



DESCRIPTION OF STUDENT'S REFRACTIVE THINKING IN VIEW OF PERSONALITY TYPES

Chumaedi Sugihandardji*¹, Nurul Istiqomah², Ari Wardayani³, Erni Widiyastuti⁴, Gunawan⁵, Jaka Wijaya Kusuma⁶

^{1,2,4,5}Universitas Muhammadiyah Purwokerto, Indonesia

³Universitas Jenderal Soedirman, Indonesia

⁵Universitas Bina Bangsa, Indonesia

*Email: chumaedi@gmail.com

ABSTRACT

This study aims to describe the refractive thinking of class VIII B students of SMP Negeri 1 Sumbang. They are distributed in terms of thinking and feeling personality types. This type of research is qualitative research. The sample of this study was six students from class VIII B who were selected using a purposive sampling method. Data collection techniques are questionnaires, refractive thinking tests, interviews, and documentation. Data analysis techniques are divided into three stages: data reduction, data presentation, and conclusion. The results of this study indicate that students with the thinking personality type can gather information on the problem, link information in the issue with prior knowledge, propose solutions or alternative solutions to problems, eliminate solutions or alternative solutions to issues, carry out appropriate solving strategies and re-examine the solutions that have been obtained. Feeling personality type, students can gather information on the problem, relate the information in the issue with previous knowledge, and propose solutions or alternative solutions to problems.

Keywords: *refractive thinking, personality type*

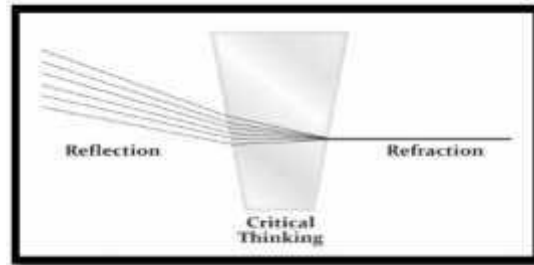
INTRODUCTION

Thinking is processing data or information to solve problems (Sumarno, 2017). A problem may not be able to determine the solution directly, but individuals try to find a solution (Prihati & Wijayanti, 2017). Students tend to deal with mathematical problems, namely difficulties in solving problems if the problems given by the teacher are different from the examples given (Prayitno, 2015). Students tend to experience difficulties in solving problems, especially in mathematics. Difficulties are especially experienced when the problem differs from the teacher's example. *Refractive thinking* is a process that will help students develop their thinking skills by understanding and identifying problems (Oktavia, 2018).

Refractive thinking will help students understand and identify problems in a lesson, develop critical thinking skills, and answer problems with solutions/alternatives from different perspectives (Pagano & Roselle, 2009). Refractive thinking aims to give students meaningful and directed learning outcomes (Prayitno, 2015). There are three components of reflective thinking, according to Sumarno *et al.* (2017), namely 1) Reflective Thinking is a process in which a person experiences confusion or doubt in the process of identifying information until finding a solution

to a problem, 2) Critical thinking is a process of generating solutions or alternative solutions and evaluating them as consideration so that the right decision or solution is produced, and 3) Product (conclusion) is the result of a reflective and critical thinking process that has occurred in the problem-solving process.

According to Pagano and Roselle (2009), the refractive process is illustrated as shown in Picture 1 below:



Picture 1. Refractive Process

Every individual has a thought process that is different from one another. This different ability to think gives rise to various types of personalities (Wafida, 2018). Personality or personality are specific thoughts, emotions, or behaviours that characterize a person in dealing with their world (Santrock, 2010). The Myers-Briggs Type Indicator is based on four main opposite dimensions (dichotomous), which are in (the Myers-Briggs personality test manual) as follows: extrovert vs introvert (how individuals see energy orientation), sensing vs intuition (how individuals collect information), thinking vs feeling (how individuals make decisions) and judging vs perceiving (how individuals see a person's degree of flexibility). The personality type used in this study is the thinking and feeling personality type (a dimension that looks at how individuals make decisions) included in the Myers-Briggs Type Indicator. Thinking and feeling personality types are personality types that reflect unique ways of making a decision based on logic and rational (thinking) or which contain emotional reactions (feeling) (Ariyanto *et al.*, 2017). Dimensions tend to make decisions based on thinking or feeling (Lutfiananda, 2014).

The description of students' refractive thinking abilities and personality types varies; some students can find solutions to problems that are different from examples/more complex, and students have difficulty finding solutions if given questions that are different from examples/more complex. Each student has different refractive thinking abilities. The tendency to make decisions for each student is different. Therefore, researchers are interested in researching refractive thinking skills in terms of thinking and feeling personality types with students at SMP Negeri 1 Sumbang as subjects.

RESEARCH METHODS

This research is descriptive research with a qualitative approach. The study was conducted in junior high school 1 Sumbang class VIII B. Research subjects were selected using a purposive sampling method, namely selecting samples using various considerations and specific goals. In this study, 6 out of 34 students were chosen as samples; three had thinking personalities, and three had feeling characters. Subjects will be contacted via WhatsApp messenger who has a thinking and feeling personality type that is provided via Google form. The research was carried out in three stages: the preparatory stage, which included determining schools, observing, and preparing proposals and instruments. The research instruments included a thinking-feeling personality type questionnaire, refractive thinking test questions, and interview guidelines. The

implementation stage was carried out by distributing questionnaires on thinking and feeling personality types, categorizing students based on thinking and feeling personality types and conducting reflective thinking tests and interviews. The data analysis phase was done by analyzing test results and interview data and compiling a research report. Data was collected using several techniques: questionnaires, refractive thinking tests, interviews, and documentation. The data analysis technique used is data reduction, data presentation, and conclusion. After the data was analyzed, validity was tested. Test the validity of the data carried out by testing the credibility. The credibility test was carried out using technical triangulation. Technical triangulation is a test of data credibility with various data collection techniques at the same source.

RESULTS AND DISCUSSION

The following presents a discussion of the description of students' refractive thinking processes based on indicators of refractive thinking

1. *Indicators Gather information from questions*

Based on the results of the data obtained by the description of refractive thinking, Respondents' Thinking (RT) and Respondents' Feeling (RF) on indicators collected information from the following questions.

- a. The description of the RT's refractive thinking process on the refractive thinking test questions fulfils the indicator of gathering information from the questions, which means that the RT collects data from the questions by writing down what they know and what they ask. The RT reads the questions carefully, clearly identifies the information on the questions/problems, and mentions the information obtained from the questions with examples.
- b. The description of RF's refractive thinking process on the refractive thinking test questions fulfils the indicator of gathering information from the questions, which means that RF collects data from the questions by writing down known and asked. RF read the questions in total, identified the information contained in the questions, and mentioned the information obtained from the questions.

2. *Indicators link the information in the problem with previous knowledge*

Based on the results of the data obtained by the description of students' refractive thinking in solving the problem of the refractive thinking test, both Thinking (RT) and Feeling (RF) Respondents on the indicator link information in problems with prior knowledge as follows;

- a. The description of RT's refractive thinking on the students' refractive thinking test questions was able to link the information in the problem with previous knowledge through a solution flow that contained formulas and methods and was explained during the interview.
- b. Description of RF refractive thinking: In the refractive thinking test questions, students can link information in problems with prior knowledge. Students write formulas and methods in the complete flow and can explain them.

3. *Indicators propose solutions or alternative solutions to problems*

Based on the results of the data obtained by the description of students' refractive thinking in solving the problem of the refractive thinking test, both Respondent's Thinking (RT) and Respondents' Feeling (RF) on the indicators proposed solutions or alternative solutions to issues as follows;

- a. Description of RT's refractive thinking on refractive thinking test questions, students can eliminate solutions by choosing the methods and formulas used to solve problems
- b. Description of RF refractive thinking: In the refractive thinking test questions, students can propose solutions to solving problems in the form of formulas and methods.

To be able to find solutions requires high-level thinking. In this thought, refractive thinking is needed. Chistinove *et al.* (2022) explained that high-level thinking requires refractive thinking in finding solutions or ideas for solutions.

4. Indicators eliminate solutions or alternative solutions to problems

Based on the results of the data obtained by the description of students' refractive thinking in solving the issue of the refractive thinking test, both Respondent's Thinking (RT) and Respondents' Feeling (RF) on indicators eliminate solutions or alternative solutions to problems as follows;

- a. Description of RT's refractive thinking on the questions of the refractive thinking test, students can propose solutions and other alternative solutions to problems in the form of formulas and methods
- b. Description of RF refractive thinking on refractive thinking test questions, students have not been able to eliminate methods and formulas because they only carry out the calculation process according to the completion flow

5. The indicator implements the settlement strategy appropriately

Based on the results of the data obtained by the description of students' refractive thinking in solving the problem of the refractive thinking test, both Respondent Thinking (RT) and Respondent Feeling (RF) on the indicator carried out the appropriate solving strategy as follows;

- a. Description of RT's refractive thinking on refractive thinking test questions, students can solve problems with the chosen strategy and produce the right solution
- b. Description of RF refractive thinking In the questions of the refractive thinking test, students have not been able to carry out the strategies correctly because there are inaccurate calculations, so the resulting solutions are also in line with the process.

This result aligns with Yenti *et al.* (2022) explain the importance of refractive thinking in making decisions. In this case, the researcher developed a refractive thinking instrument that fulfils valid and reliable aspects.

6. The indicator re-checks the solution that has been obtained

Based on the results of the data obtained by the description of students' refractive thinking in solving the problem of the refractive thinking test, both Respondent Thinking (RT) and Respondent Feeling (RF) on indicators re-examine the solutions that have been obtained as follows;

- a. Description of RT's refractive thinking on refractive thinking test questions. Students re-examine their calculation process before concluding a solution to the problem and producing the correct answer.
- b. Description of RF refractive thinking in the questions of the refractive thinking test, Students re-examine solutions even though the solutions examined are inaccurate, and there are examinations whose results are false. However, we still need to conclude the results obtained.

CONCLUSION

Based on the results of research regarding the description of refractive thinking in terms of the personality types of class students VIII SMP Negeri 1 Sumbang on the material of flat-sided space can be drawn the following conclusions:

1. Thinking personality type students can collect information on problems, link information in problems with previous knowledge, propose solutions or alternative solutions to problems, eliminate solutions or alternative solutions to issues, carry out appropriate solving strategies, and re-check the solutions obtained. Students also tend to answer systematically, sequentially,

and the results of their thinking. Students also have relatively high accuracy and can solve with the right solution. Students solve problems by prioritizing something clear and coherent, logical, and facts, strong in planning, organized in analyzing things critically and prioritizing truth.

2. Students with the feeling personality type can gather information on the problem, link information in the issue with previous knowledge, and propose solutions or alternative solutions to problems. Meanwhile, to eliminate solutions or alternative solutions to problems, implementing appropriate settlement strategies and re-examining the solutions that have been obtained have yet to be carried out. Students also tend to answer with inaccurate steps, have yet to be able to correctly determine the solution's completion, and solve it randomly. Students are less precise because they need to be more accurate in calculations, giving units of area and volume in questions and converting time. Students solve problems with feelings, need to be more organized and believe in something based on personal beliefs.

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