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Implementation of the TPS (Think-Pair-Share) Learning Model To Improve Students Critical Thinking Skills

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ABSTRACT

The low ability of students' critical thinking during the learning process is the driving force behind this research. This is based on observations made by researchers who found that students during learning activities were unable to explain the material being studied straightforwardly, draw conclusions, explain the material being studied, or identify assumptions. This is because students' critical thinking skills are less developed when the learning model is used. It is hoped that this study will be able to find out and get an overview to further develop the reasoning abilities in determining fifth grade elementary school students by applying the TPS (Think Pair Offer) learning model. This study used the Classroom Action Research (CAR) method developed by Kemmis and Mc Taggart, which is one used in this study. Classroom action research is research that describes the causes and effects of treatment, as well as describes what happens when the treatment is given. and describes the entire process from the beginning of the treatment to the impact of the treatment. In this study two cycles were used which were carried out in class V of elementary school. One lesson and four stages namely planning, implementing, observing, and reflecting are each cycle. The instruments used in this review are perception sheets, field notes, test questions, and documentation. This study found that students' critical thinking skills increased by 63% in cycle I, rising to 82% in cycle II, placing it in the very good category. From these results it can be seen that there was an increase of 19% from cycle I to cycle II. This shows that one of the elementary school TPS (Think Pair Share) models can improve the critical thinking skills of fifth grade students.

Keywords: Think Pair Share; critical thinking; elementary school

INTRODUCTION

The improvement of the period from one year to another has progressively carried changes and advancements to all parts of human existence, one of which we can plainly feel in the areas of innovation and science. The 21st century is another name for this period. According to (K. Sari, 2022), in order for every citizen to be able to contribute meaningfully to the globalization

of the 21st century, they must possess skills that can meet the needs of the time. The abundance of (1) information that can be accessed at any time and from any location marks the 21st century as well; 2) more rapid computing; 3) routine jobs that are automated; furthermore (4) correspondence that should be possible from anyplace and anyplace, Service of Instruction and Culture Innovative work (Hidayat et al., 2019) . (Agustin, 2021) , that the 21st century is a century set apart by the quick improvement of data. All nations must prepare their human resources for these rapid changes in order to survive in the 21st century. In addition, this has an effect on the growth of a life order that is becoming more and more competitive. As a result, it is necessary to improve the quality of human resources as a whole, including their capabilities and skills, in order to become more competitive in a world without borders (Nuryani et al., 2019).

As a result, efforts to build a new civilization within the dynamics of an increasingly advanced life can be made in the field of education to increase human resources. The 21st century has had a significant impact on many aspects of life, including educational requirements. Education is essential to human life and cannot be separated from it. (Agustin, 2021) uncover that 21st century schooling can be deciphered as training that unequivocally and certainly obliges all 21st century capabilities determined to assist individuals with having the option to endlessly live in the 21st 100 years. According to Hasibuan and Prastowo (Hunafa et al., 2022), a straightforward description related to the 21st century from an educational point of view 2022, in which the thinking style encourages students to think more critically, apply their knowledge to real-world situations, comprehend technology and information, and communicate and collaborate effectively. Learning must also be geared toward learning that can accommodate skills of the 21st century in education for the 21st century. Critical thinking, problem-solving, creative thinking, innovation, collaboration, and communication are skills of the 21st century.

One of the skills that must be possessed by students in the 21st century is critical thinking skills. Critical thinking skills are skills that must be developed by students in order to be able to compete in the 21st century. Critical thinking is important for preparing students to deal with various problems that exist in everyday life (Zulfadewina et al., 2020) . One of the roles of students is to contribute solutions or ideas for solving a problem that is currently happening in people's lives (Masus & Fadhilaturrahmi, 2020). Critical thinking is a person's cognitive ability to state something with confidence because it is based on logical reasons and strong evidence. According to Johson in (Egok, 2016) critical thinking is an organized process that allows students to evaluate the evidence, assumptions, logic, and language that underlies other people's statements. In addition, according to (Sari et al., 2017) critical thinking is the ability to solve

problems rationally according to logical stages and provide better solution results. efficient. According to Ennis in (Sani, 2019), critical thinking skills are grouped into 5 aspects of critical thinking ability indicators, namely: 1) providing simple explanations (including: focusing on problems, analyzing arguments, asking and answering classification questions or challenging questions), 2) build basic skills (includes considering the credibility of a source, observes and considers the results of observations), 3) performs inference (includes making deductions and considering the deduction results, making decisions and considering the results), 4) providing further explanation (includes defining terms and considering definitions , identifying assumptions), 5) organizing strategies and techniques (including formulating and deciding on an action, presenting arguments orally and in writing). A person can be said to be able to think critically if he is able to carry out these aspects in an effort to solve a problem and can be said to think critically if he is able to reason any newly acquired information or knowledge into several stages of activity in a sequential and structured manner.

Critical thinking skills are very important to be taught to elementary school students. This is a positive effort in developing the quality of human resources as a whole, to increase strong and superior competitiveness to compete in the 21st century. according to Nugraha (Fitri, 2022) Critical thinking is a key competency to solve problems needed for an individual to be able to live responsibly and for social life to be able to overcome global challenges. Meanwhile (Syafitri et al., 2021) revealed that the importance of critical thinking skills is so that they are able to build the quality of thinking so as to produce good learning. Marzano (Agustin, 2021) explains that the importance of critical thinking is taught, namely:

a. Critical thinking enables a person to maximize their potential for problem-solving, idea generation, and self-awareness.
b. Critical thinking is an essential skill for all occupations. The capacity to think plainly and judiciously is expected in any work. Critical thinking skills can help you solve any problem and study a variety of fields of knowledge. Therefore, having skills in critical thinking is beneficial to one's career.
c. In this day and age of technology and information, critical thinking is essential. One should answer rapidly and really to changes in this mechanical period, along these lines requiring adaptable scholarly abilities, abilities to dissect data, and coordinate different wellsprings of information to tackle issues. Critical thinking skills are where you'll find these abilities.

d. Verbal and analytical abilities are enhanced by critical thinking. The way ideas are expressed can be improved through systematic and clear thinking. Learning how to logically analyze text structures and comprehending a problem are made easier with these skills.
e. Creativity is boosted by critical thinking. In addition to having novel concepts, creative solutions to problems must also be practical and relevant to the task at hand. Critical thinking is useful for evaluating new concepts, picking the best ones, and making adjustments as needed.
f. Self-reflection requires critical thinking. It is necessary to be able to seek the truth and consider one's own values and choices in order to give life structure and make it more meaningful (meaningful life). In order to make life more meaningful, critical thinking is a metathinking skill—the ability to reflect on one's own values and decisions and then make an intentional effort to incorporate those reflections into daily life.

Based on the results of observations and analysis that have been carried out by researchers in class V of one of the elementary schools, it shows that the low level of students' critical thinking skills in the learning process. This is because students are unable to provide simple explanations about the material they are studying, students have not provided explanations in their own sentences, are unable to conclude the material they have learned, are unable to provide explanations about the material they are studying, are unable to identify assumptions, and students have not able to provide appropriate arguments in answering the questions posed by the teacher. Noting some of the problems that arise, it seems that there are no indicators of critical thinking skills in students in the learning process. The cause of these problems is because the learning that is applied is teacher center. The teacher only uses lecture and assignment methods, so the learning process is monotonous. In addition, the learning process does not utilize learning media that are already available in schools to help convey learning material. This resulted in students not being able to express opinions both orally and in writing. It can be seen that when students work on questions, they only do what they want according to the knowledge students get. In addition to the above, another problem that arose in the class was that learning activities were marked more by memorization, in other words, other students were only asked to memorize the contents of the lesson rather than being asked to think critically to develop students' thinking power.

Seeing this, scientists are of the view that to cultivate understudies' decisive reasoning abilities by utilizing more imaginative mastering models. Teachers must be able to use learning models that can help students improve their thinking skills. The TPS (Think Pair Share) learning model is the solution in line with this. According to (Kurniasih et al. 2015), the Think Pair Share (TPS) learning model, also known as thinking in pairs and sharing, is cooperative learning intended to influence students' school interactions. The purpose of this model is to influence how students interact during learning activities. Additionally, (Wicaksono et al., 2017) The Think Pair Share (TPS) model is a learning strategy that encourages students to respond more flexibly to the information and questions presented. According to (Lestari & Yudhanegara, 2017) ,a type of cooperative learning called "Think Pair Share" encourages students to work in pairs to solve problems and share their knowledge with other students. The Think Pair Share cooperative learning model has five steps (syntax) (Nuraeni et al. 2021) with three main steps—think, pair, and share—as a characteristic. The Think Pair Share cooperative learning model has five learning stages: 1) Orientation, 2) Thinking (individually), 3) Pairing (with peers), 4) Sharing (with other pairs), and 5) Awards.

One of the benefits of the TPS type helpful learning model is that it can encourage understudy contribution and cooperation by giving open doors to understudies to talk and communicate their own thoughts and persuade understudies to take part in class discussions. According to (Marlina et al., 2014). This is evidenced by research conducted by (Wicaksono et al., 2017) stating that the effectiveness of the Think Pair Share (TPS) learning model with the hypothesis used is that H0 = $\mu 2 \leq 75$ (Learning using the Think Pair Share (TPS) learning model is not effective) . From the calculations obtained tcount = 1.8465 and ttable value = 1.69552 because t count > t table then H0 is rejected, which means learning mathematics using the Think Pair Share (TPS) learning model is effective for students' critical thinking skills. This success is inseparable from the model applied and the overall average has reached more than 75, namely 78.22. The Think Pair Share (TPS) learning model requires relatively shorter and more effective learning time. Even though students are required to study independently first, students can immediately understand the material provided and can immediately exchange ideas (discuss) with their partners. This turned out to be quite effective in understanding students of the material being studied.

Based on the description above, the use of the Think Pair Share (TPS) learning model is expected to be able to improve students' critical thinking skills. Therefore, to find out whether or not there is an influence of the TPS learning model on critical thinking skills, it is necessary to

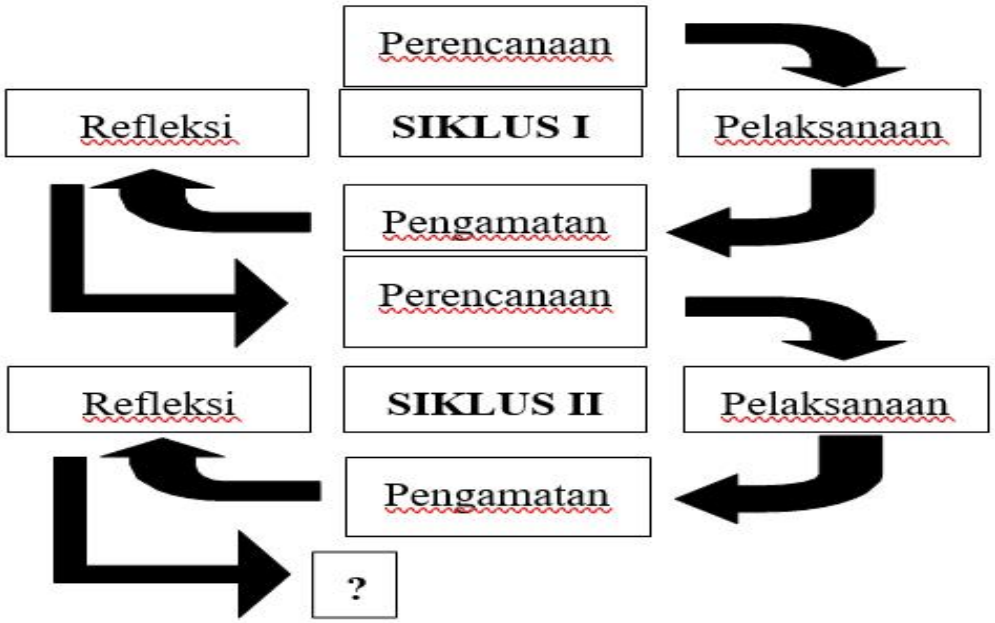
conduct research on "Implementation of the TPS (Think-Pair-Share) Learning Model to Improve Critical Thinking Skills of Class V Elementary School Students" using a different method than has been used by previous studies using the PTK method.

MATERIALS AND METHOD

The Classroom Action Research (PTK) model developed by Kemmis and Mc is the one that was utilized in this study. Taggart. Classroom action research, according to Kemmis and Taggart (Muslich, 2009) is a systematic, planned, and introspective study done to improve oneself and one's own work experience. In the interim, (Arikunto et al., 2015), classroom action research is research that describes the causes and effects of a treatment, as well as what took place during the treatment and the entire process, from the beginning of the treatment to its impact.

This study was carried out over two cycles. Kemmis and Taggart's spiral model is utilized in this investigation. The spiral model from Kemmis and Taggart, as stated by (Undang, 2009) is a development of Kurt Lewin's fundamental concept, which consists of four stages: planning (plan), action (act), observation (observe), and reflection (reflect). The models and explanations for each stage according to (Arikunto et al., 2015) are as follows.

Figure 1. Arikunto's Classroom Action Research Model



This classroom action research is planned in two interrelated cycles, for more details, the details of the cycles to be carried out are as follows.

In cycle I the actions taken were:

1. The planning stage

   The PTK implementation plan includes the following activities:

   a. planning lessons,

   b. prepare a Learning Implementation Plan (RPP),

   c. prepare learning resources,

   d. prepare a learning observation format.

2. Implementation stage (acting)

   At this stage the learning steps and actions refer to the plans that have been made, namely the researcher carries out the actions in accordance with the learning implementation plan and the learning objectives to be achieved.

3. Observation stage

   Observations were made at the time the implementation of learning took place. This observation aims to determine student activity during the learning process. The results of the observations are outlined in the student activity observation sheet.

4. Reflection

   This stage is intended to thoroughly review the actions that have been taken, based on the data collected and then carry out an evaluation to improve the next action. If the activity is not achieved then the next cycle will be carried out.

In cycle II the actions taken were:

1. The planning stage

   The PTK implementation plan includes the following activities:

   a. determination of alternative solutions to problems,

   b. prepare learning scenarios of Learning Implementation Plans (RPP) for implementing the second lesson.

2. Implementation Stage (Acting)

   PTK actions in cycle II were in the form of implementing the second lesson according to the learning scenario.

3. Observation Stage

   See the progress of learning and compare it with previous learning.

4. Reflection Stage

The activities carried out in the reflection stage of cycle II are to see the achievement of learning, and to see changes in student learning.

The students in the fifth grade at SDN Jembatan Besi 01 Pagi Kota West Jakarta, a total of 30 students, 11 of whom were male and 19 of whom were female, served as the study's subjects. The instruments utilized in this review were perception sheets which were made to get discoveries during the growing experience, field notes were utilized to get information as compositions during the educational experience, test question sheets were made considering angles and marks of decisive reasoning abilities. The collection of data in the form of photographs during the learning process is known as documentation, and students were used to measure their critical thinking abilities.

RESULTS

At the planning stage the researcher prepared learning tools in the form of learning implementation plans, student worksheets, research instruments, test question sheets, and field notes. The learning implementation plan is made by adjusting the steps of the TPS (Think-Pair-Share) learning model.

From observations of student activities were analyzed by means of scores and categories of mean scores. The average category of student activity scores consists of 3 categories, namely Good, Adequate, and Poor. The range of scores for each category is determined by the following formula: Range of scores $= \frac{XX_n - XX_1}{k}$ (Susanti, 2010)

Information:

XX_n= Maximum score

XX_1= Min score

k = Number of categories

The range of student activity observation scores is further categorized based on Table 1.

Table 1. Category Average Student Score

No.	Rerata Skor	Kategori
1	22-27	Good
2	16-21	Enough
3	9-15	less

Data on students' critical thinking skills were analyzed using the percentage of students' critical thinking skills with the following formula:

$$P = \frac{\varepsilon_X}{N} x\ 100\%$$

(Sudijono, 2014)

Information:

P = Percentage figure

Σ x = The total value of all students

N = Total number of students

The results of the percentage of students' critical thinking are then categorized based on Table 2.

Table 2. Critical Thinking Criteria

No.	Presentase	Criteria
1	81% - 100%	Critical Once
2	66% - 80%	Critical
3	56% - 65%	Critical Enough
4	41% - 55%	Less Critical
5	0 – 40%	Not Critical

Implementation of learning in cycle I, namely on Theme 7 (Events in Life), Sub-Theme 2 (National Events Around the Proclamation of Independence), learning 1. The following results can be seen through table 3:

Table 3. Average Score

Siklus	Average Score
I	19
II	24,7

The data shows that the average student activity score has increased from cycle I to cycle II. In cycle I, the average student activity score was in the sufficient category, and in cycle II it

increased to 24.7 in the good category. The average score of student activity in each stage of learning with the think pair share type cooperative model can be seen in Table 4.

Table 4. Average Score

Stage	Siklus I	Siklus II	**Information**
Thingking	9	11,5	Increase
Pairing	1	3	Increase
Shairing	9	10,2	Increase

After getting the average score, the next step is to analyze the percentage of students' thinking ability criteria using the formula as listed above, and the following results are obtained which can be seen in table 5 as follows:

Table 5. Percentage of Students' Critical Thinking Ability Criteria

Siklus	Percentage Average Score
I	63,04%
II	82,17%

In cycle I students' critical thinking skills were still in the criteria of being quite critical with a percentage of 63.04%, there were still many students who had not been able to identify by providing further explanations and managing strategies and tactics when working on test questions.

In cycle II, students' critical thinking skills increased, this can be seen from the increasing percentage of students' critical thinking skills with indicators namely identifying by providing advanced explanations, managing strategies and tactics, providing alternative solutions. Increasing the percentage of students' critical thinking skills to 82.17% with very critical criteria.

The application of the TPS (Think-Pair-Share) learning model is a solution to improve students' thinking skills. Using the TPS model in learning has an influence on improving the thinking skills of fifth grade elementary school students. This is known from the implementation of classroom action research conducted in two cycles.

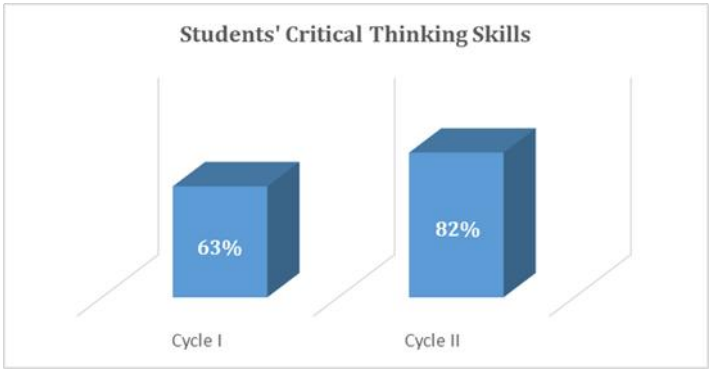
The findings in cycle I, that in the implementation of learning there are still students who look passive and have not been able to identify by giving explanations and there are still many students who have not been able to use strategies and tactics when working on the questions that

have been given. In addition, there are still some students who are less able to focus and analyze the text or discourse given by the teacher directly. This is because the teacher does not motivate students in the learning process. Then during the sharing activities with group mates about the learning that was carried out that day, there were still some students who were just silent and some students who chatted and only relied on their group mates to express their opinions about the lesson at that time which had been assigned by the teacher. This causes students to not understand the material they are studying, so that discussions between students regarding the topics given by the teacher are still students who are unable to focus and analyze the topic of learning at that time so that the questions and responses given are not appropriate, from the discussion results there are still many students who less able to conclude and provide further explanations when filling out the questions given by the teacher, and students have not been able to provide appropriate arguments in conveying the subject matter that they already know both from the results of sharing with group mates and from the text or discourse given by the teacher. This is because the teacher is still not optimal in improving students' thinking skills, besides that the teacher is not optimal in managing the class, and still does not pay attention to time allocation so that learning activities are not in accordance with the lesson plan.

In cycle II the implementation of learning is better than the previous cycle. Teachers are able to make improvements to the learning process. Teachers are able to motivate students well, so that students can focus more on participating in learning. This causes students to be more able to focus and analyze the main text or discourse being discussed by the teacher during learning or in sharing activities with their respective group mates. The teacher is able to manage the class better than before, so students are more disciplined during the learning process, because there are rules given by the teacher. Time management is much more organized and in accordance with the lesson plan. Students can be much more focused and enthusiastic when learning takes place, because the teacher can manage the class and motivate students well. Teachers are able to improve students' critical thinking skills, so that the results of student answers to the questions given by the teacher are much better. Students are better able to focus and analyze the subject matter being discussed well, students are able to convey the contents of the text or discourse that is being discussed together with their group mates. Students are able to provide a simple explanation of the material being studied Students can conclude and provide further explanations from the text or discourse given by the teacher. In addition, students are able to provide explanations about the material being studied in their own sentences to their friends through inter-group discussions during sharing activities.

Through the application of the TPS (Think-Pair-Share) learning model, students' critical thinking skills experience an increase in each cycle. The improvement of students' thinking skills in each cycle is shown in the following diagram.

Figure 2. Student Thinking Skills in cycle I and cycle II



Based on the diagram, it can be seen that the percentage of students' thinking skills in grade V at one of the elementary schools increased from cycle I to cycle II. The results of this increase prove that the TPS (Think-Pair-Share) learning model can improve the critical thinking skills of fifth grade elementary school students. This is consistent with the objectives of the TPS (Think-Pair-Share) model according to (Sari, 2018) is to improve academic mastery, teach social skills and assist students in cultivating critical thinking skills, as well as increase students' understanding in understanding concepts that difficult.

DISCUSSION

The results of this study are supported by the results of research conducted (Nur ‘aini, 2016) which concluded that learning students use the Think-Pair-Share learning model is interesting, fun, motivates them to learn actively and work together, easy to understand, the media used interesting so that it helps understand the material and evaluation questions with a level of critical thinking in accordance with the material being taught. The results of (Arpin, 2014) showed that the application of the think pair share (TPS) cooperative model in class VIId of SMPN 17 Bengkulu City in Science-Biology learning could improve student learning outcomes so that they reached the completion criteria. This is different when the conventional learning process is known to be more dominant in teacher centered, so that students' thinking power does not develop properly. This is in accordance with the opinion of Asna (2016) which states that the results of conventional learning result in students only being limited to remembering the concepts of the subject matter conveyed by the teacher.

Then it is proven by research conducted by Bintang (Wicaksono et al., 2017) which states that the effectiveness of the Think Pair Share (TPS) learning model with the hypothesis used is that H0 = $\mu 2 \leq 75$ (Learning using the Think Pair Share (TPS) learning model is not effective). From the calculations obtained tcount = 1.8465 and ttable value = 1.69552 because t count > t table then H0 is rejected, which means learning mathematics using the Think Pair Share (TPS) learning model is effective for students' critical thinking skills. This success is inseparable from the model applied and the overall average has reached more than 75, namely 78.22. The Think Pair Share (TPS) learning model requires relatively shorter and more effective learning. Even though students are required to study independently first, students can immediately understand the material provided and can immediately exchange ideas (discuss) with their partners. This turned out to be quite effective in understanding students of the material being studied.

From several studies that have been carried out by previous researchers, it further strengthens the research that has been carried out by researchers regarding the application of the TPS learning model which has proven to be effective in improving the critical thinking skills of fifth grade elementary school students.

CONCLUSION

Based on the results of this study it can be concluded that the TPS (Think-Pair-Share) learning model can improve the thinking skills of fifth grade students in one of the elementary schools. This can be seen from the average student score obtained in cycle I of 19 (Enough), and in cycle II it increased to 24.7 (Good). The increase in the average student score was followed by an increase in students' critical thinking skills. This can be seen from the percentage of students' critical thinking skills in cycle I, namely 63.04% (Critical), and in cycle II it increased to 82.17% (Critical Once).

REFERENCES

Agustin, M. (2021). *Keterampilan Berpikir Dalam Konteks Pembelajaran Abad Ke-21.* Bandung: PT Refika Aditama.

Arikunto, S. (2015). *Penelitian Tindakan Kelas.* Jakarta: PT Bumi Aksara.

Arpin. (2014). Penerapan Model Kooperatif Tipe Think Pair Share (TPS) Pada Pembelajaran IPA-Biologi Untuk Meningkatkan Hasil Belajar Siswa Kelas VIID SMPN 17 Kota Bengkulu. Universitas Bengkulu.

Egok, A. (2016). Kemampuan Berpikir Kritis Dan Kemandirian Belajar Dengan Hasil Belajar Matematika . *Jurnal Pendidikan dasar* , 7(2), 186. DOI: https://doi.org/10.21009/10.21009/JPD.081

Fitri, S. (2022). Pengaruh Motivasi belajar terhadap Kemampuan berpikir Kritis Warga Belajar Pendidikan Kesetaraan Paket C Di SKB Kuningan.*Repositori Unsil,* doi: http://dx.doi.org/10.37058/diffraction

Hidayat, R. U. (2019). Kompetensi Kepala Sekolah Abad 21 : Sebuah Tinjauan Teoritis . *Jurnal Kepemimpinan Dan Pengurusan Sekolah* . 4(1), 61-68. DOI: http://dx.doi.org/10.34125/kp.v4i1

Hunafa, S. Y. N. U. (2022). Rancang bangun Media Power Point Interaktif Pada Materi Zat Tunggal Dan Campuran Di Kelas V SD. *Educational Technology Journal* , 8-21. 2(2). DOI: https://doi.org/10.26740/etj.v2n2.p8-21

Kurniasih, I. S. B. (2015). *Ragam Pengembangan Model Pembelajaran.* Jakarta: Kata Pena .

Lestari, K. Y. M. (2017). *Penelitian Pendidikan Matematika.* Bandung : PT Refika Aditama .

Muslich, M. (2009). *Melaksanakan PTK Itu Mudah (Classroom Action Research)* . Jakarta : Bumi Aksara.

Marlina, M. H. H. (2014). Penggunaan model pembelajaran kooperatif tipe think-pair-share (TPS) untuk meningkatkan kemampuan komunikasi dan disposisi matematis siswa di SMA Negeri 1 Bireuen. *Jurnal Didaktik Matematika* .

Masus, S. F. F. (2020). Peningkatan Keterampilan Proses Sains Ipa Dengan Menggunakan Metode Eksperimen Di Sekolah Dasar. *Jurnal Pendidikan Dan Konseling (JPDK)* , 2(1), 46–55. DOI: https://doi.org/10.31004/jpdk.v2i2.1129

Meilana, S. F. (2020). Pengaruh Model Pembelajaran Think Pair Share (TPS) Terhadap Kemampuan berpikir Kritis di Sekolah Dasar . *Jurnal Basicedu*, 5(1), 218-226. DOI: https://doi.org/10.31004/basicedu.v5i1.644

Nuraeni K, A. E. (2021). Perbedaan kemampuan komunikasi matematis dan self confidence siswa antara tps dan stad. *SIGMA*, 1(2), 249-262. DOI: https://doi.org/10.31980/plusminus.v1i2.1260

Nuryani, P. A.Y. (2019). Model Pedagogik Multiliterasi dalam Mengembangkan Keterampilan Berpikir Abad Ke-21. *EduHumaniora*, 11(2), 117-126. doi: http://dx.doi.org/10.17509/eh.v11i2.18821

Sani, R. (2019). *Pembelajaran Berbasis HOTS Edisi Revisi: Higher Order Thinking Skills.* Tangerang: Tira Smart.

Sari, K. (2022). Penerapan Strategi Pembelajaran 4C Creative Thinking, Critical Thinking and Problem Solving, Communication, Collaboration, dalam Pemmbelajaran Bahasa Indonesia Siswa Kelas IV di MIN 01 Kepahiang. *Repository IAIN Bengkulu* .

Sari, N. B. B. (2017). Pengaruh Penerapan Model Pembelajaran Problem Based Learning Dipadu Numbered Heads Together terhadap Keterampilan Metakognitif dan Kemampuan Berpikir Kritis Geografi Siswa SMA. *Jurnal Pendidikan : Teori, Penelitian, Dan Pengembangan* , , 2(3), 440–447 DOI: http://dx.doi.org/10.17977/jptpp.v2i3.8720

Sari, Y. (2018). Perbedaan Hasil Belajar Siswa Menggunakan Model Pembelajaran Think Pair Share (Tps) Dengan Model Pembelajaran Improve Materi Statistik Kelas Vii Smpn 1 Sumbergempol Tulungagung. *UIN Satu Tulungagung Institutional Repository*.

Susanti, M. (2010). Statistik Deskriptif dan Induktif. Yogyakarta : Graha Ilmu.

Syafitri, E. A. (2021). Aksiologo Kemampuan berpikir Kritis (Kajian Tentang Manfaat dari Kemampuan Berpikir Kritis). *Journal Of Science And Social Research*, 4(3), 320-325. doi:https://doi.org/10.54314/jssr.v4i3.682

Undang, G. (2009). *Teknik Pdnelitian Tindakan Kelas* . Sayagatama.

Wicaksono, B. S. (2017). Model Pembelajaran Group Investigation (GI) Terhadap Kemampuan Berpikir Kritis. *Aksioma*, 1. DOI: https://doi.org/10.26877/aks.v8i2.1876

Zulfadewina, S. A. (2020). Development of Adobe Flash CS6 Multimedia-Based Learning Media On Science Subjects Animal Breeding Material . *Jurnal Basicedu*, 4(4), 1308–1314. DOI: https://doi.org/10.31004/basicedu.v4i4.551