RECALL PROCESS AND MATHEMATICS PROBLEM SOLVING FOR MILDLY MENTALLY RETARDED STUDENTS

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Abstract: This article reports on the ability of feeble-minded or mentally retarded students in mathematical recall and problem-solving processes. In particular, this study investigated whether recall ability can affect feeble-minded students' ability to work on mathematical problems. This research was conducted using a mixed-method approach with a sequential explanatory research design. The sample of this study consisted of 34 feeble-minded students. The findings show that the ability of feeble-minded students to solve mathematical problems and their recall abilities were categorized as fair Another finding is that the ability to recall had a 62.1% effect on the ability to work on mathematical problems. The contribution of this study is that feeble-minded students' ability to work on mathematical problems is greatly influenced by their ability in the mathematical recall process.

Keywords: Mathematics, Problem, Recall, Mentally Retarded Students

INTRODUCTION

Education is a need and a right for every human being. Children with special needs are entitled to schooling (Aykora & Uğraş, 2020; Taylor, 2020). Children with intellectual disabilities are children with special needs who have obstacles in thinking (Yoshii, 2016). Mental retardation is a term used to refer to children who have intellectual abilities below average. Other disorders experienced by children have limitations in terms of thinking, such as low thinking ability, weak attention and memory, difficult abstract thinking, and less able to think logically (Ellis, 2017; Koester, 2016).

Children with intellectual disabilities have complex problems in following the learning process, especially learning mathematics. Difficulty in learning mathematics is often felt in learning concentration, limited abstract thinking ability, weak memory, and socialization towards the environment (Yoshii, 2019; Wills-Jackson, 2019). Difficulties experienced by students will a bad influence on their learning (Yoshii, 2016; Hawkins-Lear & Grisham-Brown, 2019). Mathematics has a significant role, especially in intellectual development (Stopes-Roe, 2017; Sönmez, & Alptekin, 2020).

Mathematics as an understanding of patterns and relationships. In studying mathematics, students need to connect a mathematical concept with the knowledge they already have (Zhao & Ding, 2019; Kurniawan et al, 2019). The emphasis on this relationship is indispensable for the unity and continuity of concepts in mathematics. Knowing one another's links is an ability students must possess to instill mathematical completion (Lestari & Surya, 2017; Griffin et al, 2018). This ability gives students an understanding to immediately realize the concept that they have learned has similarities or differences with the concepts they have learned. However, a teacher's struggle is not easy to improve students' abilities in learning mathematics (Retnawati, 2016; CunHua et al, 2019).

MMR (Mildly Mentally Retarded) is the official designation of the degree of MR involving current intellectual functioning performance between 2 and 3 standard deviations below the population mean and significant limitations in some, but not all, aspects of daily adaptive functioning. MMR was first formally recognized about a century ago and is described explicitly in the 6th, 7th, and 8th revisions of the American Association on Mental Retardation Disabilities (AAMR) classification manual (Grossman, 1973; Heber 1960). The fact to state that mildly mental retardation students have limitations in terms of thinking, such as low ability to think, attention, and memory are weak, difficult to think abstractly, and less able to think logically. This fact will have difficulties in learning mathematics. Mathematics has a goal in shaping students' mindset into a systemic, logical, critical mindset with great care. Those facts give the slice that how the mental retardation process of children with intellectual disabilities in learning mathematics.

Consequently, feeble-minded children experience a disruption in cognitive processes

(Koester, 2016; Rivera-Singletary & Cranston-Gingras, 2019). Cognitive processes include perception, memory, the emergence of ideas, evaluating, and reasoning. Cognitive function or low intellectual ability causes mildly retardation child's difficulty accepting and mastering the lessons given by teachers in schools (Allen & Fuller, 2016; Swann, 2017). The ability to remember the lessons learned are essential and support students to master the learning given by the teacher during the learning process. Thus, recalling lessons learned previously is needed by someone in determining the success of their education called recall (Lüftenegger et al, 2016; Chirume, 2017).

Recall memory is a person's activity to bring back or recall the knowledge learned in the past. Whereas recall, according to Santrock, is when taking something from a mental data ware-house, searching through our memory warehouse to find relevant information. With the agreement, this search can be automated or require some effort (Krokos, Plaisant & Varshney, 2019). The recall process is the activity and the ability of a person to call back the knowledge that has been stored in memory by encryption and searching automatically or with some effort without any instructions to the person (Rashid et al, 2016; Unsworth, 2016). The steps in the recall process that are commonly used are divided into four, namely: (1) Through the attention process, information moves to Sort term memory and lasts for 30 seconds (or more with repetition); (2) Then the data enters the storage of Long term memory; (3) Then the process of retrieving information goes back to Sort term memory again.

Children with mildly mental retardation have problems with memory, especially short-term memory abilities so that they experience limita-tions in remembering and capturing complex information. Mildly mentally retarded children have short-term memory abilities that are different from normal children, mildly mentally retarded children have lower short-term memory abilities than normal children, while the long-term memory abilities of mentally retarded children are not different from normal children if there is continuous repetition (Somantri, 2007; Jones, Latchford, & Tober, 2016). Mildly mental retardation is a subtype of MR that is different from other levels of MR. People with MMR typically emerge as normal individuals whose ongoing developmental challenges in the use of abstract thinking and complex judgment lead to their identification as people in need of services in educational settings and intermittent support during the adult years (Meekums, Macaskie, & Kapur, 2016; Baker, 2019). Then the process of retrieving information goes back to short term memory again. The question given is to find out the student's recall process in completing the mathematical problem of tube material regarding the operation of retrieving information back to short term memory again. It is an essential process in recall (Macaskie, Lees, & Freshwater, 2015; Martin & Myers, 2018). The emphasis on this relationship is indispensable for the unity and continuity of concepts in mathematics. Knowing one another's links is an ability students must possess to instill mathematical completion (Griffin et al, 2018; Lestari & Surya, 2017). This ability gives students an understanding to immediately realize the concept that they have learned has similarities or differences with the concepts they have learned.

This study focuses on analyzing recall abi-lity to determine the ability of mildly mental retar-dation students in solving social mathematics problems. The objectives of this research are; (1) To find the recall process of mildly mental retar-dation students on tube material; (2) To find the problem solving ability of mildly mental retar-dation students on tube material; (3) Constraints found in problem solving skills and recall process in the tube material; (4) Looking for the effect of process recall on the problem solving skills of mildly mental retardation students.

METHODS

A mixed-method to explanatory design completed the method in this study. Quantitative data was used to supplement qualitative data. Researchers obtain data by using interviews, observation of problem-solving instruments, and recall process using essay. Researchers explore how mildly mental retardation students in learning mathematics. Focused on the process of recall of mathematics subject matter tube. And limited to students who have mildly disruption. The research procedure carried out in this study refers to the mixed-method research (Creswell, 2017). The research procedure is shown in Figure 1.

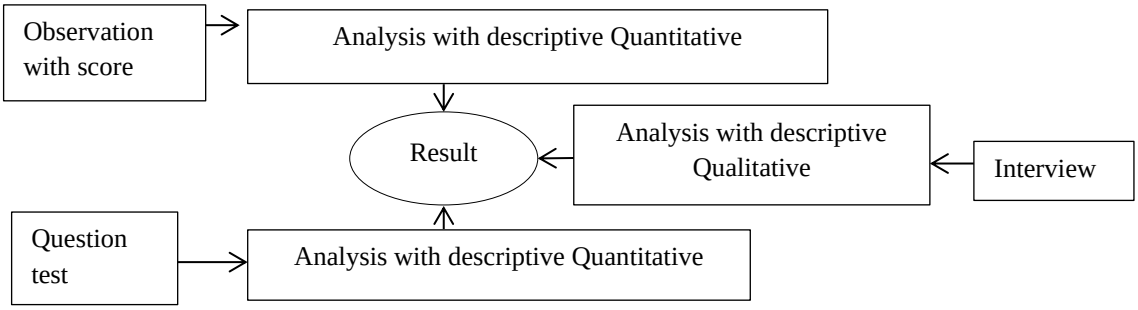

Figure 1. Research Procedure

This study used the total sampling technique with mildly retardation students at the junior high school level, who are studying mathematics on the subject of tube space construction. The number of samples in this study amounted to 34 students divided into two schools with special needs in Jambi (SLB Prof Dr Sri Soedewi Mascjhun Sofwan, SH 20 students and SLB 2 Kota Jambi 14 students). The population of 20 people and 14 people, the sample in this study used 20 students at SLB Prof Dr Sri Soedewi Mascjhun Sofwan, SH 20 students and 14 students at SLB 2 Jambi City 14 students. Why take the entire population, because the researcher uses a total sampling technique, where the total sampling technique is a technique that takes the entire population which will be used as a sample in the study. This is also taken into consideration, because the population is not up to 100 people, the entire population is used as a sample in the study (Creswell, 2012).

The data collection instrument used in this study was aimed at finding quantitative data and qualitative data. Quantitative data were obtained from observation sheets and essay tests, while qualitative data were obtained from interviews conducted. In the grid of observation sheets used, it can be seen in Table 1.

Table 1. Observation sheet instrument grid for problem solving ability of mildly retardation students

Indicator	Number Statement
Understand	1,2,3,4
Planning	5,6,7
Operate	8,9
Check again	10,11,12

The student observation sheet has 12 statements with a Likert scale 4. The range of assessments can be seen in Table 2.

Furthermore, the test instrument, the test used is an essay test aimed at the ability to recall mildly retardation students on the tube material in Table 3.

Table 2. The range of the problem-solving ability category of mildly retardation students on the tube material

Category	Solving math problems
Very Not Good	12.0 – 19.2
Not Good	19.3 – 26.4
Enough	26.5 – 33.6
Good	33.7 – 40.8
Very Good	40.9 – 48.0

Table 3. Essay test instrument grid for mildly retardation student's recall ability

Indicator	Number Statement
Name the elements of a tube	1
Determine the formula for the surface area of a cylinder	2
Determine the formula for the volume of a cylinder	3
Calculate the height of the cylinder if the volume is specified	4
Calculate the radius of the base of the cylinder if its volume is determined	5

The essay test had 5 question items; each item contributes maximum score of 20 points. The range of score can be seen in table 4

Table 4. The range of the category of ability to recall mildly mentally retarded students on tube material

Category	Recall process
Very Not Good	0.0 – 20.0
Not Good	20.1 – 40.0
Enough	40.1 – 60.0
Good	60.1 – 80.0
Very Good	80.1 – 100.0

There are two kinds of data analysis in this study, the first is quantitative data obtained from observation sheets to determine problem solving abilities in mathematics subjects and essays to determine students' memory skills which will be analyzed using descriptive statistics which include mean, maximum value, minimum scores, and categories, then analyzed by inferential statistics using simple regression analysis, as well

as qualitative data obtained from student and teacher interviews to deepen the results of this study which were analyzed using the Miles and Huberman method which includes reducing data, presenting data, and concluding (Miles & Huberman, 1994). Simultaneously, the test results are analyzed based on the screening criteria to determine the recall process category. Test result data are in the form of scores and analyzed using descriptive analysis using SPSS (Field, 2017). Furthermore, the findings data were analyzed regretfully from the process of recall of solving mathematical problems from students.

The very low category shows that students' abilities in learning outcomes and recall processes are at the lowest level. The Low shows that students' skills in learning outcomes and recall processes are at a level that requires a lot of visual and non-visual support. A fair shows that students' abilities in learning outcomes and the process of recall at a level can sometimes be independent but sometimes must get guidance. The high shows that the ability of students in learning outcomes and the process of recall at the student level has been independent but requires a relatively long time and requires reinforcement. The very high category shows that students' abilities in learning outcomes and recall processes at the independent level.

FINDING AND DISCUSSION

Finding

Analysis and results of the study will be discussed based on how the stages of mental retardation children follow the procedure of critical thinking in working on the problems. The stages of critical thinking in working on the issues that become the benchmark of this research are understanding the problem, making plans, implementing plans, and checking again. Critical thinking of feeble-minded students will be obtained after analyzing the findings and synthesizing observational data, test scores, and interview results.

Solving math problems

The results for solving mathematical problems in mildly mentally retarded students are shown in Table 6. Data are expressed in the form of a presentation of the number of students who fit the category. Besides, the data is presented in the way of the mean results of solving mathematical problems. These findings provide an overview of the ability to solve mathematical problems of mildly mentally retarded students.

Table 6 shows that the solving of mathematic problems of recall mildly mentally retarded students is in the fair category. In detail, students who are categorized as very not good have a 2.94% presentation. Mildly mentally retarded students who are classified not good 26.47%, enough 61.76%, good 5.88%. Finally, mentally disabled students who are in the category of very good 2.94%. The average student has a fair category (M = 29.5), with a maximum of 10 and a minimum score of 0.

Table 5. Steps to recall mildly retardation students

Indicator	Descriptor
Sensory input into a sensory memory/Information entry	Read the questions to completion and absorb the information contained in the questions
Through the process of attention, information moves to short term memory (STM) and persists for 30 seconds (or more with the help of repetition).	Write down any information in the question
Then the information goes to Long term memory (LTM) storage.	Write down the formula that will be used for problem solving and write down the problem solving based on the selected formula
Then there is a process of retrieval of information (recall) to the STM again	Checking the results and seeing weaknesses, errors, or mistakes from solving questions completely and correctly

Table 6. Solving of mathematical problems of mildly mentally retarded students

Classification				Mean	Min	Max
Category	Interval	F	%			
Very Not Good	12.0 – 19.2	1	2.94			
Not Good	19.3 – 26.4	9	26.47			
Enough	26.5 – 33.6	21	61.76	29.5	12	47
Good	33.7 – 40.8	2	5.88			
Very Good	40.9 – 48.0	1	2.94			

Table 7. Recall process for mildly mentally retarded students

Classification				Mean	Min	Max
Category	Interval	F	%			
Very Not Good	0.0 – 20.0	2	5.88			
Not Good	20.1 – 40.0	6	17.65			
Enough	40.1 – 60.0	19	55.88	52.5	18	92
Good	60.1 – 80.0	7	20.59			
Very Good	80.1 – 100.0	0	0.00			

When viewed from the interview findings, the students stated that they had little difficulty in solving problems. This difficulty is implied in the following interview;

> "I have difficulty in working on the problems because the time given is so short, usually I only work on 2 questions. These are 5 (cynical) questions "then another student stated;
> "I didn't solve problem number 5 because I ran out of time."

From the interview excerpt above, it is found that students tend to state the time allotted to complete the problem is very short. To determine the student's recall ability, researchers must limit time appropriately to measure the student's recall process adequately. Besides, the results of interviews with other students are as follows;

> "I have solved all the questions on time because I have studied the questions before in class."

Process of recall mildly mentally retarded students

The result of the recall mildly mentally retarded students showed in Table 7. Data are expressed in the form of descriptive statistics according to categories. The data are presented in frequencies, percentage, mean, minimum, and maximum score of the essay.

Table 7 shows that the recall process for mildly mentally retarded students is in the fair category. In detail, mentally disabled students who are categorized as very not good have a 5.88% presentation. Mildly mentally retarded stu-dents who are categorized as not good 17.65%, enough 55.88%, good 20.59%, very good 0.0%. The average students have a fair category (M = 52.5), with a maximum of 92 and a minimum score of 18.

Furthermore, based on the results of inter-views with feeble-minded students, they stated that they have obstacles in remembering the return of mathematical concepts in solving problems. The following are excerpts of student interviews;

> "I have difficulty finding the concept of solving problems."

Then another student added that the thought process was very tiring. Excerpt of the interview as follows;

> "I'm tired of thinking, I've tried to remember, but I still don't remember."

The regression between the recall process and solving of mathematical problems

The influence of students' critical thinking to solve mathematical problems can be seen in Tables 8 & 9.

Table 8. Results of regression

Variable	B	Std. Error	t	sig.
Constant	7.115	2.216	3.121	.000
Recall process	5.167	.431	1.103	.001

Table 8 shows that the results of a simple regression test found that the regression equation is Y = 7.115 + 5.167X, where it is found that students' solving of mathematic problems is influenced by critical thinking ($p < 0.05$).

Table 9. Contribution from the recall process

Model	R	R square	Adjust R Square	Std. Error of the Estimate
1	.621	.515	.409	1.119

The results of simple regression analysis based on Table 9 showed that the coefficient of determination was (R2) 0.515. It means that re-call to solving mathematical problems is 51.5%, while other variables influence the remaining 48.5%. There are student responses that illustrate the effect of recall processes to solve mathe-matical problems.

From the results of the interviews concluded that;

> "I have difficulty remembering, so I didn't finish question number 4," another student replied, "I don't know how to work on number 2. I ran out of time there."

From these interviews, students tend to focus on problems that cannot be done by them.

This fact affects the ability to work on low math problems.

At sensory input, it enters sensory memory. The question given is to determine the process of student recall in completing mathematical problems with the tube material regarding the step of sensory input into neural memory/information entry. The subject is said to meet the recall indicator at the sensory input step into the sensory memory/information entry if the student has read the given problem to completion and absorbs the problem's information.

Discussion

Based on table 6 shows that the solving of mathematic problems of recall mildly mentally retarded students is in the fair category. In detail, students who are categorized as very not good have a 2.94% presentation. Mildly mentally retard-ed students who are classified not good 26.47%, enough 61.76%, good 5.88%. Finally, mentally disabled students who are in the category of very good 2.94%. The average student has a fair category (M = 29.5), with a maximum of 10 and a minimum score of 0. From the interview ex-cerpt above, it is found that students tend to state the time allotted to complete the problem is very short. To determine the student's recall ability, researchers must limit time appropriately to measure the student's recall process adequately.

The students answer with confidence because the student had worked on the question before. So students are more comfortable to solve math problems. Students' frequency in working on a lot of problems, then the ability of students to solve problems more easily (Darmaji et al, 2020; Kenedi et al, 2019). The ability to work on problems is also influenced by students' back-ground (Tanti et al, 2020; Walkington et al, 2018), in addition, it is affected by mathematics learning activities during class (Çelik, 2018).

Based on Table 7 shows that the recall process for mildly mentally retarded students is in the enough category. In detail, mentally disabled students who are categorized as very not good have a 2.94% presentation. Mildly mentally retarded students who are categorized as not good 26.47%, enough 61.76%, good 5.88%, very good 2.94%. The average students have a fair category (M = 52.5), with a maximum of 92 and a minimum score of 18. Furthermore, based on the results of interviews with mildly mentally retarded students, they stated that they have obstacles in remembering the return of mathematical concepts in solving problems.

At the time of conducting the study, researchers gave questions to several students. Have read the items to the end. It is indicated by some of them reading questions with a loud voice. Seen several students have absorbed the information in the problem with a complete. Next to the attention process is the report moves to Sort term memory and lasts for 30 seconds (or more with the help of repetition). Questions are given to find out the process of student recall in solving math problems. The subject is said to meet the indicator if it can write/mention what information is in the question.

In Figure 2 & 3, one of the students' answers was obtained in the attention process. The information moved to short term memory and lasted for 30 seconds (or more with the help of repetition).

Figure 2 & 3, it can be seen that you can write down the information in one of the questions. By writing what is known to the problem and what is asked to the problem, Based on the problem-solving sheet some students fulfill the attention process, the information moves to short term memory and lasts for 30 seconds (or more with the help of repetition).

Then the process of retrieving information goes back to short term memory again. The question given is to find out the student's recall process in completing the mathematical problem of tube material regarding the operation of retrieving information back to short term memory again. It is an essential process in recall (Martin & Myers, 2018). The subject is said to meet the indicator if it can check the problem and see the weaknesses, errors, or mistakes of solving the problem entirely and correctly. Figure 2 is one of the students' answers in retrieving information back to short term memory again. Some students cannot make the process of returning to short term memory again. It is indicated by the inability of students to re-examine the answers they have obtained. They also have not checked the results, see the weaknesses, errors, and errors in solving the problem entirely and correctly. It is because some students have experienced difficulties and mistakes in the previous steps. The recall is an ability that must be accustomed to (Lukowski., Slonecker., & Milojevich, 2020; Avcı., Gümüş, 2020).

Then the information enters Long term memory storage. The question given is to find out the student's recall process in solving math

problems, namely information entered into long term memory storage. The subject is said to meet the indicator if it can write a formula used for problem-solving and complete and correct answers to the questions. Figure 3 shows one of the results of the sample answer in the step information entering the long-term memory storage. From the completion of some students, it was seen that he only wrote the formula correctly. Some students cannot apply the method that he uses, and he does not understand how to solve the problem using a recipe so that the numbers he entered with the formula he uses are incorrect and not correct. It is very much in need of support from outside the student's self to report (Hot et al, 2019; Mogari & Chirove, 2017).

Based on table 8 and 9, the results of a simple regression test found that the regression equation is Y = 7.115 + 5.167X, where it is found that students' solving of mathematic problems is influenced by critical thinking ($p < 0.05$). The results of simple regression analysis based on Table 9 showed that the coefficient of determination was (R2) 0.515. It means that recall to solving mathematical problems is 51.5%, while other variables influence the remaining 48.5%. There are student responses that illustrate the effect of recall processes to solve mathematical problems.

Problem solving ability is very important for every student because (a) problem solving is a general goal of teaching mathematics, (b) problem solving which includes methods, procedures and strategies is the core and main process in the mathematics curriculum, and (c) problem solving is an ability basic in learning mathematics (Sursana, Lestari & Mertasari, 2019). In addition, Pimta, Tayraukham & Nuangchalerm (2009), said that problem solving skills are very important in mathematics, not only for those who will study mathematics in the future, but also for those who will apply it in other fields of study and in everyday life. Therefore, teachers have a very important role in cultivating mathematical problem solving abilities in students both in the form of learning methods used, as well as in evaluations in the form of making questions that support, especially mildly mentally retarded students (Cassel & Reid, 1996; Hord, & Bouck, 2012). Improving students' mathematical problem solving skills needs to be supported by appropriate learning methods so that learning objectives can be achieved, one of which is by using the process of remembering.

Recall memory is a person's activity to bring back or recall the knowledge learned in the past. Whereas recall, according to Santrock, is when taking something from a mental data warehouse, searching through our memory warehouse to find relevant information. With the agreement, this search can be automated or require some effort (Murrihy, Bailey, & Roodenburg, 2017). The recall process is the activity and the ability of a person to call back the knowledge that has been stored in memory by encryption and searching automatically or with some effort without any instructions to the person (Priya, 2021).

The benefits of this research can provide knowledge in education related to recall memory in students. Recall memory is a process of evoking memories, verbally, or in real comparisons about a student's experience of mathematical concepts (Moskal & Wass, 2018; Alahmadi, 2019). Recall memory that is visible and accessible to students within 30 seconds forever included in long term memory. Factors that influence recall memory are serial position, media, repetition, intelligence, and the impact of self-review (Ferguson., 2014; Yoshii., 2015). Media plays a role in recall memory because the media can combine facts and ideas clearly expressed through images and audio.

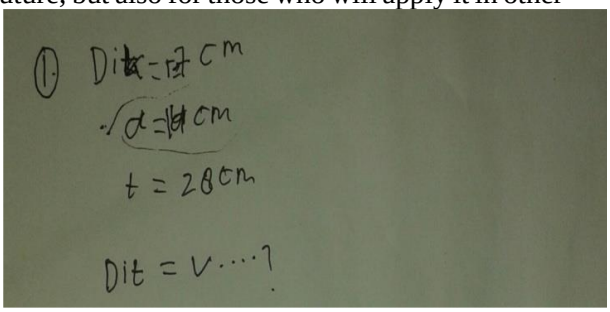

Figure 2 results of the attention process (personal documentation)

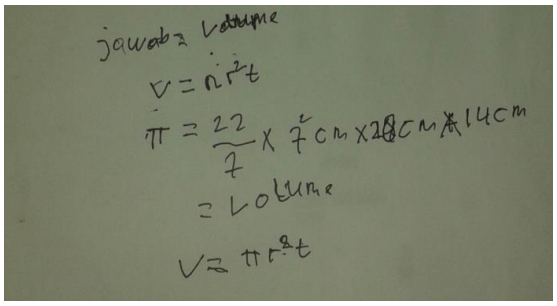

Figure 3 information entered into storage Long term memory (personal documentation)

Students have limitations in remembering concepts. Developmental students have obstacles in recognizing thoughts, synthesizing them into answer formulations. So students think to leave or not continue thinking (Francis et al, 2020; Ke. et.al., 2017). The recall is a rethinking process that requires special abilities. As students' essential skills to receive learning (Jamsai, 2019; Astalini et al., 2020a; Zhalgasbekova et al, 2018). At the time of conducting the study, the researcher gave a question to the sample. After the problem is given, the researcher asks to do it. The question presented is to determine the student's recall process in completing the tube material mathematics problem regarding the first step, namely sensory input into sensory memory/ information entry. The subject is said to meet the indicator at the neural input step into neural memory/information entry if the student has read the given problem to the end and absorbs the information in the challenge. This ability will provide a good influence to reduce the burden of students' minds (Garwood et al, 2018). It requires special attention psychologically (Astalini et al, 2020b; Sönmez & Alptekin, 2020).

CONCLUSION

The conclusion of this study is that students' ability to work on tube problems is classified as fair (M = 29.5), and recall processes are in the fair category (M = 52.5). The process recalls analysis results affect the ability of mildly mentally retarded students to work on math problems. The effect of recall ability is 62.1% on the ability to teach mathematical problems. This research's implication is that recall ability can be improved if students routinely learn mathematical concepts first. The recall step that has not been fulfilled in mathematics learning for feeble-minded students is the step of information entering the storage of long term memory and retrieving data into short term memory.

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