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Analysis of the Inquiry-Infusion Learning Model to Develop Students' Critical Thinking Ability

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Keywords

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ABSTRACT

Abad 21 menuntut adanya perubahan proses pembelajaran yang berpusat pada siswa untuk mendukung kompetensi dan keterampilan abad ke-21. Salah satu kompetensi yang harus dikuasai adalah kemampuan berpikir kritis. Selain itu, berdasarkan hasil kajian video praktik pembelajaran yang menerapkan pembelajaran inkuiri masih belum maksimal karena masih ada beberapa kelemahan yang mengakibatkan siswa belum bisa secara mandiri mampu memecahkan masalah dan belum mampu berpikir kritis. Oleh karena itu diperlukan pengembangan model pembelajaran yang berpusat pada siswa dan mampu mengembangkan kemampuan berpikir kritis siswa. Salah satu model pembelajaran yang dapat dikembangkan adalah model pembelajaran inkuiri-infusi. Model ini merupakan bentuk modifikasi dari model pembelajaran inkuiri dengan memodifikasi pada tahap orientasi dan merumuskan masalah. Adanya modifikasi pada kedua langkah tersebut diharapkan siswa dapat secara mandiri belajar berlatih untuk tidak mudah percaya dengan informasi-informasi yang disajikan sebelum mengetahui kebenaran informasi tersebut dan diharapkan siswa terbiasa mencari tahu kebenaran informasi sebelum membuat kesimpulan atas masalah yang dihadapi sehingga dapat memaksimalkan kemampuan berpikir kritis siswa. Penelitian ini merupakan penelitian kepustakaan yang datanya diperoleh dari buku-buku dan artikel ilmiah tentang model pembelajaran inkuiri, penerapan metode infuse, dan berpikir kritis. Analisis data yang digunakan adalah analisis isi. Hasil penelitian ini diperoleh: 1) sintaks model pembelajaran inkuiri-infusi yang memodifikasi model pembelajaran inkuiri pada tahap orientasi dan merumuskan masalah; 2) sistem sosial; 3) prinsip reaksi; 4) sistem pendukung; dan 5) dampak instruksional dan pengiring.

21st century learning, learning models, inquiry-infusion, critical thinking

The 21st century demands a change in student-centered learning processes to support 21st century competencies and skills. One of the competencies that must be mastered is the ability to think critically. In addition, based on the results of the video study of learning practices that apply inquiry learning, it is still not optimal because there are still several weaknesses that result in students not being able to independently solve problems and not being able to think critically. Therefore, it is necessary to develop a student-centered learning model that is able to develop students' critical thinking skills. One of the learning models that can be developed is the inquiry-infusion learning model. This model is a modified form of the inquiry learning model by modifying it at the orientation stage and formulating problems. With the modifications in these two steps, it is hoped that students can independently learn to practice not to easily believe the information presented before knowing the truth of the information and it is hoped that students get used to finding out the truth of information before making conclusions on the problems at hand so as to maximize students' critical thinking skills. This research is a library research whose data is obtained from books and scientific articles about the inquiry learning model, the application of the infusion method, and critical thinking. Analysis of the data used is content analysis. The results of this study were obtained: 1) the syntax of the inquiry-infusion learning model that modifies the inquiry learning model at the orientation stage and formulates the problem; 2) social system; 3) the principle of reaction; 4) support system; and 5) instructional impact and companion effect.

INTRODUCTION

The 21st century is the century of openness, or the century of globalization. Human life in this century has undergone many fundamental changes that are different from the order of life in the previous century. In the 21st century, information technology is developing so rapidly that digitization or automation of everyday and repetitive work areas is starting to be replaced by production machines and computers. At the beginning of the 21st century, technological advances penetrated various aspects of life, including education. Teachers and students must have 21st-century teaching and learning skills. Teachers and students have to face many challenges and opportunities to survive in this knowledge-information age.

In connection with these challenges, teachers and students must have the competencies and skills necessary to survive and compete in this information age. The following are competencies and skills that must be acquired in the 21st century: 1) think critically in solving problems; 2) have a leadership spirit and a spirit of cooperation; 3) be adaptable and very agile; 4) have initiative and entrepreneurship; 5) have effective oral and written communication skills; 6) have access to and analyze all information; and 7) have curiosity (Nahdi, 2019; Wagner, 2008).

Critical thinking is the first competency that must be possessed and mastered, so it must be trained and accustomed to from an early age in education (Rahayu, 2019). This practice and habituation can be started with a learning process that directs students to think critically (Sugiarni & Durri, 2022). Critical thinking is a very important ability for everyone (Angeli & Valanides, 2009; As'ari, Mahmudi, & Nuerlaelah, 2017; Bell & Loon, 2015; Wulan & Ilmiyah, 2022). Furthermore, Ben-Chaim, Ron, and Zoller (2000) said that critical thinking abilities and habits greatly determine one's success in life. Critical thinking also trains us to think rationally. Critical thinkers are used to distinguishing between facts and opinions, so they tend to be able to understand information more selectively and objectively and do not jump to conclusions.

Training and familiarizing oneself with critical thinking competencies and skills can be done by carrying out learning innovations that lead to 21st century competencies and skills. These innovations can take the form of developing learning models that are relevant to learning activities. In addition, teachers must start changing traditional teacher-centered learning patterns into student-centered learning patterns. A cooperative learning model (cooperative learning) is a student-centered learning model. Cooperative learning is a learning model in which members form small, heterogeneous groups to solve problems and challenges as a team or do something to achieve a common goal (Hayati, 2017). One of the cooperative learning models used to achieve 21st-century learning goals is inquiry-based learning. This is a series of learning activities that enable all students to learn by maximizing their ability to seek and investigate systematically, critically,

Facts in the field based on the results of a study of learning practices

conducted by Asyhar and Resita (2022) note that inquiry learning applied to the introduction of comparative marks (<, >, =) in Elementary Schools (SD) is still not optimal according to inquiry learning objectives. There are still some things that haven't gone completely well. First, "the social aspects of class and an open atmosphere that invite discussion. This requires a free atmosphere in the classroom. Students do not feel pressure or obstacles to expressing their opinions. In this learning practice, there is no freedom of opinion yet because the teacher has not given all students the opportunity to express their opinion. During the discussion to determine the conversion of size (weight) on the three questions, the teacher was more directed to the right (student initials: Anz and Gi), while the students to the left of the teacher (student initials: Kr and Ki) only passively watched.

In addition, only Anz and Gi were actively discussing among the students, while Kr and Ki were not involved in the discussion. Second, "hypothesis-oriented inquiry. Students need to understand that, basically, all knowledge is temporary. There is no absolute truth. The truth is always temporary. When we think of knowledge as a hypothesis, learning activities revolve around testing the hypothesis by communicating various relevant pieces of information. Inquiry is open-ended if there are different conclusions from each student in the correct discussion." In practice, this learning has not led to the variety of conclusions submitted by students. This is because the discussion process did not fully run optimally. Only Anz and Gi were active in discussions, both with each other and with the teacher. Discussions only occur when making conclusions, which is always done by Anz by changing the form (sign) of the comparison in the "Captain Crocodile" media. Third, "the use of facts as evidence. In class, the validity and reliability of facts are discussed in general hypothesis testing as needed." In this inquiry-based learning practice, students have used the fact of the size (weight) of an object in the form of questions whose units have been converted (equated beforehand). Then they compared the size (weight) of the two parts by changing the shape (sign) of the comparison in the media.

Based on the results of the study of learning practices, it can be seen that the inquiry learning carried out is still not

optimal. This will have an impact on the competence and skills of students to think critically when solving problems. Therefore, to overcome the problem of not maximizing inquiry learning, it is necessary to modify the learning model so that it can maximize students' competence and critical thinking skills in solving problems. The model that can be developed is the "Inquiry-Infusion Learning Development Model," which is a learning model that modifies inquiry learning at the orientation stage, formulates problems, and proposes hypotheses by infusion. So, this inquiry-infusion learning model combines inquiry learning as usual with an infusion approach. Ennis (1989) says that learning with an infusion approach is a learning approach that seeks to utilize the content of certain subjects. When students study certain subjects, such as mathematics, they are encouraged to think critically. Mathematical content is like a medium for learning to think critically. Furthermore, Davies (2006) also mentions that the combination-infusion approach is important for learning and practicing critical thinking. logically and analytically.

Some research results show that students' critical thinking abilities and dispositions are better when they receive learning programs with an infusion approach. The results of Aizikovitsh and Amit's (2010) research showed that the ability and disposition to think critically in the experimental group (students who took part in a teaching program using an infusion approach) had increased. Furthermore, Bensley and Spero (2014) tested the effectiveness of direct infusion, an instructional approach to acquiring argument analysis, critical reading, and metacognitive monitoring skills, on three groups of students who received different instructions from the same course material. As a result, it can be seen that the group that received a direct critical thinking (CT) infusion experienced an increase in CT skills. Darby and Rashid (2017) also conducted a quasi-experiment on the infusion approach for engineering students. The conventional approach is used when teaching Drawing Techniques to the control group and the infusion approach to the experimental group. The results of the pre-test showed that there was no significant difference in critical thinking dispositions between the control group and the experimental group. However, the post-test results showed that the experimental group had significantly higher critical thinking dispositions than the control group.

There are several demands for changes in student-centered learning processes to support 21st century competencies and skills. One of them is the ability to think critically. In addition, from the results of the study of learning practice videos that apply inquiry learning, it is still not optimal because there are still several weaknesses that result in students not being able to independently solve problems and not being able to think critically. Therefore, it is necessary to study the development of learning models. The learning model that will be studied is the inquiry-infusion learning model, which aims to create student-centered learning and develop students' critical thinking skills. This learning model combines inquiry learning and infusion approaches that have been proven effective and can improve critical thinking skills and dispositions.

METHOD

This is library research that uses various sources from books, scientific articles, and other literature. The data collection method involves looking for books and scientific articles about inquiry learning models, applying the infusion method, and critical thinking. The resulting data is presented without an empirical test. Then selected, presented, analyzed, and summarized systematically.

The data analysis used in this research is content analysis. This content analysis technique is a technique for scientific analysis of the contents of a data message.

RESULTS AND DISCUSSION

Inquiry learning is a set of skills that maximizes the ability of all students to explore and investigate systematically, critically, logically, and analytically so that they can confidently form their insights. This learning model was developed by a character named Suchman in 1962 (in Suyadi, 2018), who believed that children were curious individuals. This learning model theory is based on the following: 1) humans have a natural tendency to always want to know about what attracts their attention; 2) humans become aware of their curiosity about everything and learn to analyze their thinking strategies; 3) we can teach new strategies directly and complement or combine old strategies that students already have; and 4) cooperative inquiry can enrich thinking skills and help students learn to continuously study science carefully and

understand alternative explanations and solutions.

Sanjaya (2006) states that "inquiry-based learning is a series of learning activities that emphasize critical and analytical thinking processes to seek and find answers to problems." This model is based on the assumption that people are born with a drive to discover their knowledge. His curiosity about the state of nature around him is natural because he was born into the world through sight, hearing, and other senses. Human curiosity continues to develop in adulthood by using the brain and mind. The knowledge he has is useful if it is based on his curiosity.

The main goal of inquiry-based learning is to help students develop intellectual discipline and thinking skills by asking questions and receiving answers based on curiosity. In addition, inquiry can develop the values and attitudes students need to think scientifically. For example, a) the skills of observing, collecting, and organizing data, such as formulating and testing hypotheses, as well as explaining phenomena; b) independent study; c) the ability to express oneself verbally; d) logical thinking ability; and e) awareness that science is dynamic and careful.

Trianto (2007) mentions several things that must be considered so that the implementation of the inquiry runs optimally. "First, the social aspect of class and an open atmosphere that invites discussion This requires a free atmosphere in the classroom. Students do not feel pressure or obstacles to express their opinions. Second, hypothesis-oriented inquiry Students need to understand that, basically, all knowledge is temporary. There is no absolute truth; truth is always temporary. When we think of knowledge as a hypothesis, learning activities revolve around testing the hypothesis by communicating various relevant pieces of information. Inquiry is open-ended if there are different conclusions from each student in the correct discussion; and third, the use of facts as evidence In class, the validity and reliability of facts are discussed in general hypothesis testing as needed."

Meanwhile, infusion learning is a learning approach that seeks to utilize the content of certain subjects (Ennis, 1989). When students study certain subjects, such as mathematics, they are encouraged to think critically. Mathematical content is described as a medium for learning critical thinking. This inquiry-infusion-based learning model incorporates conventional

inquiry-based learning and includes an infusion approach.

Inquiry-based learning has three characteristics: 1) Emphasizes students' exploratory activities to the fullest. This means that this type of learning positions students as learning subjects. Students are not only recipients of lessons through oral explanations from teachers but also play a role in discovering the nature of the subject matter. 2) All activities carried out by students aim to find their own responses from those questioned, which are designed to foster self-confidence. Learning activities are usually carried out through a question-and-answer process between the teacher and students. Therefore, the teacher's ability to use questioning techniques is an important prerequisite for carrying out this learning model; and 3) The purpose of using inquiry strategies in learning is to develop the ability to think systematically, logically, and critically, or to develop intellectual skills as part of a mental process. Therefore, in inquiry, students need to learn not only the material but also how to use their potential.

Principles of Inquiry-Based Learning

There are several principles of inquiry-based learning that teachers must pay attention to (Hamruni, 2009), as follows:

Intellectual development-oriented The main purpose of inquiry-based learning is to develop thinking skills because it is based on cognitive theory, which emphasizes the importance of one's internal processes. Inquiry-based learning is directed not only at learning outcomes but also at the learning process, so the success criteria for inquiry-based learning are not determined by subject mastery but by the extent to which students are actively seeking and finding something. This study evaluates the process of discovering new things by oneself and the ongoing process of appropriate and harmonious adaptation between new things and existing cognitive structures.

1. Interaction Principle

Basically, the learning process involves student-teacher interaction, student-student interaction, and student-environment interaction. Learning as an interaction process means seeing the teacher as the coordinator of the interaction itself, not as a source of learning. Learning activities using the inquiry approach are determined by student interaction. The entire learning process helps students become

independent, confident, and confident in their intellectual abilities to participate actively. Teachers are facilitators and need to teach students to develop their thinking skills through interaction. Teachers also need to focus on their learning goals. It is about developing higher-level thinking and critical thinking skills for students.

2. The Questioning Principle

The questions posed by the teacher to students are meant to lead to answers and lead students to hypothesis testing and meaningful exploration. Teachers can ask questions and encourage students to ask their own questions. These are free-answer questions, giving students the opportunity to direct their questions and find possible answers on their own, leading to further questions. The teacher must play the role of a good questioner to direct students to possible answers. The ability of students to answer each of these questions is part of the thinking process.

3. Principles of Learning to Think

Learning is not only remembering a series of facts but also the process of thinking, namely the process of developing the potential of the entire brain. Learning to think is the maximum utilization of the brain.

4. Openness Principle

Inquiry takes the initiative to develop problem-solving, decision-making, and research skills that provide students with real experiences and active learning, encourage them, and enable them to become lifelong learners. Students are given space and opportunities to ask logical, objective, and meaningful questions and express opinions, as well as present hypotheses. The teacher's task is to create space for students to formulate hypotheses and openly prove the truth of the hypotheses.

Syntax of the Inquiry-Infusion

1. Learning Model

Following are the stages of implementing the inquiry-infusion learning model modified from Sanjaya's (2007) inquiry learning steps.

2. Orientation

In this step, the teacher prepares the learning process by stimulating and inviting students to think about solving problems. The orientation step is a very important step because the success of inquiry-based learning depends heavily on students' motivation to engage in activities that utilize problem-solving skills.

There are several things that can be done by the teacher at the orientation

stage, including: (a) The teacher can provide an explanation of the topics to be studied, learning objectives, and expected learning outcomes; (b) The teacher can provide an explanation of the main activities that must be carried out by students to achieve goals. At this stage, the steps of inquiry-infusion are explained, along with the purpose of each step, starting from the step of formulating the problem to formulating a conclusion. At this stage, the teacher gives an explanation regarding all the possibilities that can be obtained from the given problem. Students are asked to critically and carefully think about all the information provided. Both the information is given clearly and is not ambiguous. At this stage, students are also asked not to be hasty in making decisions (making conclusions); and (c) Teachers can provide explanations about the importance of topics and learning activities with the aim that students can be motivated in learning.

3. Formulate Problems

At this step, the teacher introduces students to a problem that contains a puzzle. The problems presented are problems that challenge students to think about solving the puzzle. The puzzle can be a problem presented in the form of an open question that has many ways and many answers. This problem can be caused by asking questions that do not definitely state the universe of the conversation or do not clearly state the variable being discussed. It is intended that students can think critically.

In general, if the universe of discussion on the matter is not mentioned, it is usually just assumed. For example, when they are about to sketch a graph of an equation, students will automatically assume that the universe of discussion is a set of real numbers, even though they are not mentioned in the problem. If students are critical, they will not simply believe in the information provided. Students will ask questions and seek the truth of the information before drawing conclusions.

Therefore, in order to foster critical thinking, students must be trained not to adhere too much to the assumptions that generally occur. Students should instead be invited to be open-minded and see things from various points of view. One of the problems that can be used is the problem with no specified universal set (PWNSUS), which is an algebraic problem (a problem involving variables), but the universe of discussion of the variables is

still general (not specific). PWNSUS is one of several questions that can detect students' understanding of knowledge transfer. Answering questions requires analysis, integration, or evaluation using existing knowledge (Dös et al., 2016). The process of thinking through puzzles and finding answers is central to the inquiry-infusion strategy. Therefore, through this process, students can gain valuable experience for mental growth through thought processes.

Figure 1 below is an example of a problem or numeracy problem associated with the PWNSUS problem model that can be given as an exercise for critical thinking.

Sejak adanya pandemi covid-19, Pak Sulton mulai membudidaya ikan koi di belakang rumahnya. Permukaan *(bagian atas)* kolam ikan koi Pak Sulton berbentuk persegi panjang yang memiliki lebar 5 meter dan panjangnya dua kali lebar kolam serta kedalamannya 1 meter.

Mendengar kabar tersebut, Pak Lukman, tetangganya, tertarik membudidaya ikan koi juga untuk mengisi waktu luang dan memanfaatkan lahan yang dimilikinya. Akhirnya, Pak Lukman konsultasi ke Pak Sulton tentang cara membudidaya ikan koi dan ukuran kolam yang cocok karena lahan yang dimiliki tidak sama dengan lahannya Pak Sulton.

Dengan lahan yang dimiliki, Pak Lukman ingin permukaan *(bagian atas)* kolamnya memiliki keliling lebih kecil dari keliling kolamnya Pak Sulton tapi luasnya lebih besar. Kemudian Pak Sulton terkejut dan mengatakan "itu jelas tidak mungkin, Pak."

Apakah Anda setuju dengan pendapat Pak Sulton? Berikan penjelasan!

Figure 1. Problems for Critical Thinking Exercises

At the problem formulation stage, (a) students should independently formulate the problem. This can be done with the aim that students have high learning motivation; (b) they should examine problems that contain puzzles with definite or uncertain answers (open answers or many answers); and (c) the problem under study should be a problem related to previous conceptual understanding that students already have.

4. Proposing a Hypothesis

The stage of proposing a hypothesis is the process of each individual student making an estimate or guess (hypothesis) of the problem at hand. So that students in groups and as individuals have the ability to make hypotheses, the teacher can help by providing a number of questions that can encourage students to make estimates of temporary answers to the problems being

studied. For example, asking the universe about the size of the pool, asking about the shape of the pool that might be built, asking about the land that is owned, and so on

Collecting data

At the data collection stage, the teacher acts as a questioner. The teacher must be able to provide questions that can encourage and motivate students to find and gather the required information. Then, with a few questions from the teacher, students are expected to be able to use their thinking potential to collect as much important data as possible to answer the problem being studied.

Testing Hypotheses

The hypothesis testing stage tests the correctness of answers based on supporting data found at the data collection stage. The truth of this answer is not only based on argumentation but must also have supporting data. Hypothesis testing must determine a logical answer based on existing data or information. This hypothesis-testing stage is expected to develop students' rational thinking skills.

Formulating Conclusions

The stage of formulating the problem is the final stage. Based on the hypothesis testing stage, students are required to be able to provide explanations or describe the results found. So that the conclusions obtained can be focused and accurate on the problem under study, the teacher should be able to direct students to relevant data or information.

The steps for learning activities using the inquiry-infusion learning model are shown in Table 1.

Table 1. Activity Steps in the Inquiry-Infusion Learning Model

Teacher Activity	***Student Activity***
Orientation	
1. The teacher provides an interesting stimulus for students. For example, through stories and cases that arouse students' curiosity, 2. The teacher provides direct guidance so that students can practice with their own minds and focus their minds on the problem to be solved. 3. The teacher gives an explanation regarding all the possibilities that can be obtained from the problem given.	1. Students receive and pay attention to stories or cases conveyed by the teacher. 2. Students pay attention to the teacher's explanation to understand certain information before making decisions.

Teacher Activity	***Student Activity***
Then students are asked to critically and carefully think about all the information provided. Both the information is given clearly and is not ambiguous. Here, students are also asked not to be hasty in making decisions (drawing conclusions).	
Formulate Problems	
1. The teacher presents the problem in the form of worksheets. The problems presented are problems that contain puzzles and challenge students to think about solving them. The puzzle can be a problem presented in the form of an open question that has many ways and many answers. This problem can be solved by asking questions that do not definitely mention the universe of the conversation. Or do not clearly mention the variable being discussed. It is intended that students can think critically. In general, if the universe of discussion on the matter is not mentioned, it is usually just assumed. For example, when they are about to sketch a graph of an equation, students will automatically assume that the universe of discussion is a set of real numbers, even though they are not mentioned in the problem. However, critical students will not simply believe the information provided. He will ask questions and seek the truth of the information before drawing a conclusion. One of the problems that can be used is the problem with no specified universal set (PWNSUS), which is an algebraic problem or problem (a problem involving variables), but the universe of discussion of the variables is still general (not specific). 2. The teacher asks questions of students as an angler in order to formulate the expected problem. When the teacher's encouragement and suggestions work well, they generate questions and	1. Students receive LKS and discuss in groups how to solve the given problem. 2. Students identify all the information presented in the LKS. 3. Students criticize all the information presented and ask for information that is unclear (ambiguous) or ask for several possible ways and answers to the problems given.

Teacher Activity	***Student Activity***
problems in students' minds, which form the basis of problem formulation. 3. The teacher provides guidance in formulating problems so that they are accustomed to and trained to solve problems critically.	
Proposing a Hypothesis	
1. The teacher guides students in submitting hypotheses by providing probing questions that direct students to answer the problem formulation. For example, asking the universe of conversation about problems, geometric shapes, the availability of land, etc. 2. The teacher guides students in determining the formulation of the hypothesis (temporary answer).	1. Students try to propose hypotheses about the problems they face with the guidance of the teacher. 2. Students determine the hypothesis.
Collecting data	
1. The teacher asks provocative questions that can encourage students to think about finding the information they need. 2. The teacher only acts as a facilitator. Here, the teacher provides all the things needed by students and their groups to collect data or information to solve problems.	1. Students answer the teacher's questions as a basis for collecting data. 2. Students, independently or in groups, try to collect as much data as possible to be used as a basis for testing the truth of the hypothesis proposed.
test the hypothesis	
1. The teacher invites students to process data and information obtained after studying various learning sources (information sources) and existing data sources. 2. The teacher asks students to organize data into tables, lists, or summaries to help confirm the truth of the hypotheses previously proposed. 3. The teacher asks students to test the correctness of the hypothesis proposed on the principle that the correctness of the answers given must not only be based on arguments but also supported and proven by the data found.	1. Students begin to process data and information by organizing it into tables, lists, or summaries. 2. Students test the truth of the hypothesis based on data and information found previously.

Teacher Activity	*Student Activity*
Formulating Conclusions	
1. The teacher guides students to draw conclusions about the results of the hypothesis testing that has been done. 2. The teacher shows students which data are relevant as a basis for making conclusions. 3. The teacher provides reinforcement or justification if various conclusions arise.	1. Students, with teacher guidance, draw conclusions. 2. Students pay attention to the teacher's explanation if there are various answers (different conclusions).

Social System

Joyce, Weil, and Calhoun (2009) stated that social systems describe the roles of teachers and students, the interaction patterns used, and the expected targets. Winata and Hasanah (2021) say that social interaction that occurs in learning can improve student character. The duties and roles of the teacher in inquiry-infusion learning are as follows: 1) The teacher must be able to provide stimulation so that students can play an active role and have a passion for thinking in the learning process; 2) The teacher must be able to be a guide for students who experience problems in their thinking processes; 3) The teacher must be able to ask several reinforcing questions to convince students' opinions or arguments; 4) Teachers must be able to become administrators who are responsible for all learning process activities; 5) Teachers must be able to become leaders so that students' thinking activities lead to the expected goals; 6) Teachers must be able to manage learning resources, time, and class organization; and 7) Teachers can give awards for student achievement with the aim of increasing student enthusiasm in the inquiry process.

Reaction Principle

Joyce, Weil, and Calhoun (2009) stated that the principle of reaction is a teacher's reference in responding to student work. This principle of reaction refers to the way the teacher deals with students, for example, when the teacher asks questions of students, responds to student questions, or deals with classroom situations. Norhasanah and Zaini (2018) showed in their research that there were two response models given by the teacher to student questions: verbal and non-verbal responses. The verbal response given by the teacher by giving responses orally and in writing Non-verbal responses are given by hand gestures, facial

expressions,

eye movements, or voice intonation.

The reaction principles in the Inquiry-Infusion Learning Model are as follows: 1) The teacher provides problems or questions that are close to students' daily lives (numeracy questions); 2) The teacher gives questions to students in simple language that is easy for students to understand with the aim of directing students to the truth of the information presented in the questions; 3) The teacher provides opportunities for students to solve the numeration problem by using their respective strategies; 4) The teacher motivates students to be active in the discussion process; and 5) The teacher must show a way out if there are obstacles in the thinking process (not showing answers but providing scaffolding to direct the intended answer).

Support System

Joyce, Weil, and Calhoun (2009) stated that support systems include components that are complex but related to one another. As for the support system in the Development of the Inquiry-Infusion Learning model, it includes teaching materials, lesson plans, worksheets that contain PWNSUS problems or questions, assessment rubrics (possible LKS answers), and assessment tools.

Instructional and Accompaniment Impact

Joyce, Weil, and Calhoun (2009) state that instructional impact is an impact that is deliberately designed as a result of implementing a model, while accompanying impact is the impact that students get due to the learning environment created by the model. In the Development of the inquiry-Infusion Learning Model, the instructional impact is the ability to think critically, problem solving, and investigative strategies that are developed creatively. Meanwhile, the accompanying impact is enabling two-way cooperation (teacher-students and students) and instilling an open attitude towards all opinions. Sutarto, Jaedun, and Raharjo (2017) said that the accompaniment effect arises from learning that occurs indirectly.

CONCLUSION

The development of the Inquiry-Infusion Learning Model is a modified form of the Inquiry Learning Model by modifying the orientation stage and formulating the problem. This modification is expected so that students can

independently learn to practice not easily believing in the information presented before knowing the truth of the information, and it is hoped that students will get used to finding out the truth of the information before making conclusions on the problems they face. Habits embedded in these students are expected to maximize their critical thinking skills.

Based on the results of this study, it is hoped that field research will be carried out regarding the application of inquiry-infusion learning to find out the increase in students' critical thinking. Follow-up research can be followed up with the application of inquiry-infusion learning combined with the provision of numeracy literacy questions at the stage of presenting the problem.

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