



Analysis of Critical Thinking Ability in Solving Story Problems Main Material of Fractional Numbers in View of Student Personality Type

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Abstract: This research aims to determine the level and describe critical thinking abilities in solving story problems on fractional numbers in terms of the personality types of class VII students at SMPN 17 Mataram. This type of research is using mix *method*. The instrument used is a personality type test, namely a standardized personality test *Myers Briggs Type Indicator* (MBTI), critical thinking ability tests, and interview guidelines. The sample for this research was class VII-A students, totaling 32 students. From this class, 8 subjects were taken, namely high, medium and low categories for each personality type extrovert, *introvert*, and *ambivert* to conduct in-depth interviews. The results of the research show that the percentage of students' critical thinking abilities has personality extrovert is 27.31%, namely in the low category. Percentage of students' critical thinking abilities with personality introvert is 57.54%, namely in the medium category. Percentage of students' critical thinking abilities with personality ambivert is 50.23%, namely in the medium category. The research results also show that students have personality extrovert with critical thinking skills in the medium category can go through the clarification and assessment stages while students with personality extrovert Low categories tend to only go through the clarification stage. Personality students introvert with high category critical thinking skills tend to go through the stages of clarification, assessment, strategy and conclusion. Then students have personality introvert Medium categories tend to go through the clarification and strategy stages. Meanwhile, students have personality introvert those in the low category tend to only go through the clarification stage. Personality students ambivert with high category critical thinking skills tend to go through the stages of clarification, assessment, strategy and conclusion. Then students have personality ambivert Medium categories tend to go through the clarification and strategy stages. Meanwhile, students have personality ambivert Low categories tend to only go through the clarification stage.

Keywords: Critical Thinking Ability, Story Problems, Personality Type (*Extrovert, Introvert, Ambivert*)

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INTRODUCTION

Mathematics is a very important subject to study. According to Faizi (2013: 71) mathematics teaches logical thinking based on reason and reasoning. Thus, through learning mathematics, students can improve their thinking habits at a higher level, namely critical thinking. According to Dewanti (2015: 172) critical thinking is thinking that examines, connects, and evaluates all aspects of a situation or problem. These include collecting, organizing, remembering, analyzing information, and drawing conclusions.

Based on the results of an interview with one of the mathematics teachers at SMPN 17 Mataram, information was obtained that students' critical thinking abilities at SMPN 17 Mataram were still relatively low. Students' low critical thinking skills can be seen when students work on story problems related to fractional number material. Students tend to be able to write or convey what is known and asked in the problem, but cannot write down strategies or conclusions when solving the problem. This is also in line with research by *Trends in International Mathematic and Science Study* (TIMSS) which revealed that students' critical thinking skills in Indonesia are still low. The results of this study show that students in Indonesia are consistently ranked at the bottom (Hadi & Novaliyosi, 2019: 562-563).

The low critical thinking skills of students will influence student learning outcomes to decrease and vice versa (Husnuddu'a et al., 2022: 989). One of the mathematics learning materials that has the potential to be a means of developing critical thinking skills is fractions. According to Crismasanti and Yuniarta (2017: 76) the aim of learning the subject of fractional numbers is that students can solve problems related to number counting operations and apply them in problem solving. Fraction number material is usually presented in the form of story problems. According to Ningsih, et al (2022: 710) in solving story problems, students do not only pay attention to the final answer to the calculation but also must be able to understand the required solution process. Students are expected to solve story problems through a step-by-step process so that their line of thinking can be seen and choose operations. calculate correctly to solve the story problem.

According to Hassoubah (Hasruddin, 2009: 50-51) a person's personality and cultural background can influence that person's efforts to think critically about a problem in life. According to Hasanah, et al (2013: 424) in the classroom there will be three personalities that stand out and are easily observed in students, namely students who have the same personality. *extrovert, introvert, and ambivert*. One person extrovert usually have a tendency to think objectively, namely a way of thinking that considers something that is real, physical, and exists regardless of personal perception. Introvert usually have a tendency to think subjectively, namely a way of thinking that is based on personal views or feelings about something. Whereas Ambivert is a combination of extrovert and introvert.

METHOD

The type of research used in this research is *mix method*. According to Gay (2012: 481) *mix method* is research that combines a quantitative approach and a qualitative approach. The time for conducting the research was 17 May 2023 to 17 June 2023. The data collection method used in this research was 1) Personality Type Questionnaire; 2) Written Test; 3) Interview. The research instrument used in this research is a standardized personality type questionnaire instrument *Myers Briggs Type Indicator* (MBTI) developed by Silaban (2020), a critical thinking ability test consisting of 3 story questions and an interview guide which aims to strengthen the answers of the students studied.

To determine whether an instrument is suitable for use, the instrument must be tested for content validity first. where this validity is carried out by consulting the instrument with several parties who are considered experts in that field. According to Sugiyono (2012: 177), the validity of experts will provide a decision in the form of an instrument that can be used without improvements, with improvements, or cannot be used at all. To combine the validity results from the validators, the Aiken's V formula is used.

The data analysis method used in this research uses two methods, namely the quantitative data analysis method and the qualitative data analysis method. Quantitative data analysis is used in data collection related to critical thinking ability tests. Meanwhile, qualitative data analysis is used to collect data related to personality type questionnaires and interviews. The criteria for grouping students based on personality type can be seen in Table 1 below.

Table 1. Personality Type Categorization Scoring

Category	Option the chosen	Percentage
<i>Extrovert</i>	a	> 55%
<i>Introvert</i>	b	> 55%
<i>Ambivert</i>	a/b	$45\% \leq \dots \leq 55\%$

The interpretation of critical thinking skills used in this research is based on scoring guidelines according to Ekawati & Sumaryanta (2011: 37) in Table 2 below.

Table 2. Interpretation of Critical Thinking Abilities

Interval Value	Criteria
$X \geq M_i + Sb_i$	Height
$M_i - Sb_i \leq X < M_i + Sb_i$	Currently
$X < M_i - Sb_i$	Low

Information:

- X : Shoes the respondent
 M_i : Mean ideal
 Sb_i : Ideal standard deviation
 M_i : $\frac{1}{2}$ (highest score + lowest score)
 Sb_i : $\frac{1}{6}$ (highest score – lowest score)

After calculating the critical thinking ability score of each student, it will be continued by calculating the percentage of the student's critical thinking ability level for each personality type, namely the percentage of the critical thinking ability level of students with this personality *extrovert*, percentage of students' critical thinking ability level with personality *introvert* and the percentage of critical thinking ability levels of students with personality *ambivert*.

In the interview process, interviews were conducted with 8 students, namely 2 students with personality types *extrovert*, 3 students with personality types *introvert*, and 3 students with personality types *ambivert*.

RESULTS AND DISCUSSION

Based on the results of the personality type questionnaire test, it was found that there were 6 students who had personality types *extrovert*, 14 students have personality types *introvert*, and 12 students have personality types *ambivert*. Next, students are given a critical thinking ability test. The critical thinking skills used in this research are the critical thinking ability model developed by

Perkins & Murphy. Where critical thinking skills through four stages, namely 1) Clarification; 2) Assessment; 3) Strategy; 4) Conclusion. At the clarification stage, students can determine the information they know and ask questions. In the assessment stage, students can determine the ideas or concepts used. In the strategy stage, students can determine the solution steps. And at the conclusion stage, students can draw the conclusions obtained (Perkins & Murphy, 2006: 301).

Based on the results of tests on students' critical thinking abilities on fractional number material, it was found that 14 students had high category critical thinking abilities, 7 students had medium category critical thinking abilities, and 11 students had low category critical thinking abilities. After classifying students into personality types extrovert, *introvert*, an ambivert, then an analysis was carried out on students' critical thinking abilities on fractional number material. So that the level of students' critical thinking abilities for each personality type is obtained which can be seen in Table 3 below.

Table 3. Level of Critical Thinking Ability in View of Student Personality Type

Personality type	Critical Thinking Ability Score	Percentage	Category
<i>Extrovert</i>	59	27.31%	Low
<i>Introvert</i>	290	57.54%	Currently
<i>Ambivert</i>	217	50.23%	Currently

Based on Table 3, it can be seen that the percentage of students' critical thinking abilities for personality types extrovert is 27.31%. This shows that students with this type of personality have critical thinking skills extrovert namely low category. Next is the percentage of students' critical thinking abilities by personality type introvert is 57.54%. This shows that students' critical thinking abilities vary with their personality types introvert medium category. Meanwhile, the percentage of students' critical thinking abilities by personality type ambivert namely 50.23%, where students' critical thinking abilities are personality types ambivert also belongs to the medium category.

Then 2 students with personality were selected extrovert with critical thinking skills in the medium and low categories, 3 students have personality introvert with critical thinking abilities categorized as high, medium and low, and 3 students with personality ambivert with critical thinking abilities categorized as high, medium and low, then these subjects will be interviewed one by one.

CRITICAL THINKING ABILITY OF PERSONALITY TYPE STUDENTS EXTROVERT

Students' Critical Thinking Ability *Extrovert* Medium Category, **site extrovert** with moderate category critical thinking skills, that is, they can go through the clarification and assessment stages. Meanwhile, at the strategy and conclusion stage, the subject was not yet able to write and explain it completely and precisely. This means that understanding questions and concepts can be achieved, although only some of them can be completed by going through the clarification and assessment stages, namely those related to Competency Achievement Indicator 4.1.1, solving problems related to the order of fractional numbers in the form of ordinary, mixed, percent and decimal fractions. This is also in accordance with research conducted by Lestari, (2016: 207) that students have good personalities. *extrovert* with moderate category critical thinking skills tend to only go through the clarification and assessment stages.

Students' critical thinking abilities *Extrovert* Lower Category, subject extrovert with low category critical thinking skills, namely only able to go through the clarification stage. Where the subject is only able to write and explain information that is known and asked about. Meanwhile, at the assessment, strategy and conclusion stages, the subject was not able to go through these stages. Although only part of it can be solved by going through the clarification stage, namely related to Competency Achievement Indicator 4.1.1, solving problems related to the order of fractional

numbers in the form of ordinary, mixed, percent and decimal fractions. This means that the subject is only able to formulate the main problems in the questions and does not master the concepts, understanding of the questions, and solving the questions requested. This is also in accordance with research conducted by Lestari, (2016: 202) that students have good personality *extrovert* with low category critical thinking skills on average only go through the clarification stage.

CRITICAL THINKING ABILITY OF PERSONALITY TYPE STUDENTS INTROVERT

Students' Critical Thinking Ability *Introvert* Higher Category, subject introvert with high category critical thinking skills, namely being able to go through the stages of clarification, assessment, strategy and conclusion. At the clarification stage, there is no difficulty at all in classifying problems, where the subject is able to write completely and precisely what is known and asked. At the assessment stage, the subject is able to write down the ideas or concepts that will be used completely and precisely, even if only on some indicators. Next, at the strategy stage, the subject is able to carry out this stage coherently and correctly according to the ideas or concepts that have been created, without any errors in calculations.. Then at the conclusion stage, the subject is also able to write and explain the conclusions obtained from all the questions clearly and precisely. This is also in accordance with research conducted by Lestari (2016: 204) that students have good personalities *introvert* those with high category critical thinking skills tend to be able to solve problems by going through critical thinking stages, namely classification, assessment, strategy and conclusions.

Students' Critical Thinking Ability *Introvert* Medium Category, subject introvert with moderate category critical thinking skills, namely being able to go through the clarification and strategy stages. Meanwhile, at the assessment and conclusion stage, the subject was not yet able to write and explain completely and accurately. This means that understanding and solving the problem can be achieved even though only part of it can be solved by going through the clarification and strategy stages, namely related to Competency Achievement Indicator 4.1.1, solving problems related to the order of fractional numbers in the form of ordinary, mixed, percent and decimal fractions. . This is not in line with research conducted by Lestari (2016: 202) that students have introvert with moderate category critical thinking skills on average, they go through the critical thinking process stages of clarification, assessment and conclusion.

Students' Critical Thinking Ability *Introvert* Lower Category, subject introvert with low category critical thinking skills, namely only able to go through the clarification stage. Where the subject is only able to write and explain information that is known and asked about. Meanwhile, at the assessment, strategy and conclusion stage, the subject was not able to pass this stage. This means that the subject is only able to formulate the main problems in the questions and does not master the concepts, understanding of the questions, and solving the questions. Although only part of it can be solved by going through the clarification stage, namely related to Competency Achievement Indicator 4.1.1, solving problems related to the order of fractional numbers in the form of ordinary, mixed, percent and decimal fractions. This is in line with research conducted by Lestari, (2016: 203) that students have good personality *introvert* with critical thinking skills in the low category on average, they only went through the clarification stage.

CRITICAL THINKING ABILITY OF PERSONALITY TYPE STUDENTS AMBIVERT

Students' Critical Thinking Ability *Ambivert* Higher Category, subject ambivert with high category critical thinking skills, namely being able to go through the stages of clarification, assessment, strategy and conclusion. This means that understanding questions, concepts, problem solving and

drawing conclusions can be achieved even though only some of the questions given have been successfully resolved by going through the clarification, assessment, strategy and conclusion stages, namely related to Competency Achievement Indicator 4.1.1, resolving related problems. with a sequence of fractional numbers in the form of ordinary, mixed, percent and decimal fractions.

Students' Critical Thinking Ability *Ambivert* Medium Category, subject ambivert with moderate category critical thinking skills, namely being able to go through the clarification and strategy stages. Meanwhile, at the assessment and conclusion stage, the subject was not yet able to write and explain completely and accurately. This means that understanding and solving the problem can be achieved even though only part of it can be solved by going through the clarification and strategy stages, namely related to Competency Achievement Indicator 4.1.1, solving problems related to the order of fractional numbers in the form of ordinary, mixed, percent and decimal fractions. .

Students' Critical Thinking Ability *Ambivert* Lower Category, subject ambivert with low category critical thinking skills, namely being able to go through the clarification stage. Where the subject is only able to write and explain information that is known and asked about. Meanwhile, at the assessment, strategy and conclusion stages, the subject was not able to pass through these stages. This means that the subject is only able to formulate the main problems in the questions and does not master the concepts, understanding of the questions, and solving the questions given. Although only part of it can be solved by going through the clarification stage, namely related to Competency Achievement Indicator 4.1.1, solving problems related to the order of fractional numbers in the form of ordinary, mixed, percent and decimal fractions.

The summary results of the discussion can be seen in Figure 1 below.

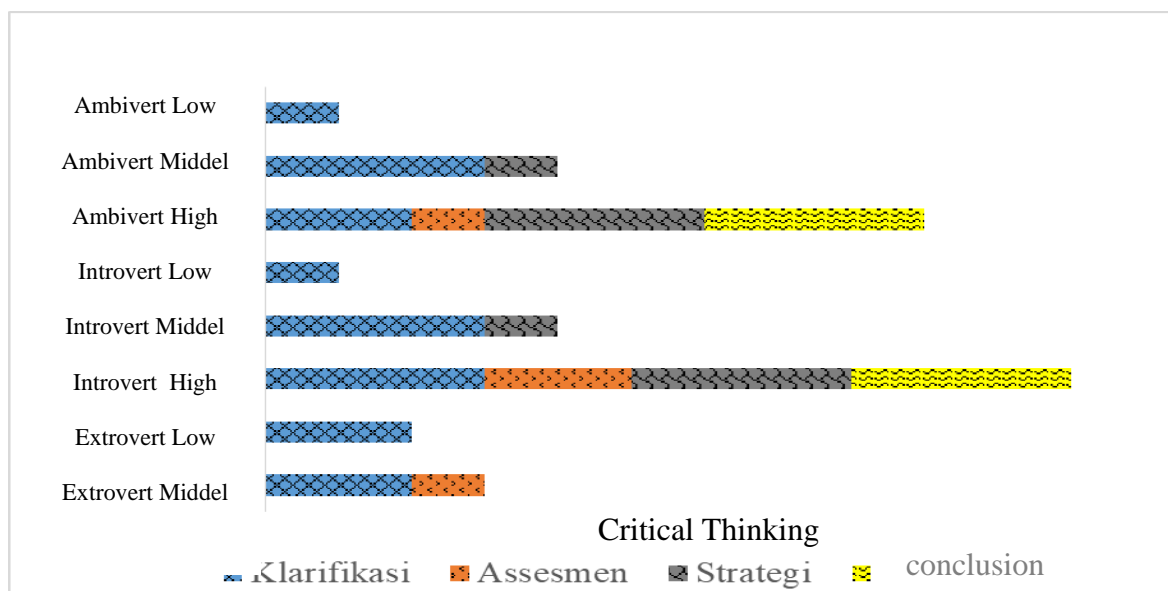


Figure 1. Diagram of Results of Students' Critical Thinking Ability in View of Personality Type

Based on Figure 1, it can be seen that students have personalities introvert and ambivert those with high category critical thinking abilities tend to be able to go through the stages of critical thinking, namely, clarification, assessment, strategy and conclusion. Next, students have personality extrovert with moderate category critical thinking skills, they are able to go through the critical thinking stages, namely clarification and assessment. Meanwhile students introvert and ambivert able to go through the stages of critical thinking, namely clarification and strategy. Then students have personality extrovert, *introvert*, an ambivert those with low category critical thinking abilities tend to only be able to go through the critical thinking stage, namely clarification. This is also in line with research conducted by Kartin, et al (2023: 38) that students' critical thinking ability in solving test questions for each indicator of critical thinking ability can only be passed by the high category

of students, while the medium and low category students have not been able to pass each indicators of critical thinking abilities.

CONCLUSION

The level of critical thinking ability of class VII-A students at SMPN 17 Mataram in solving story problems on fractional numbers in terms of personality type for the 2022/2023 academic year, namely, for students with personality types extrovert The percentage obtained was 27.31%, meaning critical thinking skills were in the low category, then for students with personality types introvert The percentage obtained was 57.54%, which means that critical thinking abilities were in the medium category, then students with personality types ambivert The percentage obtained was 50.23%, meaning that critical thinking abilities were in the medium category. Students' critical thinking abilities based on personality type can be described as follows:

- a. Student *extrovert* the medium category has been able to partially go through the clarification and assessment stages. Meanwhile students extrovert Low categories tend to only be able to go through the clarification stage.
- b. Student *Introvert* High categories tend to be able to go through the clarification, assessment, strategy and conclusion stages. Then students introvert category is partially going through the clarification and strategy stages. Meanwhile students introvert Low categories tend to only go through the clarification stage.
- c. Student *ambivert* The high category partially goes through the stages of clarification, assessment, strategy and conclusion. Then students ambivert category is partially going through the clarification and strategy stages. Meanwhile students ambivert Low categories tend to only be able to go through the clarification stage.

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