**Abstract**

*This study aims to improve the activities and learning outcomes of students in class IX Jekulo Kudus Junior High School on geometry transformation material through a ICARE learning model assisted by smart apps creators. The subjects of this study were students of class IX-F in the 2022/2023 school year, with amounted to 30 students consisting of 14 male students and 16 female students. This research method is a classroom action research carried out in two cycles. Each cycle consists of four stages, namely planning, action, observation, and reflection. The method of data collection is done through tests, observing student learning activities and observing the implementation of teacher learning when learning takes place. The results showed that in the first cycle the percentage of students activity in the learning process was 78.33% in the active category, the average student knowledge learning outcomes was 72.50 with 76.67% classical learning mastery, the average student skills learning outcomes were 72.58 with classical learning mastery 76.77%, and teacher performance scores during learning 79.76% good category. In cycle II the percentage of students activity in the learning process was 88.34% in the very active category, the average student knowledge learning outcomes was 86.00 with 90.00% classical learning mastery, the average student skills learning outcomes was 83.17 with classical learning mastery 86.67%, and the value of the teacher's performance during learning 92.86% very good category. These results indicate an increase in activities and learning outcomes from cycle I to cycle II. Based on the results obtained, it can be concluded that the ICARE learning model assisted by Smart Apps Creator can improve student activities and learning outcomes.*

**Keywords:** ICARE learning model, Smart Apps Creator, Activities and learning Outcome.

**Introduction**

Mathematics is a subject that has an important role in education. According to Zanthly in Nurfalah (2020) the important role of mathematics apart from training thinking skills, can also help solve problems in everyday life. Therefore mathematics is made a subject that must be studied by all students from elementary to high school/vocational school and even to university. This subject needs to be given to all students with the intention of equipping students with the ability to think logically,

analytically, systematically, critically and creatively as well as the ability to work together or collaborate. With this competence, students are expected to have the ability to manage and utilize information to survive in changing or disruptive and competitive conditions.

One of the competencies in the 2013 curriculum for class IX is geometric transformation with material covering reflection, translation, rotation and dilation. Many events in everyday life are the application of geometric transformation

material, for example when a student is looking in a mirror which produces an image that is exactly the same as the object as a form of applying the nature of reflection; when students carry out marching activities in the field, during flag ceremonies, room decoration arrangements, batik activities, activities of playing traditional games of hide and seek or cart sodor which are the application of translational properties; painting activities, playing tops, playing roulette activities are the application of the rotation concept; the activity of enlarging or reducing the size of a photo, viewing a film or slide show which is the application of the dilation concept, all of these activities are the application of transformation material. From the examples above, the geometry transformation material is very close to the student's world, but in reality there are still many students who have difficulty learning the geometric transformation, this is indicated by the low student learning outcomes.

The results of the observations of researchers at Jekulo Kudus 1 Public Middle School in the learning process obtained the following information: 1) some students said that mathematics was difficult, uninteresting, and boring; 2) students learn only to follow routines to fill in attendance, look for value without being accompanied by awareness to increase knowledge or skills; 3) students only memorize concepts and some students have not been able to understand all the concepts conveyed by the teacher to solve problems; 4) students are less actively involved in the learning process, lack initiative and contribution both intellectually and emotionally; 5) questions, ideas and opinions from students rarely appear, even if there are opinions that do appear they are rarely followed by other opinions as a response; 6) another possibility is that the teacher has not applied the right learning methods or models in teaching them; 7) besides that, teachers also don't give contextual questions for various reasons, questions still tend to understand concepts or apply concepts, so students are less familiar

with questions that contain contextual problems.

The lack of time provided by the curriculum in studying transformation geometry material causes the teacher to only complete the material in the curriculum, the teacher does not involve students in meaningful learning process activities. For this reason, the teacher as a researcher believes that it is necessary to make strategies and design learning so that the student learning process becomes more meaningful and interesting by providing contextual problems, one learning model that provides sufficient scope for students is through the ICARE learning model. This is inspired by the superiority of the ICARE learning model put forward by (Salyers et al., 2010). An effective teaching strategy in an e-learning environment and satisfying for students is the ICARE learning model; (Handayani, Agoestanto, & Masrukan, 2013) said that the ICT Learning Model which emphasizes the characteristics of: active, creative, and fun (joyful learning) is the ICARE model; (Wahyudin, 2010) ICARE is an extension of introduction, connect, apply, reflect, and extend, where at each stage of ICARE learning activities require good problem-solving skills so that through ICARE learning it is hoped that students' problem-solving abilities can be trained.

For this reason, a learning model is needed that is in accordance with the characteristics of the material to be studied by students, namely by dividing activities into several stages which include introduction, connection, application, reflection and attention. Learning activities in building the concept of transformation geometry for students which are carried out through the introduction, connecting (Connection) stages are very effective and easily understood by students, but in reality the concepts that have been mastered and even memorized by students are still not sufficient enough to solve problems. mathematics, especially the subject of transformation geometry. For this reason, it

is necessary to continue with the application of the material that has been obtained in everyday life.

### **Method**

This research was conducted using a class action research method consisting of 2 cycles. The research procedure carried out in each cycle includes four stages which include: planning, implementing actions, observing, and reflecting.

The research was conducted in class IX-F of SMP 1 Jekulo with a total of 30 students consisting of 14 male students and 16 female students. The independent variable in this study is the ICARE learning model assisted by smart apps creators, while the dependent variable is the activity and student learning outcomes in geometry transformation material. In this study there were several instruments used to capture research data, including guidelines for observing student activities, learning achievement tests and guidelines for observing teachers in carrying out learning,

The stages of classroom action research through the ICARE learning model assisted by smart apps creators are as follows:

#### **Planning.**

The planning is to plan the implementation of learning geometry transformation material through the ICARE learning model assisted by smart apps creators including: (1) making a learning implementation plan (RPP) on basic competencies of geometry transformation using the ICARE learning model assisted by smart apps creators; (2) create assessment instruments consisting of test instruments in the form of essay questions (description) and non-test instruments in the form of observation sheets; (3) dividing study groups heterogeneously consisting of 4-5 students

#### **Implementation**

At the implementation stage, the teacher carries out the lesson plan using the ICARE learning model assisted by smart apps

creators according to what has been planned. During the learning process, the teacher teaches in accordance with the lesson plan (RPP) that has been made, namely facilitating the learning of geometry transformation material using the ICARE learning model assisted by smart apps creators, with the following steps:

(1) Stage I: Introduction, at this stage the teacher explains the overall outline of the subject matter, objectives to be achieved, prerequisite material, time required, activities and evaluations to be carried out, as well as required reading material. (2) Stage II: Connection, at this stage the teacher gives students the opportunity to find facts, concepts, principles by themselves, by pairing or discussing in their groups. (3) Stage III: Application, teachers provide challenges and activities that allow students to apply the knowledge they have acquired to solve problems related to the real world which are carried out in groups. (4) Stage IV: Reflection, the teacher asks students to reflect on what they have learned, what they have gained and the experience they have gained. (5) Stage V: Extend, the teacher provides opportunities for students to broaden their knowledge by providing broader challenges by providing evaluation tests of the competencies that have been taught to students through the help of smart apps creators.

#### **Observation**

Observations were made during the learning process, namely when the teacher conveyed the competence of explaining the geometry transformation material to carrying out evaluation tests using observation sheets to determine the level of student activity.

#### **Reflection.**

Sources of data collected were in the form of test results and observations in cycle I which were then analyzed. The data obtained is then collected to determine the extent to which students understand the competencies conveyed by the teacher. Furthermore, the results of reflection are

used as a reference for improvement in cycle II learning activities.

The graphical flow of thought carried out by researchers in conducting classroom action research can be described in the form of a diagram as follows:

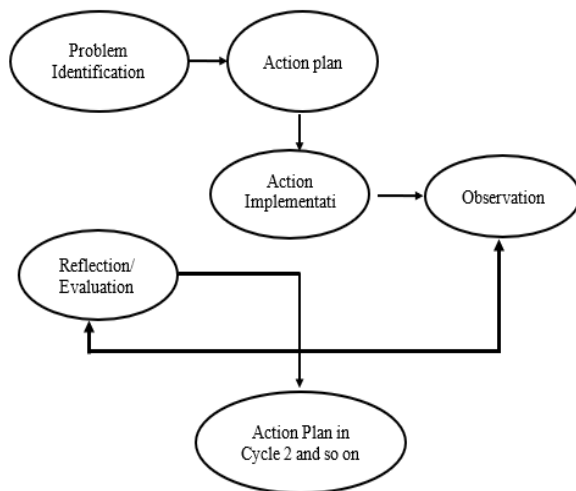


Figure 1. Class Action Research Cycle Plan  
(Abdullah Ridwan, 2020: 136)

## Results and Discussion

The research activity was carried out because in learning there were problems, namely the activeness of student learning in learning activities was low, this can be seen from the observation of learning activities in the initial conditions showing that the number of students included in the very active category was 2 students (6.67%) and as many as 10 active students (33.33), 13 students (43.33%) were in the less active category and 5 students (16.67%) were inactive. The average activeness of learning mathematics in the quadratic function material of students in class IX-F semester 1 of SMP 1 Jekulo Kudus in the 2022/2023 academic year before the research was carried out was 55.19% in the less active category, while the results of learning mathematics before conducting research were also in the low category, this is shown by obtaining the average value of daily tests of knowledge which is still below the KKM, namely 68.20, and the average value of daily

tests of skills is also still below the KKM, which is 67.60, while the KKM for mathematics class IX-F of SMP Negeri 1 Jekulo Kudus semester 1 academic year 2022/2023 is 72.00.

The low activity and student learning outcomes are due, in part, to the factor of the teacher still teaching using the usual discussion method, namely a mixture of guided lectures and discussions and assignments using worksheets. Provision of worksheets without guidance to understand the problems contained in the questions, encouragement to plan problem solving, steps to solve problems and encouragement to interpret results. The activities carried out by the teacher were still limited to explaining, while students listened, after that students were ordered to discuss to complete worksheets containing problem solving questions.

### Cycle I

Cycle I consisted of 3 meetings, namely the first meeting with an allotted time of 2 x 40 minutes was used to discuss reflection material, the second meeting with an allotted time of 3 x 40 minutes was used to study shift material, while the third meeting with an allotted time of 2 x 40 minutes was used for activities. cycle I formative test.

The results of learning knowledge in cycle I showed that the number of students who completed or obtained a score greater than or equal to 72 (KKM) was 23 students (76.67%), while students who had not completed or students who scored less than 72 (KKM) were 7 students (23.33%), while the average score is 72.50 with the highest score of 100 and the lowest score of 45, classically the learning activities have not been completed because the number of students who scored 72 or more recently reached 76.67%, but there are already increase when compared to learning outcomes in the pre-cycle.

The achievement of the progress of students' knowledge learning outcomes from

the pre-cycle and cycle I can be seen from the following bar chart:

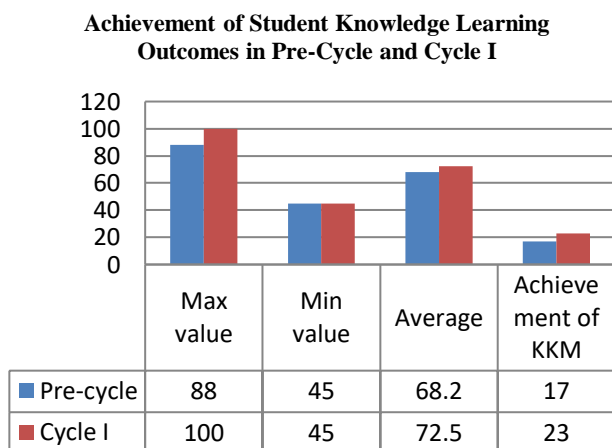


Figure 2. Bar diagram of achievement of students' knowledge learning outcomes in Pre-Cycle & Cycle I.

The results of learning skills in cycle I, showed that the number of students who completed or obtained a score of more than or equal to 72 (KKM) was 23 students (76.67%), while students who had not completed or students who scored less than 72 (KKM) as many as 7 students (23.33%), while the average score is 72.58 with the highest score 95 and the lowest score 40, classically the learning activities have not been completed because the number of students who scored 72 or more recently reached 76.67%, but already there is an increase when compared to learning outcomes in the pre-cycle.

**Achievement of Student Skills Learning Outcomes in Pre-Cycle and Cycle I**

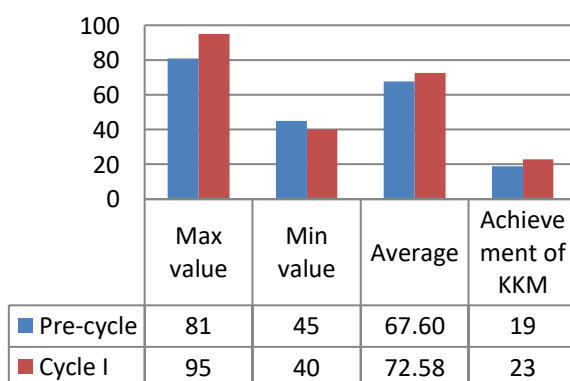


Figure 3. Bar chart of the achievement of students' skills learning outcomes in Pre-Cycle & Cycle I

The average student activity in participating in learning with the ICARE learning model assisted by smart apps creators in cycle I is:

Table 1. Average Student Activity First Meeting and Second Meeting in Cycle I

No	Meeting	Percentage	Categori
1	Meeting 1	72,96	Active
2	Meeting 2	74,63	Active
Average		73,80	Active

The table above shows that the average student activity in participating in the ICARE learning model assisted by smart apps creators is in the active category, and there has been an increase when compared to the results of activities in the pre-cycle.

The progress of students' active learning from the pre-cycle and cycle I can also be presented through the following bar chart:

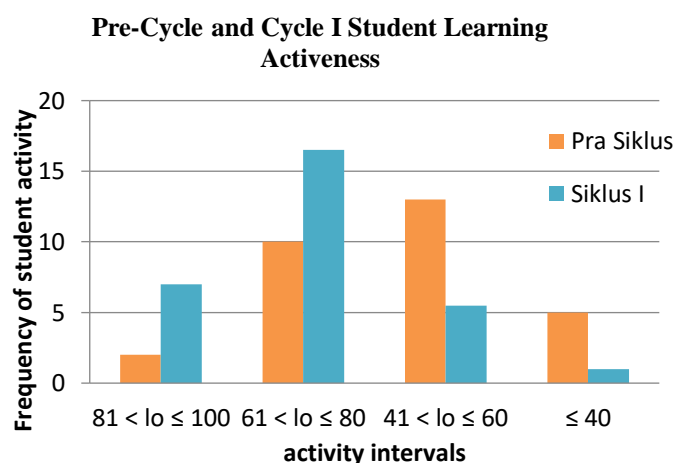


Figure 4. Bar diagrams of students' active learning in Pre-Cycle and Cycle I

The average result of observing the teacher's skills in carrying out ICARE learning assisted by smart apps creators during two meetings in cycle I conducted by observers was a score of 33.5 with a percentage of 79.76% in the good category.

Reflection in the implementation of cycle I in general, some deficiencies can be found in the application of the ICARE learning model assisted by smart apps creators, among others:

- 1) In working on group assignments to solve the problems given there are still many students who rely on their friends and are less active and creative in finding additional learning resources (literature) to solve the group assignments that have been given.
- 2) Researchers have not provided comprehensive guidance to each student who needs it in discussions between friends in groups, so that the accuracy of the answers from the results of each group's discussion is still low.
- 3) Due to time constraints, not all groups can convey the results of their discussions
- 4) In group presentations held in front of the class, only some students have the ability to convey the results of their discussions, students who have better learning achievements than other students are enthusiastic in providing answers and responses, while students with low achievement abilities are less active in participating in discussion activities between groups.

Based on the reflection results in cycle I, several plans were made to improve the actions that would be implemented in cycle II, namely:

- 1) Researchers should encourage students to actively read student books or teaching materials, look for material in modules, notebooks or other learning resources including smart apps creator applications via WhatsApp;
- 2) The researcher must give a few brief questions to students who are not active and provide individual opportunities for students to convey their ideas/ideas, as well as provide opportunities to demonstrate the results of each group's

assignments during the presentation and discussion stages between groups;

- 3) Researchers must be more thorough in guiding students in group discussions, especially for students with less ability;
- 4) The researcher must give a few short questions to students who are not active and provide individual opportunities for students to convey their ideas/ideas, as well as provide opportunities to demonstrate the results of each group's assignments during the presentation and discussion stages between groups;
- 5) Researchers must be more thorough in guiding students in group discussions, especially for students with less ability.

### Cycle II

Cycle II consisted of 3 meetings, namely the first meeting with an allotted time of 3 x 40 minutes was used to study rotation material, the second meeting with an allotted time of 2 x 40 minutes was used to discuss enlargement or reduction material, while the third meeting was used with an allotted time of 2 x 40 minutes. for cycle II formative test activities.

The results of learning knowledge in cycle II showed that the number of students who completed or obtained a score of more than or equal to 72 (KKM) was 27 students (90.00%), while students who had not completed or students who scored less than 72 (KKM) were 3 students (10.00%), average score of 86.00 with the highest score of 100 and the lowest score of 50, classically the learning activities have reached completeness because the number of students who score 72 or more reaches 90.00%, and there are also increase when compared to the results in the pre-cycle.

The achievement of the progress of students' knowledge learning outcomes from the pre-cycle and cycle II can be presented through the following bar chart:

Achievement of Student Knowledge Learning Outcomes at Pre Cycle and Cycle II

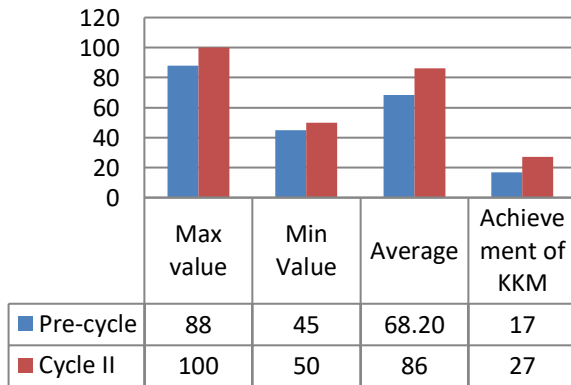
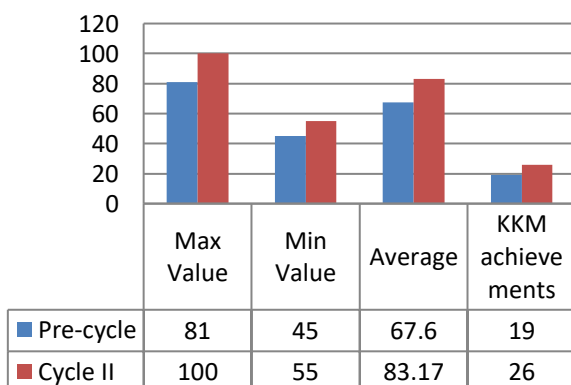


Figure 5. Bar diagram of achievement of students' knowledge learning outcomes in Pre-Cycle and Cycle II

The results of learning skills in cycle II showed that the number of students who completed or obtained scores more than or equal to 72 (KKM) was 26 students (86.67%) while students who did not complete or students who scored less than 72 (KKM) were 4 students (13.33%), average score of 83.17 with the highest score of 100 and the lowest score of 55, classically the learning activities have reached completeness because the number of students who get a score of 72 or more reaches 86.67%, and there is also increase when compared to the results in the pre-cycle.

Achievement of the progress of students' skills learning outcomes from the

Achievement of Student Skills Learning Outcomes in Pre-Cycle and Cycle II



pre-cycle and cycle II can be presented through the following bar chart:

Figure 6. Bar diagram of the achievement of students' skills learning outcomes in Pre-Cycle and Cycle II

The average student activity in participating in learning with the ICARE learning model assisted by smart apps creators in cycle II is:

Table 2. Average Student Activity First meeting and second meeting in cycle II

No	Meeting	Percentage	Categori
1	Meeting 1	81,30	Very active
2	Meeting 2	82,78	Very active
	Average	82,04	Very active

The table above shows that the average student activity in participating in the ICARE learning model assisted by smart apps creators is in the very active category, and there has been an increase compared to the results in the pre-cycle. The progress of students' active learning from the pre-cycle and cycle II can also be presented through the following bar chart:

Pre-Cycle and Cycle II Student Learning Activeness

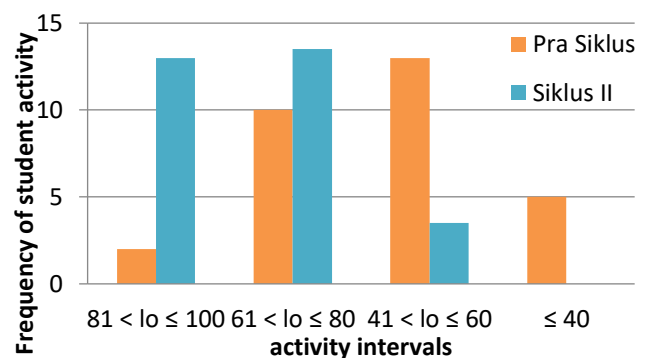


Figure 7. Bar diagram of students' active learning in Pre-Cycle and Cycle I

Reflection in the implementation of cycle II, based on data from the results of research implementation in the pre-cycle, cycle I and cycle II, there was a gradual increase in student learning outcomes. The

increase in cycle I did not show significant results, but in cycle II it showed significant results.

The increase in student knowledge learning outcomes can be categorized as very good with the achievement of learning outcomes 90.00% of students have achieved KKM scores as well as an increase in student skills learning outcomes can be categorized as very good with the achievement of learning outcomes 86.67% of students have achieved KKM values.

Thus the increase in student learning outcomes in cycle II can be categorized as very good.

### Discussion of Research Results

Data on achieving student knowledge learning outcomes by applying the ICARE learning model assisted by smart apps creators in mathematics subject matter geometry transformation can be seen in the following table:

Table 3. Achievement of Learning Outcomes of Material Knowledge of Geometry Transformation

Stage	Number of Students Achieving KKM ( $\geq 72$ )	Number of Students	Achieving KKM
Pre-Cycle	17	30	56,67%
Cycle I	23	30	76,67%
Cycle II	27	30	90,00%
Upgrade I	6		20,00%
Improvement II	10		23,33%

Based on table 3 above, it can be concluded that the learning outcomes of students' knowledge of geometry transformation material for class IX-F semester 1 of SMP 1 Jekulo Kudus can be improved through the use of the ICARE learning model assisted by smart apps creators.

Data on the achievement of students' skills learning outcomes by applying the ICARE learning model assisted by smart

apps creators in mathematics subject geometry transformation material can be seen in the following table:

Table 4. Achievement of Geometry Transformation Material Skill Learning Outcomes

Stage	Number of Students Achieving KKM ( $\geq 72$ )	Number of Students	Achieving KKM
Pre-Cycle	19	30	63,33%
Cycle I	23	30	76,67%
Cycle II	26	30	86,67%
Upgrade I	4	0	13,33%
Improvement II	7	0	23,33%

Based on table 4 above, it can be concluded that the learning outcomes of students' skills on geometry transformation material for class IX-F semester 1 of SMP 1 Jekulo Kudus can be improved through the use of the ICARE learning model assisted by smart apps creators.

The ICARE learning model assisted by smart apps creators is also able to increase student activity in learning activities. This can be seen from the average score of student activity obtained from observations in cycle I and cycle II, can be seen in table 5.

Table 5: Average Percentage of Students Active in Learning Activities Cycle I and Cycle II

No	Meeting	Percentage	Categori
1	Cycle I	78,33%	Active
2	Cycle II	88,34%	Very active
<b>Description: Increased</b>			

The number of students who were active in discussions on learning activities in cycle I was 78.33% in the active category and showed an increase in cycle II, namely 88.34% in the very active category.

Student activity in solving mathematical problems already meets



indicators of success, namely the average student activity in each cycle increases and the average student activity at the end of cycle 2 is in the very good category.

Based on the discussion above and supported by the results of interviews with students and teachers, in general it can be concluded that student activity in learning mathematics in class IX-F semester 1 of SMP 1 Jekulo Kudus can be improved through the use of the ICARE learning model assisted by smart apps creators. This is in line with research conducted by Mazidah, N., Kartini, T., & Kantun, S. (2020) that the activities and learning outcomes of students in learning increase with the application of the ICARE learning model, the same research by Aini, Maulida Zulfa (2022) who said that the use of the ICARE learning model was effective on students' creative thinking skills in mathematics class VIII MTsN 3 Brebes.

### Conclusion

From the research data and discussion that has been described, the following conclusions can be drawn:

1. The ICARE learning model assisted by smart apps creators can increase student learning activity from pre-cycle to cycle I and to cycle II, showing that student learning activeness in pre-cycle is 40.00% less active category, cycle I is 78.33% category active and cycle II of 88.34% very active category. While the average student inactivity in learning in the pre-cycle was 60.00%, cycle I was 21.67% and cycle II was 11.66%.
2. The ICARE Learning Model assisted by smart apps creators can improve knowledge learning outcomes and skills learning outcomes in the pre-cycle, cycle I and cycle II, as follows:
  - (1) For knowledge competency learning outcomes. The number of students who completed or scored more than or equal to 72 (KKM) in the pre-cycle was 17 students (56.66%), cycle I was 23 students (76.66%) and cycle II was 27

students (90.00%) ). While students who did not complete or students who scored less than 72 (KKM) in pre-cycle conditions were 13 students (43.34%), cycle I were 7 students (23.34%) and cycle II were 3 students (10, 00%).

(2) For skills competency learning outcomes. The number of students who completed or scored more than or equal to 72 (KKM) in the pre-cycle was 19 students (63.33%), cycle I was 23 students (76.67%) and cycle II was 26 students (13.33%) ). While students who did not complete or students who scored less than 72 (KKM) in pre-cycle conditions were 11 students (36.67%), cycle I were 7 students (23.33%) and cycle II were 4 students (13, 33%).

### Suggestion

Based on the results of the research that has been carried out in an effort to improve learning outcomes, the researcher feels the need to provide suggestions, among others:

- 1) For schools, from the results of this study the ICARE learning model assisted by smart apps creators is a learning model that needs to be supported in its implementation in schools.
- 2) For teachers, teachers should always create bridges between teachers and students during learning, namely by providing apperceptions about events that are inherent, known and experienced by students and always explaining the benefits obtained from studying the material.

### Bibliography

- [1] Abdullah, R. S., Prayitno, W., & Hodriani. 2020. *Panduan Praktis Penelitian Tindakan Kelas*. Bandung. PT Remaja Rosdakarya.
- [2] Aini, Maulida Zulfa. 2022. Efektivitas model pembelajaran ICARE terhadap kemampuan berpikir kreatif siswa pada mata pelajaran matematika kelas VIII

- MTsN 3 Brebes. *Undergraduate (S1) thesis*, Universitas Islam Negeri Walisongo Semarang.
- [3] Arikunto, Suharsimi. 2008. *Prosedur Penelitian Suatu pendekatan Praktik*. Jakarta : Rineka Cipta
- [4] Handayani, P., Agoestanto, A., & Masrukan. 2013. Pengaruh Pembelajaran Berbasis Masalah dengan Asesmen Kinerja Terhadap Kemampuan Pemecahan Masalah. *Unnes Journal of Mathematics Education*, 2(1): 70–76.
- [5] Iis Asriah Nurfalah, L. S. 2020. Analisis Kesalahan Siswa Kelas XI SMK dalam Menyelesaikan Soal Pada Materi Fungsi. *Jurnal Matematika dan Pendidikan Matematika Vol. 5 No.1*, 31-43.
- [6] Mazidah, N., Kartini, T., & Kantun, S. 2020. Penerapan Model Pembelajaran ICARE untuk Meningkatkan Aktivitas dan Hasil Belajar Siswa (Studi Kasus Pada Siswa Kelas X AK 2 SMK Al Qodiri Jember Mata Pelajaran Akuntansi Kompetensi Dasar Posting Semester Genap Tahun Ajaran 2018/2019). *JURNAL PENDIDIKAN EKONOMI: Jurnal Ilmiah Ilmu Pendidikan, Ilmu Ekonomi Dan Ilmu Sosial*, 14(1), 246-252. doi:10.19184/jpe.v14i1.12426.
- [7] Salyers, V., Carter, L., Barrett, P., & Williams, L. 2010. "Evaluating *Student and Faculty Satisfaction with a Pedagogical Framework*". *The Journal of Distance Education / Revue de l'Éducation à Distance*, 24(3): 1–15
- [8] Sari Wulan. 2022. Meningkatkan Hasil Belajar Siswa dengan Model Pembelajaran ICARE pada Mata Pelajaran Matematika di Kelas V SD N 9 Palu. *Undergraduate Theses thesis*. Universitas Tadulako.
- [9] Wahyudin, D. 2010. Model pembelajaran ICARE pada kurikulum mata pelajaran TIK di SMP. *Jurnal Penelitian Pendidikan*, 11(1): 23–33.
- [10] Wahyudin, D. & Susilana, R. 2012. *Kurikulum & Pembelajaran: Inovasi Kurikulum dan Pembelajaran*. Rajawali Pers.
- [11] Yumiati, & Wahyuningrum, E. 2015. Pembelajaran Icare (Introduction, Connect, Apply, Reflect, Extend) Dalam Tutorial Online Untuk Meningkatkan Kemampuan Pemecahan Masalah Matematis Mahasiswa UT. *Infinity Journal*, 4(2): 182–189.

#### Profil Penulis

Rodhi, lahir di Kudus, 25 Juli 1972, menempuh Pendidikan sarjana di IKIP Semarang Jurusan Pendidikan Matematika lulus tahun 1997, dan Pendidikan S2 Unnes jurusan Pendidikan Matematika lulus tahun 2022. Pekerjaan sehari-hari penulis selain sebagai guru di SMP 1 Jekulo Kudus Jawa Tengah, Aktif menulis artikel dan melakukan penelitian beberapa artikel yang sudah diterbitkan antara lain:

1. Kiat Problem Based Learning (PBL) dalam Pembelajaran Matematika"ISBN: 978-623-258-278-1
2. Analisis Kemampuan Literasi Matematika Ditinjau dari Minat Siswa pada Materi Transformasi" p-ISSN: 2460-4399 e-ISSN: 2528-7214 (artikel dijurnal profesi keguruan unnes)
3. Analisis Kemampuan Literasi Matematika dan Minat Siswa pada Pembelajaran Kuantum dengan Lembar Kerja Materi Transformasi" ISSN: 1693-8631 (jurnal BPMP)

Penulis juga Aktif di Program Guru Pengerak sebagai guru pendamping praktek.