



## Improving Critical Thinking Skills In Mathematics Content Using The Sisi Ceria Model In Grade Iv Elementary School Students

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### ABSTRACT

The problems that occur are low activity, critical thinking skills and student learning outcomes which are caused by several things, namely one-way learning, the learning atmosphere is less enjoyable, students are less actively involved in solving problems and learning is less meaningful. The aim of this research is to describe teacher activities and analyze activities, critical thinking skills and student learning outcomes in the mathematical content of plane figures in class IV. This type of research is classroom action research (PTK). The research subjects were fourth grade students at SDN Kolam Makmur, Barito Kuala Regency. The results of this research are the application of the SISI CERIA model, teacher activity meets the very good criteria, student activity reaches the criteria, all students are active.

**Keywords :** Student Activities, Critical Thinking Skills, Learning Outcomes, HAPPY SIDE

### Introduction

In the 21st century the world is moving fast and dynamic. Various aspects of life are developing rapidly, one of which is the life aspect. Along with the development of science and technology, it demands an increase in the quality of human resources. The higher the quality of education, the higher the quality of human resources. Through education we can create people who are active, skilled, have high morals and dignity and are sensitive to the environment in the future. Entering the era of globalization, future generations must have quality and character so that the existence of the nation and state can be maintained. Efforts to prepare human resource development are through education (Suriansyah & Aslamiah, 2015). Good education will be implemented with a good teaching and learning process as well. A good teaching and learning process can only be carried out by professional teachers who have pedagogical skills, professionalism, character and social competence (Suriansyah et al., 2016). Good teaching and learning conditions are able to generate ideal teaching and learning activities stated by Ian James Mitchell, namely that students can achieve effective learning behavior such as proactive and focused learning, students can complete homework correctly, students can explain their learning results, students dare to ask questions, and express his opinion (Suyono & Hariyanto, 2014). In the era of society 5.0, learning emphasizes critical thinking skills where students are able to solve the problems they face. This 21st century education focuses more on areas of expertise such as creativity, critical thinking, communication and collaboration in accordance with the era of society 5.0 to be able to direct and shape students' character in curriculum development. The curriculum is developed based on the principle that students have the ability to form people who are devout, moral, rich in knowledge, fit and have creative abilities. The aim is to develop people who are independent, contribute to the State, democratic and consistent (Khasanah & Herina, 2020; Rahayu, 2021). According to Hamalik in Arsyad (2018) The use of learning media can foster new interests and stimulation in the learning process. The use of learning media is very helpful in increasing students' understanding. Teachers must

be clever in utilizing learning support tools such as TPACK-based media in teaching and learning activities so that they can create interesting learning conditions.

Based on Minister of Education and Culture Regulation No. 22 of 2016, the ideal conditions are expected to be achieved in learning mathematics, namely exploring mathematical concepts, explaining mathematical concepts, being able to manipulate opinions in mathematics, compiling mathematical opinions and statements, solving mathematical problems and providing appropriate solutions and discussing ideas with diagrams, tables, symbols or other media to clarify problems. According to Mirdanda (2019) learning activities are activities carried out to obtain the expected achievements and are efforts to form oneself through activities that involve attitudes, attention and activity in learning activities to support the success of the learning process. Busran (2019) believes that teachers must be able to choose methods that can motivate students to learn so that students who do not master the material dare to ask teachers or friends who are more knowledgeable. In the 2013 curriculum, the goal to be achieved is to direct students to be able to think critically, especially in learning mathematics. Critical thinking is needed because in learning mathematics, not only learning concepts but students need to develop additional skills such as observation, analysis, giving reasons and invitations. (Kristihana & Ratu, 2021). However, the facts found prove that during the activity mathematics learning process, critical thinking skills and student learning outcomes are still low, this can be seen from students who are less actively involved in learning activities, students have difficulty understanding mathematics learning, and students are less skilled in solving problems. This statement is supported by the results of observations made with class IV teachers at SDN Kolam Makmur, Barito Kuala Regency, that the teaching activities carried out in class are less varied and do not use interesting learning models, making students quickly bored and unmotivated to learn. The low critical thinking of students means that students prefer to memorize material and formulas rather than mastering concepts and students are passive in asking questions and giving opinions, As a result, students find it difficult to solve problems that must be analyzed. This can cause student learning outcomes to be less than optimal. If this situation is allowed to continue, it will give rise to the root of student problems, namely students are less actively involved in learning, in learning teachers have not implemented models that focus on student activities, students are less actively involved in solving problems, minimal use of media makes learning less interesting. This condition is certainly not expected in learning, this is because students' activities and critical thinking in learning will determine student learning outcomes. The most effective learning is learning that involves students actively in all learning activities and continues to learn throughout the learning process (Suriansyah & Aslamiah, 2015). Based on the reality, it can be overcome by using the SISI CERIA learning model, this model is a combination of several models that complement each other, including Problem Based Learning (PBL), Talking Stick, and Course Review Horay (CRH). Through the Problem Based Learning model, students can learn through problem solving activities that can hone students' critical thinking skills (Rahmadani & Anugraheni, 2017).

This model is able to stimulate students to analyze problems, estimate answers, search and analyze data and be able to conclude answers to problems, so that students grow interested in learning because learning is felt in everyday life. Based on previous research related to implementation *PBL* namely a learning model that includes all students to be active in learning, solving problems through scientific stages so that students can learn knowledge related to the problem and can develop critical thinking skills because the subject is always linked to everyday life problems. (Akhdinirwanto et al., 2020; Marnita et al., 2020; Suhaimi & Nasidawati, 2020; Suriansyah et al., 2019). According to Jeklin (2016), the Talking Stick model can foster students' critical thinking skills because they have to answer questions that are shared so that students are motivated to think in solving problems. This model also trains students' communication so they have the courage to express their opinions. Apart from that, many problems in everyday life can be connected to flat material so that it is easier for students to understand and express arguments in solving problems. This model is very suitable to use because it can encourage students to dare to express their opinions (Istarani, 2014; Saragih & Shilviana, 2003). Based on previous research related to the application of learning models *Talking Stick* This is a learning model that is carried out by giving sticks where students have to complete and answer questions given by the teacher after the child has received the material provided. This model makes children more active (Agustina et al., 2018; Faresy, 2021; Milana, 2021; Norhafizah & Novita, 2015). The choice of the CRH learning model aims to encourage students to be active in learning. Students can learn concepts through group discussions, can grow students' competence in the critical thinking process and teaching and learning activities are packaged interestingly with games inserted so that students are more encouraged to take part in learning. (Eviyanah et al., 2018; Rini & Pujiastuti, 2017). Based on previous research regarding the application of the model *Course Review Hooray* namely a learning model that can improve the quality of children in learning activities in the classroom. This model is a complementary model that makes learning more fun (Aslamiah et al., 2019; Metroyadi et al., 2019; Noorhapizah et al., 2019). The position of this research is supported by relevant research that has been conducted previously by (Agustina et al., 2018; Aisyah et al., 2021; Akhdinirwanto et al., 2020; Aslamiah et al., 2019; Faresy, 2021; Fatiani, 2022; Marnita et al., 2020; Metroyadi et al., 2019; Milana, 2021; Noorhapizah et al., 2019; Suhaimi & Nasidawati, 2020; Suriansyah et al.,

2019)stated that research by applying the PBL, Talking Stick and CRH learning models can increase activity, critical thinking skills and student learning outcomes.

## Research Methodology

The type of research used is Classroom Action Research (PTK). According to(Suriansyah et al., 2021)PTK is action research in the field of education which aims to improve the learning structure in the classroom. This research uses the PTK Kemmis and Mc Taggart model structure which consists of four steps, namely planning, implementation, observation, reflection(Arikunto Suharsimi, 2013). This PTK was held in three meetings. The subject of this research was 26 fourth grade students at SDN Kolam Makmur, Barito Kuala Regency in the even semester of the 2022/2023 academic year, consisting of 18 boys and 8 girls. This research uses data collection techniques such as observation and written tests. Observations focused on collecting qualitative data related to teacher and student activities, as well as students' critical thinking abilities during learning activities. Meanwhile, quantitative data is obtained from student learning outcomes in groups and assessment results data through written tests at the end of the meeting. The indicator of the success of this research is teacher activityreach category $\geq 26$  (very good), student activity reached category 24 (very active) and classically reached an indicator of 82% of the number of students, critical thinking skills reached category 13 (very critical thinking) and classically reached an indicator of 81%, and indicators of student learning outcomes that is, if the individual student's completeness reaches 70 and for classical completeness it reaches 82% of the students who get a score of 70.

## Results and Discussion

Based onBased on the results of observations made by researchers regarding student activities during the learning process, both at meeting 1, meeting 2 and meeting 3, there was an increase in activity where students became more active in learning and students' critical thinking abilities also increased.Teachers consistently make improvements that serve as strategies for creating student-focused courses. The implementation of classroom actions consisting of 3 meetings by applying the SISI CERIA model to subjects has found several observation results which were then analyzed. The following is an analysis of the results of these observations:

**Table 1. Recapitulation of results of teacher activity observations**

Meeting	Score	Criteria
1	25	Good
2	29	Very good
3	32	Very good

Table 1 displays the results of teacher observations at each meeting where the quality of learning was improved. The teacher received a score of 25 with satisfactory criteria at meeting 1. This result is still not ideal. Because researchers have not carried out the assessment components well. Then at meeting 2 the teacher's activities began to improve after making improvements so that they obtained a score of 29 with very good criteria. Meanwhile, at meeting 3 it improved by getting a score of 32 on the very good criteria. In this case, the teacher has implemented learning in accordance with the assessment components that have been determined.

**Table 2. Recapitulation of observation results of student activities**

Meeting	Percentage	Criteria
1	50%	Some Active Students
2	85%	Almost all students are active
3	100%	All Active Students

Table 2 displays the results of observations of student activities that progress at each meeting. At meeting 1, they obtained a percentage of 50% with the predetermined criteria, namely that some students were active. at meeting 2 obtained a percentage of 85% with the criteria that almost all students were active. Student activity in participating in learning increased after the teacher made improvements. Furthermore, at meeting 3, the percentage was 100% where students were in the category of all active students. This can happen because the teacher always makes improvements at each meeting in learning activities so that students can play an active role during the learning process.

**Table 3. Recapitulation of observation results of students' critical thinking skills**

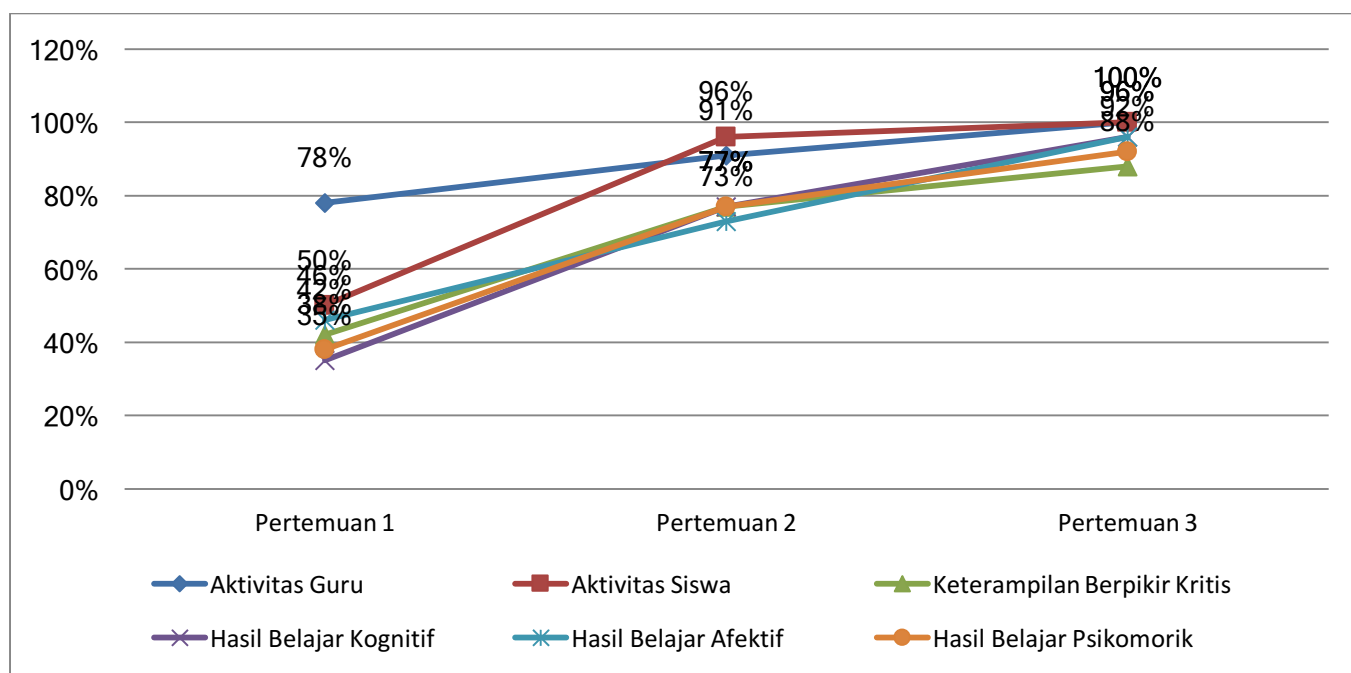
Meeting	Percentage	Criteria
1	42%	Some Students Think Critically
2	77%	Most Students Think Critically
3	88%	Almost All Students Think Critically

The table above shows the critical thinking skills of classical students who have progressed. At meeting 1, the proportion of students who demonstrated critical thinking skills was 42%. This is because there are still some students who have not fully mastered the critical thinking ability indicators, resulting in low scores. However, at meeting 2 the proportion increased to 77%, which shows an increase in students' abilities. At meeting 3 the proportion reached 88% with almost all students showing critical thinking skills.

**Table 4. Recapitulation of student learning outcomes**

Meeting	Cognitive Domain	Affective Domain	Psychomotor Domain
1	42%	46%	38%
2	77%	73%	77%
3	96%	86%	92%

The table above shows that the classical percentage obtained from the total number of students in the class at meeting 1 in the cognitive domain was 35% of students who were able to reach the minimum completeness criteria of 70, then at meeting 2 it increased to 77% of students who completed it and at meeting 3 learning completion reached 96 % classically, this means that the completeness of learning outcomes in the cognitive domain is in the satisfactory complete category. Then in the affective domain of meeting 1, students only had 46% classical completeness, then at meeting 2 it increased to 73% of students who completed it, and increased at meeting 3 students were able to achieve a learning mastery score of 96% of the total number of students. Then in the psychomotor domain at meeting 1 classical completeness was obtained at 38% minimum completeness, at meeting 2 the psychomotor domain increased to 77% and at meeting 3 it increased again by 92% of students' classical completion in the psychomotor domain. Based on the results of the observations above, it was found that there was a visible trend in increasing teacher and student activity, critical thinking skills and overall student learning outcomes at each meeting. For more details, see the following graph:

**Figure 1. Trend of increasing teacher activity, student activity, student critical thinking skills and student learning outcomes**

In the picture above there is The increase in results shown at each learning meeting is influenced by teacher activity as the main important thing carried out in the learning process and classroom actions, quality teacher activities influence student activity and critical thinking skills shown by students in the learning process, increased teacher quality results will also affect student learning outcomes. If the quality of teachers improves or increases, students' activities and critical thinking skills will also increase, accompanied by learning outcomes that will have a significant influence. The progress of teacher activities at each meeting is due to improvements made by maximizing learning planning, motivating students to be actively involved in learning, motivating students to actively solve problems and packaging the lesson material as attractively as possible so that it is easy for students to master the material. This is in line with opinion Sanjaya (2013) that the component that really determines the implementation of learning strategies is the teacher. According to Suriansyah et al., (2015) also explains that teachers play an important role in determining how learning strategies are practiced in classroom settings. In the learning process, teachers not only act as models or role models but also as managers of learning. According to Noorhapizah et al., (2019) Teacher activities continue to improve at each meeting because teachers always reflect in creating effective learning experiences for students. This approach is very important because successful learning outcomes can be achieved if teachers consistently strive to provide quality learning opportunities.

In the learning process the teacher creates an atmosphere that encourages all students to be actively involved in learning, stimulates the growth of thinking in the process and after learning takes place, and learning will be enjoyable for all students (Mulyasaa, 2012). According to the opinion of Slameto (2010) explains that teachers in the learning process have the task of encouraging, guiding and providing learning facilities for students to achieve the expected goals. As stated by Putra (2012), a teacher must have the ability to develop a learning system that fosters enthusiasm and enthusiasm for the subject among students. This system must also prevent students from feeling bored during the learning process. In line with Bruner's opinion (in Trianto, 2011) states that students make their own efforts to find solutions to problems and the knowledge that accompanies them, producing meaningful knowledge. Therefore, teachers need to equip students with communication skills. To communicate and participate, students must have strong communication skills, including expressing disagreement and refuting opinions in a polite way without cornering others. (Suriansyah & Aslamiah, 2015). Implementing the CERIA SIDE model, student activity can increase at each meeting to reach active and very active criteria. Students play an active role in learning activities because the combination of this model is able to make students play an active role and is able to hone students' critical thinking skills in the learning process. The use of the problem based learning model can increase students' activity and critical thinking abilities. In learning activities carried out using the PBL model, the teacher presents problems by observing pictures and LKK to students for analysis and discussion. Through activities like this, students are required to be able to think critically in understanding the topics proposed by the teacher. Apart from that, the use of picture media and quiz games in the PBL, Talking Stick and CRH models also makes students interested and understand the material and involves all students' senses such as analyzing, discussing, presenting and asking and answering questions. According to Suprihartini (2019:118) said that the CRH model can create a lively and enjoyable classroom atmosphere. Teachers guide students in the Course Review Hooray game so that the quizzes don't seem stressful. This game can increase student activity to compete with each other while playing. This activity can make the class atmosphere enjoyable, so that quality education can be achieved and can produce complete individuals with learning that develops students' creativity and trains high-level thinking skills. (Tarihoran, 2019).

In this regard, the increase in student activity is due to when the teacher applies the model *THE HAPPY SIDE* succeeded in making students active when participating in learning, including student activities, namely students were disciplined when the teacher conveyed learning competencies, students were active when the teacher divided groups heterogeneously, students were disciplined when the teacher delivered learning material, students were active when answering questions from the teacher, students were active during group discussions, students are active when presenting the results of discussions and making conclusions. This is in line with Wibowo (2016), that many factors can influence student activities in class, one of which is making the learning experience interesting so that students are motivated to participate and encourage students to be active in the learning process. Efforts that can be made by educators in creating student action in subjects are by developing student interest, stimulating student inspiration, and involving media in learning. Student involvement in learning makes children actively involved in the learning process. The success of this activity is in line with the opinion of Sanjaya (2012) who explains that the learning model states that the inquiry learning model is a learning model that involves a thinking process to search for and discover for oneself a problem that has been posed by means of critical thinking and analytical skills. This is in line with the opinion of Suriansyah et al. Students' critical thinking skills in learning have increased because at each meeting the teacher always tries to make improvements at the end of the learning meeting so that in the future students can participate actively and be critical in group discussions. Therefore, it is clear that teacher activities and student activities are able to optimize students' critical thinking skills in learning so that there is a significant increase in students' critical thinking skills at each meeting.

The increase in students' critical thinking skills is due to the learning process being student-centered and the teacher only as a facilitator to be able to develop students' critical thinking skills through predetermined indicators. This is in line with the opinion of Adiwijaya (2015: 62) and Agusta (2018) in (Yunita et al., 2020) which states that improving students' critical thinking skills does not come from a monotonous and teacher-centered learning process but rather learning that makes students think actively with a variety of learning activities.

The teacher's efforts to train students' critical thinking skills are by guiding and directing them to be actively involved in group discussions so that students can actively ask questions and answer questions from the teacher so that they can improve students' critical thinking skills. This is in line with the opinion of Supriatna (2019) that the learning process cannot be separated from asking questions because learning is a process where someone who doesn't know becomes someone who knows. Students who actively ask questions in the learning process are expected to have the competence to develop curiosity and the ability to formulate questions to form critical thinking on topics and problems that exist in everyday life. Student activities and learning outcomes continue to be improved because a teacher's success in learning will support the success of students in learning, which is a good quality of learning. (Zaini, Aslamiah & Celia, 2020). Improving learning outcomes cannot be separated from the role of the teacher who provides information that will provide illustrations about the topics that students will study, so that students have parameters for achieving learning goals. When students have a general idea of the subject matter, the teacher guides students to find certain concepts from the illustrations provided, so that students' understanding is more evenly distributed by asking questions between students and teacher. (Aslamiah & Agusta, 2017). Apart from that, the increase in student learning outcomes is due to learning with models *THE HAPPY SIDE* can make students active during learning and students can think critically well during group learning so that this can influence student learning outcomes which also increase. With an increase in student activity and critical thinking skills, student learning outcomes will increase. The use of the SISI CERIA model is able to improve student learning outcomes because students not only listen to the material presented by the teacher but can be active in learning and are able to solve problems and collaborate in groups.

## Conclusion

From the results of the analysis and discussion of classroom action research, it can be concluded that the teacher's activities in learning mathematics content material about flat shapes using the SISI CERIA model for students at SDN Kolam Makmur Kab. Barito Kuala can be implemented according to the steps that have been planned and is able to achieve the success indicators that have been determined by researchers in the very good category. Student activities in learning mathematics content about flat shapes using the SISI CERIA model for students at SDN Kolam Makmur Kab. Barito Kuala experienced an increase and was able to achieve the success indicators set by researchers in the active and very active categories. Critical thinking skills in learning mathematical content about flat shapes using the SISI CERIA model for students at SDN Kolam Makmur Kab. Barito Kuala experienced an increase and was able to achieve the success indicators set by researchers in the categories of critical thinking and very critical thinking. Use of models *THE HAPPY SIDE* to students at SDN Kolam Makmur Kab. Barito Kuala can improve the learning outcomes of mathematical content on plane material at each meeting, and has achieved the predetermined indicators of completion both individually and classically.

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