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THE LATERAL THINKING PROCESSES IN SOLVING MATHEMATICAL WORD PROBLEMS REVIEWED AT ADVERSITY QUOTIENT AND REFLECTIVE COGNITIVE STYLE

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ABSTRACT

Solving word problems with a thought jump shows flexibility and the ability to use alternative procedures that are important for students to master. The thought jump is a feature of the lateral thinking process and is needed to overcome the various difficulties in solving mathematical word problems. However, lateral thinking has not been widely linked with adversity quotient and reflective cognitive style. This study aimed to describe students' lateral thinking processes in solving word problems in terms of adversity quotient and reflective cognitive style. This research is a qualitative descriptive study. The subjects in this study were junior high school students in Gowa Regency, South Sulawesi Province. The research instrument used the MFFT diagnostic test, ARP questionnaire sheet, word problem text, and interview guidelines. The results of this study indicate that climber-reflective subjects can think laterally and use them to solve the first and second-word problems well. Camper-reflective subjects can only think laterally for situations that are still within reach, while for more complicated cases, camper subjects are easily distracted and even stop solving problems. Quitter subjects solve word problems very procedurally, follow rigid algorithms, and cannot work backward when faced with difficulties.

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1. INTRODUCTION

Thinking is the abstraction and ideas concepts developed through a series of systematic procedures needed to solve problems (De Bono, 1970). Learning activities in the classroom require thinking activities so that students understand the ideas structure from the material taught by the teacher. Students are said to have carried out the thinking process if they have analyzed a certain object or material only through comparing, observing, and abstracting the object from various viewpoints (Wantika, 2019). Thinking activities are directed at obtaining solutions to a given problem to activate each student's unique perspective.

Thinking ability related to creativity is lateral thinking (Hadar & Tirosh, 2019; Nggaba et al., 2018). De Bono suggests that lateral thinking be used to develop creativity by using a flexible way from one aspect to distinct (Hadar & Tirosh, 2019). Lateral thinking is the processing of information that provides a means to rearrange the mindset to pave the way for the new ideas development that may be needed (Mustofa & Hidayah, 2020; Nggaba et al., 2018).

Problem-solving ability is a necessary tool in lateral thinking (Hadar & Tirosh, 2019; Julita et al., 2019). Someone who thinks laterally will be able to develop a problem-solving perspective from various view points to come up with various ideas (Nggaba et al., 2018). Problem-solving is closely related to the think creatively ability. Creativity supports the emergence of various ideas to obtain solutions problems (Muliawati, 2016). Students who think laterally have various viewpoints in understanding the problem and do not just rely on the same conclusion. The lateral thinking advantage is that it can help students develop creativity and foster an open-minded behaviour in dealing with problems.

Students can develop lateral thinking skills through word problems. In general, word problems are connected to students' daily life situations along with mathematical symbols that can be used in solving problems (Sarjana et al., 2020). Geometry is a concept that is often found in the everyday life context and has a relationship with word problems. In addition, geometry can be used to reveal students' lateral thinking skills because it is supported by visualization and imagination (Susilawati et al., 2018). The curved side space concept is a special object in geometry that requires spatial thinking skills and creativity solving problems (Johnston-Wilder & Mason, 2005).

The stages of solving word problems Geiger et al. (2018), namely; understanding, compiling, simplifying, interpreting context, making assumptions, formulating, mathematizing, working mathematically, interpreting the results of mathematization, comparing, criticizing, validating, communicating if the solution is considered to be following the model, and review if the solution is considered not according to the model. Furthermore, according to Toshio (Tasni et al., 2020), there are four stages of problem-solving development, namely; Students understand problems and think about problem-solving directions, Students determine appropriate, logical, and representative information to plan problem solving, Students verify problems and discover new knowledge through mathematical schemes, Students evaluate previous processes, reconstruct all problem-solving processes, and generalize ideas to other domains. The steps taken in solving word problems can be exchanged sequences or can even be skipped. For example, a person can interpret the context of a word problem repeatedly while validating each stage and at the same time thinking about how to communicate the solution obtained.

The problem-solving strategy can be used when a person has sufficient mental capacity. The problem-solving process carried out by each student can be different from each other due to differences in thinking, problem spaces, and learning struggles. A problem can be solved not only supported by intellectual and emotional intelligence but also adversity intelligence or Adversity Quotient (AQ) (Stoltz, 1997). AQ contains four main dimensions, namely the control of adverse events, responsibility for bad results, the reach of difficult situations, and resilience to adversity (Yakoh et al., 2015). AQ is divided into three groups, namely quitters, campers, and climbers. The quitter group is students who have low struggle and tend not to make an effort to adversity. A quitter group is a group that easily hopeless and accepts difficult situations as something to be avoided. Camper groups are students who have struggle at the comfort zone level. Efforts are only made if the problem can still be solved. However, if the problem is more difficult then students tend to quit and immediately final solution. The last group is the climbers who are identified as mountaineers struggle with high spirits until they are at their peak. Students with the climber type will try various ways so that the problems they face can be solved. Climber groups always try to find solutions to the difficulties they face and turn them into profitable opportunities.

The problem-solving process can also be determined by cognitive style, namely the response that a person gives when facing a problem in the viewpoint, the time required and response accuracy, or the dominant method used to respond (Nur & Nurvitasari, 2017). Cognitive styles are divided into four cognitive styles (Haghighi et al., 2015), namely; impulsive, slow inaccurate, fast accurate, and reflective. These cognitive styles are distinguished based on the tempo and accuracy response results. The faster response is given and the results obtained are not accurate is categorized as an impulsive cognitive style. Conversely, the slower response with accurate results is called a reflective cognitive style. According to Sa'dijah et al. (2020), there are four aspects of reflective thinking, namely; technique, monitoring, insight, and conceptualization. Students who have a reflective cognitive style tend to think deeply, calculate all possibilities, and relatively accurately solve problems. Students with reflective cognitive style are not much influenced by intuition in solving problems (Qolfathiriyus et al., 2019), and more critical in using argumentation in analyzing each calculation result (Masfingatin & Suprapto, 2020). The students orientation with reflective cognitive style lies in the accuracy of problem-solving accompanied by logical thinking processes.

The level of adversity quotient and students' cognitive style are important factors that support lateral thinking processes (Oliveros, 2014). Strength to overcome difficulties is a necessary strategy to build creative thinking processes and better problem-solving abilities (Suryapuspitarini & Adhi, 2018; Wahyuningtyas et al., 2020). Students who have resilience in dealing with problems always have a way to find solutions and are able to think reflectively at every stage. Reflective thinking is a method that can be used in finding alternative procedures. Based on this description, the research question posed is how is the lateral thinking process of students in solving word problems reviewed at adversity quotient and reflective cognitive style?

2. METHOD

This research is descriptive qualitative research that explores the lateral thinking process of students in solving word problems reviewed at adversity quotient and reflective cognitive style. The subjects of this study were ninth-grade students at the state junior high schools in Gowa Regency, amount 30 people. The process of selecting subjects used the purposive sampling technique is based on the determination of research criteria. The researcher acted as a key instrument and was supported by the Matching Familiar Figure Test (MFFT) sheet, Adversity Response Profile (ARP) questionnaire sheet, word problem text, and interview guidelines.

The student's AQ type is identified through the Adversity Response Profile (ARP) score. ARP is constructed by using several situational statements that stimulate students' responses to these conditions (Stoltz, 1997). Students who get an ARP≤59 score are categorized as quitter, a score of 95≤ARP≤134 is categorized as a camper, and a score of 166≤ARP≤200 is categorized as a climber (Pradika et al., 2019). In addition, students' reflective cognitive style was identified using MFFT. This test consists of 14 items, each student is asked to find a model picture that matches the question among eight other identical pictures. Students are given 15 minutes to complete the questions. Warli (Nur & Nurvitasari,

2017) made the criteria for students' cognitive style after completing the MFFT test as shown in Table 1.

Table 1. Criteria for MFFT results

Time	**Accurate**	
	≤7 correct answers	**> 7 correct answers**
≤ 7 minute 30 second	Impulsive	Fast accurate
>7 minute 30 second	Slow inaccurate	Reflective

The selection results of research subjects based on the MFFT test and the AQ questionnaire were obtained as shown in Table 2.

Table 2. The selection results of research subjects

Cognitive style	**AQ Type**			**Total**
	Quitter	**Camper**	**Climber**	
Impulsive	5	1	0	6
Slow inaccurate	2	1	1	4
Fast accurate	0	3	2	5
Reflective	2	3	3	8
Total	9	8	6	23

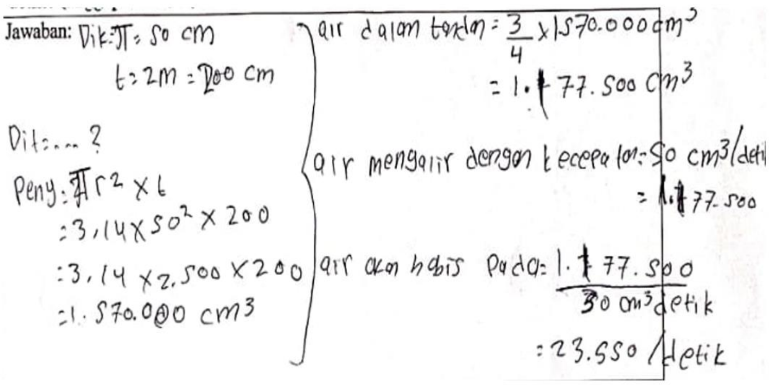
Based on the selection results of research subjects in Table 2. choosen one student with a reflective cognitive style was selected with the most quitter, camper, and climber types. Students' lateral thinking processes were explored using two word problem related to curved side space (Subchan et al., 2018), namely; (1) A tubular reservoir with a radius of 50 cm and a height of 2 m is used to irrigate the garden. Currently, the reservoir contains water as much as 3/4 of the total volume, and there is a small hole in the bottom of the reservoir that causes water to flow out at a rate of 50 cm^3/sec. Determine how long the water in the reservoir will run out! (2) A cone measuring 36 cm in diameter and 24 cm in height is cut horizontally at the top with a height of 8 cm. What are the surface area and volume of the remaining cone?

The data analysis technique used the Miles and Huberman model (Sukestiyarno, 2020), namely; collect data, reduce data, verify data, and draw conclusions. Students' lateral thinking processes are described through diagrams that describe the stages of solving word problems according to Geiger et al. (2018). The results of solving word problems and lateral thinking processes were confirmed through interviews used the think-aloud technique to explore students' thoughts when solving word problems. Interview transcripts were coded in three digits, each digit separated by a "–". The first digit indicates the source of information, namely "R" for researchers, and "SQ" for quitters, "SCH" for campers, and "SC" for climbers. The second digit represents lateral thinking process data on first and second word problem by using the symbol "1" or "2". The third digit represents the sequence of questions in the interview process. For example, "SQ-1-01" states the interview transcript of the quitter subject on the first word problem and the first question sequence.

3. RESULT AND DISCUSSION

3.1. Result

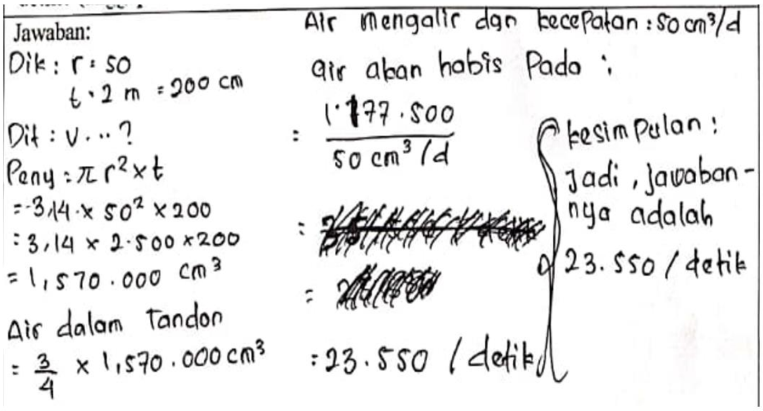
The subject selection process was successfully identified students with reflective cognitive style characters for each AQ type. The lateral thinking process is carried out by selected each reflective subject with the quitter, camper, and climber types and has nice communication skills. Quitter subject understands the problem with a thought about the known information in the questions and components being asked. Quitter subject identifies known and asked information in the word problem. Quitter subject understands the problems encountered related to the cylinder volume and writes down how to find the volume. Quitter subject try to compose and interpret the context of the word problems by writing the formula for the cylinder volume. Quitter subject connects the reservoir shape with the volume building concept. Quitter subjects can use the formula for the cylinder volume and obtain a mathematical solution. Quitter subject thinks about 3/4 of the reservoir volume filled with water used appropriate computations. After the water volume in the reservoir is known, quitter subject then relates the information on water leakage at a rate of 50 cm^3/second with the water volume in the reservoir. Quitter subject was initially confused when determining the time required for the water to run out in the reservoir. Quitter subject used analogy and finally divided the water volume by the rate of water leakage in the reservoir. Quitter subject interprets the results she gets and communicates them in the initial context. Quitter subject does not validate the solution that has been obtained even thought there is a notation error (see Figure 1).



Translation:
Given: r=50 cm, t = 2m = 200cm. Asked: …?
Solving: $\pi r^2 t = 3{,}14 \times 50^2 \times 200 = 3{,}14 \times 2500 \times 200 = 1570000\ cm^3$
Water in reservoir: $\frac{3}{4} \times 1570000\ cm^3 = 1177500\ cm^3$
water flows with speed: $50 cm^3/s$, the water will run out: $1177500/50 = 23550/s$

Figure 1. The solution quitter subject in solving first word problem

Camper subjects understood the problem by compiled the information that is known and asked in the question. Camper subjects identified the reservoir shape as a tube model so write down the formula for the cylinder volume. Camper subjects can relate the relation of reservoir volume in mathematical form. In addition, the camper subject did the mathematization process to determine the water volume in the reservoir. Camper subjects try to interpret the meaning of 3/4 reservoir volume and relate to the entire reservoir volume. Camper subjects could identified the elements in the tube and see their relationship in problem-solving (see Figure 2).



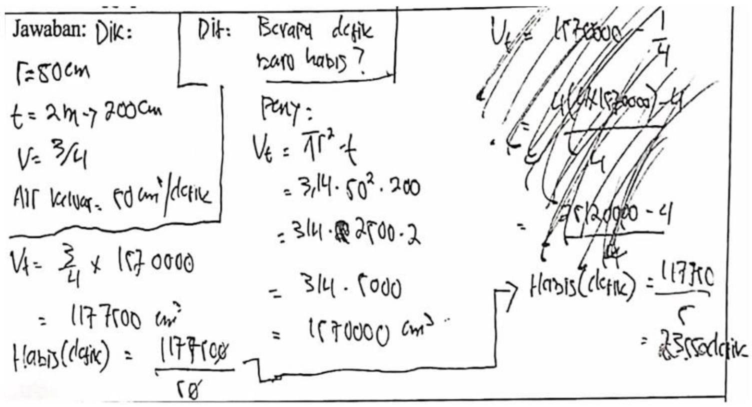
Translation:
Given: r=50, t = 2m = 200cm.
Asked: V…?
Solving: $\pi r^2 t = 3{,}14 \times 50^2 \times 200 = 3{,}14 \times 2500 \times 200 = 1570000\ cm^3$
Water in reservoir: $\frac{3}{4} \times 1570000\ cm^3$
water flows with speed: $50 cm^3/s$, the water will run out: $1177500/50 = 23550/s$
Conclussion: so, the answer is $23550/s$

Figure 2. The solution camper subject in solving first word problem

Camper subjects interpret the mathematization results as well as validate the solutions they get. The camper subject tries to relate the water volume and the leakage rate to determine time it takes for the water to run out in the reservoir. The camper subject tries to understood the context and then illustrates if every second the water leaves the reservoir as much as 50 cm^3/second and used the division operation to determine time it takes for the water to reservoir run out. Camper subjects work mathematically while compared the solutions him get. The camper subject tries to validate the solution by observing the accuracy of the computational process used. When the camper subject considers the solution obtained is irrelevant, the process is repeated until a convincing solution is obtained. Camper subjects communicate the solutions obtained after validating each step.

The camper subjects use leaps of thought to obtain logical relationships in solving word problems. Camper subjects did not completely follow sequential steps because they sometimes have to work backward, or if the problem seems easy can move directly to the next step and think about its relevance to the word problem context. When faced with obstacles, camper subjects think of effective ways to found solutions and try rational solutions.

Furthermore, the climber subject began to understood the problem by written down each information piece and making logical connections in each statement. The climber subject understood the tube concept as an reservoir abstraction shape to analyze the water volume. At the same time, the climber subject works mathematically used the tube volume concept. The climber subject then determined water volume in the reservoir but had difficulty assumed 1/4 as a subtracting quantity from the total volume. The climber subject realized that the process he was doing did not make sense, so he started thinking about other ways. The climber subject tries to think backward by interpreting the context of 3/4 of the volume. The climber subject makes a model and works mathematically after understood that what is meant by the word problem is 3/4 part of the reservoir volume. The climber subject determines the time it takes for the water to run out in the reservoir by dividing the water volume by the water velocity. The climber subject tries to validate the solution by checking every step that has been passed. After the examination is carried out, the climber subject gains confidence in the solution obtained and tries to communicate it according to the initial context (see Figure 3).

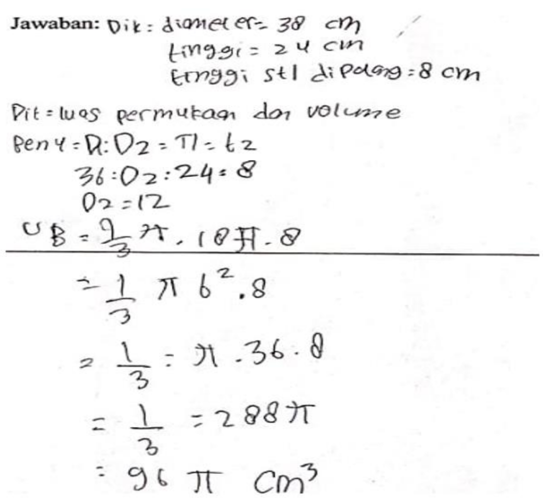


Translation:
Given: r=50, t = 2m = 200cm,
V=$\frac{3}{4}$, water run out $50cm^3/s$.
Asked: How many seconds does the water run out?
Solving: $\pi r^2 t = 3{,}14 \times 50^2 \times 200 = 3{,}14 \times 2500 \times 200 = 1570000\ cm^3$
Vt: $\frac{3}{4} \times 1570000\ cm^3$
Run out (s): $1177500/50= 23550/s$

Figure 3. The solution climber subject in solving first word problem

Different AQ types show different thinking processes in solving word problems even though all reflective subjects get the same solution. This shows that AQ has a role in designing strategies, choosing procedures, and increasing efforts to overcome difficulties. Furthermore, the second word problem was used to verify the lateral thinking process of each reflective subject with a higher adversity level. The second word problem has a more complex challenge and requires the subject to make mathematical manipulations and decompositions to simplify the problem.

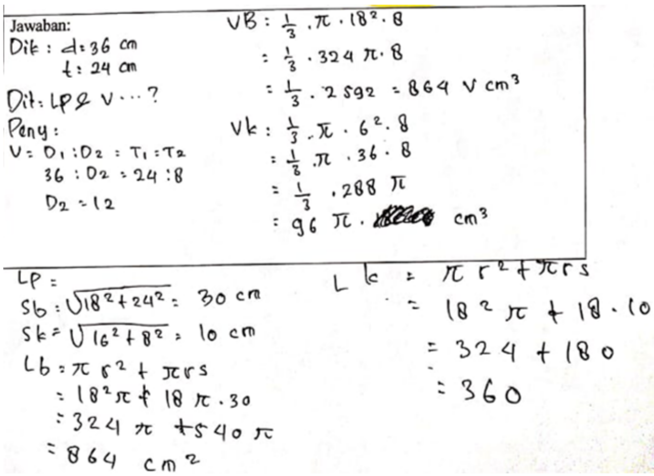
The quitter subject began to writen down the information that is known on the question and connects the cone shape. Quitter subjects use the surface area and volume of the cone as a mathematical form to solve the problem but have difficulty connected various information on the problem. Quitter subjects try to remember the relationship between the diameter of the cone that has been cut by used a similarity ratio. However, the quitter subject has difficulty found the relationship between the two concepts. Many times, the quitter subject tries to understand the problem context, but is unable to found the right relationship and ends up rushing to use the formula for the cone volume. In addition, the quitter subject gave up and tried to communicate the solution obtained even though it was irrational. The quitter subject is unsure of the solution obtained, but cannot use other methods and chooses to quit (see Figure 4).



Translation:
Given: diameter= 38 cm, high = 24cm, high after cutting= 8cm. Asked: surface area and volume. Solving: $D_1{:}D_2 = T_1{:}t_2$, $36{:}D_2 = 24{:}8$, $D_2 = 12$
$V_B = \frac{1}{3}\pi.18.8 = \frac{1}{3}\pi.6^2.8 = \frac{1}{3}.288\pi = 96\pi cm^3$

Figure 4. The solution quitter subject in solving second word problem

Camper subjects showed a more flexible thought process to solve the second word problem. The camper subject begins to think about the problem context and written down the surface area and volume as the elements being asked. However, camper subjects had difficulty in determining the diameter and volume of the cut cone. Therefore, the camper subject tried to use the similarity concept to obtain the cut cone diameter. Furthermore, the camper subject used this diameter to obtain the volume of each cone before and after being cut. The camper subject was could distinguish between diameters and radius so that they are not mistakenly applied to the formula. However, the camper subject made an error in applying the cone height measurement to the complete cone size. The subject camper did not verify the error has been made and continues with troubleshooting stages. After the cone volume is obtained, the camper subject tries to found the relationship between the two volumes. The camper subject had difficulty understanding the relationship between the two cone volumes he had obtained and decided shift to the next problem, which was to determine the cone surface area (see Figure 5).



Translation:
Given: d= 36 cm, t= 24cm. Asked: surface area and volume…?
Solving: $D_1 : D_2 = T_1 : t_2$, $36 : D_2 = 24 : 8$, $D_2 = 12$
$V_B = \frac{1}{3}\pi.18^2.8 = \frac{1}{3}\pi.324.8 = \frac{1}{3}.2592\pi = 864\,\pi cm^3$
$V_k = \frac{1}{3}\pi.6^2.8 = \frac{1}{3}\pi.36.8 = \frac{1}{3}.288\pi = 96\,\pi cm^3$
L_p: $s_b = \sqrt{18^2 + 24^2} = 30cm$, $s_k = \sqrt{16^2 + 8^2} = 10cm$. $L_b = \pi r^2 + \pi rs = 18^2\pi + 18\pi.30 = 324\pi + 540\pi = 864cm^2$. $L_k = \pi r^2 + \pi rs = 18^2\pi + 18.10 = 324 + 180 = 360$

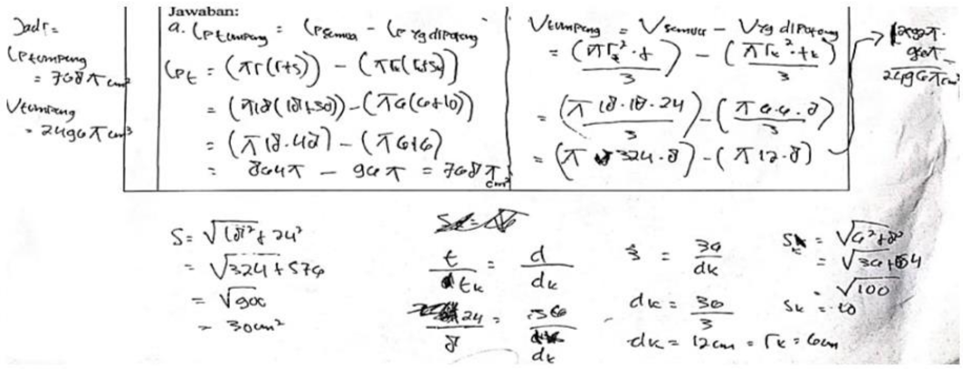
Figure 5. The solution camper subject in solving second word problem

Camper subjects understand well that determining the cone surface area will require the painter's line size. Camper subjects determine the painter's line from each cone by using the Pythagorean theorem to then be applied to the formula for the cone surface area. After obtained the cone surface area before and after being cut, the camper subject thought that the solution was similar to determining the volume. The camper subject understands that the solution has not been solved, but the process to determine the relationship of the known components is so difficult to solve. The camper subject chooses to stick with the results got him.

When faced with a problem that is quite difficult to solve, the camper subject chooses to turn his attention to another problem or stop at the solution that has been obtained. Camper subjects did not have alternative procedures to be sure of the solution. This condition shows that the camper subject's thought process was largely determined by the him situation. When the situation was most difficult peak, the camper subject tries to avoid it and chooses to stop.

In addition, the climber subject began to understood the cone surface area and volume as the difference between the entire cone and the cut cone. The climber subject did not focus on the relationship between the cone concept, but instead thinks mathematically to found the relationship between the cut cone surface area and volume. The climber subject seemed more flexible in using mathematical procedures and identifying cone model.

However, the climber subject has difficulty in determining the cut cone radius and the painter's line length. The climber subject tries to found the painter's line length with using the Pythagorean theorem and draws the relationship of the radius, height, and painter's line like a right triangle. In addition, the cut cone radius was determined by the congruence concept. Climber subjects used cone radius to determine the painter's line length that has been cut. The elements that have been found become an important tool for the climber subject to solve problems (see Figure 6).



Translation:

$s = \sqrt{18^2 + 24^2} = \sqrt{324 + 576} = \sqrt{900} = 30\ cm, \frac{t}{t_k} = \frac{d}{d_k}, \frac{24}{8} = \frac{36}{d_k}, d_k = \frac{36}{3} = 12\ cm, r_k = 6cm$

$s_k = \sqrt{6^2 + 8^2} = \sqrt{36 + 64} = \sqrt{100} = 10; L_p cone = L_P all - L_p cutting = \pi r(r + s) - (\pi r_k(r_k + s_k)) = 18\pi(18 + 30) - 6\pi(6 + 10); (18\pi.48) - (6\pi.16);\ 864\pi - 96\pi = 768\pi cm^2$

$Vcone = V.all - V.cutting = \frac{1}{3}(\pi r^2 t) - \frac{1}{3}(\pi r_k^2 t_k) = \left(\frac{\pi.18.18.24}{3}\right) - \left(\frac{\pi.6.6.8}{3}\right) = (\pi.324.8) - (\pi.12.8) = 2496\pi cm^3$

Figure 6. The solution climber subject in solving second word problem

The climber subject tries to found a logical relation in determining the cut cone radius length. The climber subjects used the similarity concept to determine missing information. The climber subjects can understand the interrelationships between concepts and used him for solving word problems. After all the necessary elements have been obtained, the climber subject can apply them to the right formula. The climber subject interprets each result obtained and relates it to the context. The climber subjects always tried to validate the solutions obtained by ensuring the calculations accuracy at each stage. After gaining confidence in the solution obtained, the climber subject communicates and drew conclusions to answer the problem.

3.2. Discussion

The climber subject use think laterally to solve the first and second word problems well. The camper subjects can only think laterally for situations that are still within reach, while for more difficult situations. The camper subject was easily distracted and even stop solving problems. Quitter subjects solve word problems very procedurally, follow rigid algorithms, and could not work backward when faced with difficulties. The differences description in the lateral thinking processes of each subject in solving word problems is shown in Figure 7.

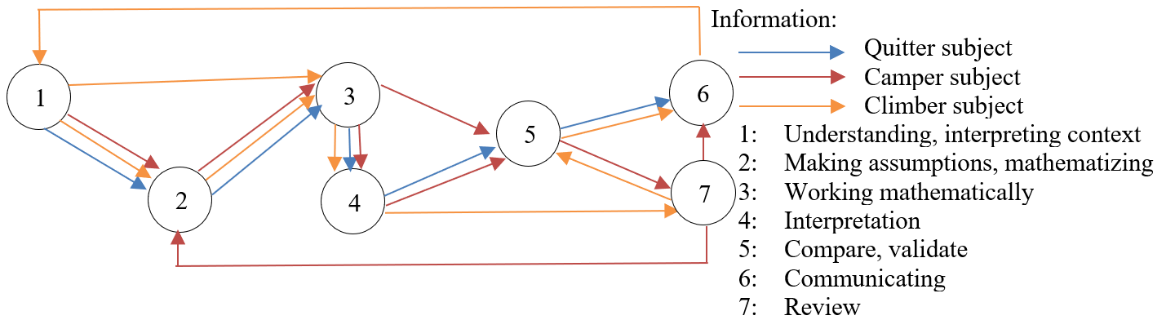


Figure 7. The lateral thinking process of each subject in solving word problems

The climber subject shows lateral thinking processes in solving the first and second word problems. The climber subjects can identify information on the problem, make relationships and express the conditions needed to solve problems. Climber subjects can make mathematical assumptions, use relevant concepts, and develop various logical problem-solving strategies. The ability to overcome difficulties and struggle high level has a better problem-solving process because him always think of various alternative ways to get solutions. The results of this study are in line with the opinion (Oliveros, 2014) which shows that the higher level of overcoming a person's difficulties, the better his mathematical problem-solving abilities. The climber subject shows an effort to obtain alternative solutions when facing problems, while the camper subject is only able to think of solutions that are still within his cognitive range and the quitter subject chooses to use more intuition and is unable to find alternative solutions when facing problems. This is in line with the opinion (Malik et al., 2019) which states that quitter type students have not been able to carry out all stages of problem-solving, camper type students have been able to carry out problem-solving stages but have not been able to check the validity of each stage taken, while climber type students can carry out all stages of problem-solving properly. This finding supports the opinion (Tasni et al., 2020) which states that students' difficulties in solving problems are related to the inability to collect representative data, plan effective strategies, understand mathematical concepts and evaluate problem-solving processes.

Based on the stages of problem-solving carried out by the three reflective subjects, the stages of identifying and analyzing problems can be understood well. This can be observed in the ability of quitter, camper, and climber reflective subjects who can write down information on questions and use it in solving problems. At the stage of understanding the problem, the reflective subject writes down information that is known and asked, presents graphs, pictures, or other mental representations to describe the problem, states the validity of the arguments expressed, and can conclude the truth of what is understood (Sudia & Lambertus, 2017). Word problem allow students to make analogies between problems and their solution models so that them require a good understanding (Maulyda et al., 2020).

Reflective subjects generally tend to think partially which allows the problem-solving process to be carried out laterally (Qolfathiriyus et al., 2019). In addition, students who think reflectively can solve problems creatively using visual and symbolic representations (Nugroho et al., 2020). This is indicated by the solutions that the subject can give to each problem. This finding is in line with the opinion Sarjana et al. (2020) which states that solving word problems can be optimized by practicing verbal skills, and the ability to create models simultaneously. However, the difficulty level causes different attitudes towards problems where the quitter subject is unable to alternative think solutions and only uses intuition. The camper subject is only able to provide alternative solutions in situations that are still understandable and the climber subject tries to use alternative solutions until the problem can be solved. Climber students have better problem-solving skills than a quitter and camper students (Suryapuspitarini & Adhi, 2018; Wahyuningtyas et al., 2020). AQ has a significant role in students' lateral thinking processes. The results of this study are in line with the findings Hulaikah et al. (2020), which show that there is a link between the learning experience and struggle to adversity with students' problem-solving abilities. This strengthens the opinion Gusau et al. (2018), that cognitive style is not the main factor in determining problem-solving ability.

Lateral thinking skills can be grown through learning that provides students with challenges in the form of problem-solving so as to facilitate the discovery process, social interaction, and reflective thinking for students (Susilawati et al., 2018). Lateral thinking skills can emerge if begin with challenging problems and allow lots of creative ideas. Students who have been proficient in solving problems will be able to think laterally and show different behavior from novice students. This finding is supported Harisman et al. (2020), which states that someone who is advanced will more easily recognize patterns, change models, and be able to find unique strategies in solving problems, while beginners are only able to recognize problems directly, manipulate numbers, and solve problems. unable to change the problem-solving model. This is in line with the opinion Julita et al. (2019), which suggests that students are accustomed to using creative problem-solving types so that they are able to think mathematically laterally better.

4. CONCLUSION

Students with reflective cognitive style have problem-solving abilities, but differences in efforts to adversity result in differences in skills at a higher stage. Climber subjects are able to think laterally and find alternative ways that allow logical solutions to be obtained. Camper subjects are able to show lateral thinking processes, but when faced with more difficult situations then him distract more. The quitter subject is able to solve word problems using a coherent procedure, but when facing difficulties the quitter subject tends to be in a hurry and does not show lateral thinking processes. The quitter subject chooses to stop at the solution obtained. The adversity quotient needs to get the teacher's attention in order to understand students' difficulties in solving word problems. Teachers should provide opportunities for students with reflective cognitive styles to develop lateral thinking processes so as to bring up various alternative solutions in developing word problem-solving skills. Lateral thinking processes are needed so that students are able to find new ideas, especially in solving word problems.

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