Mapping Prior Knowledge Middle Students in Solving Arithmatics Problems

Anita Adinda[*1]; Khashlati Hilyatul Ajda[2]; Heri Purnomo[3]; Zulhamdi[4]
[1,4] Department of Mathematics, Faculty of Tarbiyah and Teacher Training, UIN Syahada Padangsidimpuan; [2, 3] Department of Mathematics, Faculty of Mathematics and Natural Sciences, State University of Malang
E-mail: anitaadinda@uinsyahada.ac.id[1], khashlati.hilyatul.1803119@students.um.ac.id[2], heri.purnomo.1803119@students.um.ac.id[3], zulhamdi631@gmail.com[4]

Abstract

This study aims to determine the effect of prior knowledge in solving arithmetic problems and to describe the mapping of middle students' prior knowledge in solving arithmetic problems. The method used in this study is a mixed method. A total of 63 students of MTsN Batu Malang were involved in this study. The subjects used in this study were 2 students. Both students were selected based on their ability to provide written and oral answers. The instruments used in data collection were a prior knowledge diagnostic test and an arithmetic problem solving test. The results of this study indicate that prior knowledge affects students' problem solving abilities, and prior knowledge is needed to solve arithmetic problems, but the low problem solving test scores are caused by a lack of initial knowledge and also students' understanding of the problems given. The implication of this research is that educators can get an idea of how to map students' prior knowledge. In addition, educators can also design an arithmetic problem learning program design in accordance with the description of students' students' prior knowledge.

Keywords: *Arithmetic Problems; Prior Knowledge; Prior Knowledge Mapping.*

Abstrak

Penelitian ini bertujuan untuk mengetahui pengaruh pengetahuan awal dalam menyelesaikan masalah aritmatika dan mendeskripsikan pemetaan pengetahuan awal siswa menengah dalam menyelesaikan masalah aritmatika. Metode yang digunakan dalam penelitian ini adalah metode campuran. Sebanyak 63 siswa MTsN Batu Malang terlibat dalam penelitian ini. Subjek yang digunakan dalam penelitian ini adalah 2 siswa. Kedua siswa dipilih berdasarkan kemampuan mereka untuk memberikan jawaban tertulis dan lisan. Instrumen yang digunakan dalam pengumpulan data adalah tes diagnostik pengetahuan awal dan tes pemecahan masalah aritmatika. Hasil penelitian ini menunjukkan bahwa pengetahuan awal berpengaruh terhadap kemampuan pemecahan masalah siswa, dan pengetahuan awal diperlukan untuk menyelesaikan masalah aritmatika, namun rendahnya nilai tes pemecahan masalah disebabkan oleh kurangnya pengetahuan awal dan juga pemahaman siswa terhadap masalah yang diberikan. Implikasi penelitian ini adalah para pendidik dapat memperoleh gambaran bagaimana pemetaan

*Correspondence:
Email: anitaadinda@uinsyahada.ac.id

pengetahuan awal siswa. Selain itu, pendidik juga dapat merancang desain program pembelajaran masalah aritmetika sesuai dengan gambaran pemetaan pengetahuan awal siswa.

Kata Kunci: Masalah Aritmatika; Pengetahuan Awal; Pemetaan Pengetahuan Awal.

INTRODUCTION

Initial knowledge is the basic knowledge that students must possess to move to the next knowledge. Without the initial knowledge, students will have difficulty gaining new knowledge. Hailikari (2009) and Hasanuddin (2020) defines prior knowledge as a combination of knowledge and skills. Furthermore, he explained the influence of early knowledge in the learning process, namely: (1) initial knowledge functions as a label category that influences new information to be added to existing knowledge structures; (2) initial knowledge functions as an assimilation context in which new material will be interrelated, so it will be easier to construct knowledge through the elaboration process; and (3) activation of initial knowledge can increase access to knowledge during the learning process. Dochy & Alexander (1995) states that initial c, because: (1) pre-existing learning, (2) structured in the schema, (3) as declarative and procedural knowledge, (4) partially explicit, (5) contains content knowledge and metacognitive knowledge, (6) dynamic in nature and stored in an initial knowledge base.

Students who have good initial knowledge will certainly be easier to accept the next lesson. The student will also have better ability in problem solving. This is confirmed by Zakaria & Yusoff (2009) who state that early knowledge plays an important role in problem solving abilities. Students will have high problem solving skills, if based on strong initial knowledge. Initial knowledge directly and indirectly influences the learning process Santyasa (2005). The direct influence in question is that early knowledge can simplify the learning process and direct learning outcomes better. Indirect effect, namely initial knowledge can optimize the clarity of subject matter and improve the efficient use of learning and learning time.

Research Pollack, et al. (2008) and Kärner & Warwas (2015) states that prior knowledge of students' information becomes the main potential in learning in schools. In the study of Wetzels, et al. (2011) also said new information could be integrated by expanding students' prior knowledge. Allison (2000) also examined the CAFÉ strategy, namely the use of prior knowledge to link readings. Usually, readers bring information from what they already know or what they have previously read about a topic and relate it to what they read. This increases their understanding of the text and helps them remember what they have read. The use of prior knowledge can help students connect their own experiences with reading so they can better understand what they are reading

A teacher who will start learning with new material, will generally see the student's initial knowledge. Dávila (2015) says that bringing up prior knowledge in learning can anticipate unexpected consequences. This is also in accordance with Shing and Shing & Brod (2016) who say taking into account students' prior knowledge and knowing about how it affects the memory process is important for optimizing student learning.

To examine deeper about students 'initial knowledge, one of them is by mapping out students' initial knowledge. This is consistent with the opinion of Hay & Kinchin, (2008) saying concept mapping can be used to measure prior knowledge and how simple mapping exercises can promote the integration of teacher and student understanding in meaningful ways. Gurlitt & Renkl (2010) investigated two experiments investigating the effects of the characteristic concept mapping features used for the activation of prior knowledge. The Tertiary Education Commission (Van Kesteren, 2013) revealed strategies for building prior prior knowledge of students, namely semantic mapping. This strategy allows students to compare and evaluate information and ideas.

This research was conducted at MTsN Batu City. This study aims to: 1) find out how much influence prior knowledge in solving arithmetic problems and 2) describe the mapping of prior knowledge Middle Students in solving arithmetic problems.

RESEARCH METHODS

The method used in this study is the mix-method. This research is a research step with combines two forms of research that have existed before, namely research qualitative and quantitative research. The first stage uses quantitative to see how the influence of students' initial knowledge on arithmetic problem-solving abilities and then continues to analyze qualitatively. The population in this study were students in class VII D and VII H MTsN Batu Malang, totaling 63 students. This study used a purposive sampling technique by taking 2 students. Students who have a high value in prior knowledge are not chosen because most of the reasons submitted are very clear, as well as for students with low grades, as most of the students do not answer the questions given or answer no idea. Both students were chosen based on their ability to provide both written and verbal answers.

The instruments used in data collection are the prior knowledge diagnostic tests and arithmetic problem solving tests. Diagnostic tests and arithmetic problem-solving tests were validated by 2 mathematics education experts and tested for validity and reliability in order to obtain valid instruments. This diagnostic test is used to determine the initial knowledge of students who are required to complete the problem solving social arithmetic problems. Diagnostic tests consist of 20 related statements of algebraic concept, algebraic form operations, and percentages. This test is the response of a student (Agree/disagree/no know) to the statement given and the reason for each student's response. The problem solving test consists of 1 question about social arithmetic. Diagnostic and problem solving test results are analysed quantitatively to see the prior knowledge impact on problem solving capabilities. The problem solving test instrument provided was adapted from the Mathematics Student Book of SMP/MTs Class VIII Semester 2 Revised Edition 2016.

RESULTS AND DISCUSSION

1. Prior Knowledge Student's Test Analysis

Many students are based on their Prior Knowledge material categories and students' answer categories are presented in Table 1.

Table 1. Percentage of Prior Knowledge of Students ' Test Results

Categories	Percentage Number of Students (%)					
	0	1	2	3	4	5
Algebraic Concept	19,4	0,32	15,2	0,32	19,2	45,6
Percentage	19,4	0.00	16,2	0,00	23,2	41,3
Operation of Algebra	37,1	0,63	28,6	0,32	14,9	18,4

Based on Table 1, it can be seen that students are troubled at the concept of algebra. In the matter of numbers 2, 3, 7, 8, and 10, more than 23.7% of students who do not answer questions or answer do not know. These five problems relate to the concept of variables, coefficients, similar tribes, constants. Overall, in algebraic concept material, the number of students who answered do not know, did not answer, and wrong answer the question given is 34.92%.

Overall, the percentage of many students who answered do not know, did not answer, and incorrectly replied to the material percentage as much as 35.56%. Based on that, it can be said that more students understand the concept of percentages. In addition, students have problems with the operation of algebraic forms. This is evident from the number of students who answered do not know, did not answer, and wrong answer the questions given on the material amounted to 66.35%.

2. Problem Solving Student's Test Analysis

From 63 students ' answers to problem solving tests, question number 1 with the lowest score of 4 and the highest score 14. At number 2 with the lowest score 0 and the highest score 30, while at number 3 with the lowest score 0 and the highest score of 36. At number 4 with the lowest score 0 and the highest score 20. The results of a problem solving test analysis of 63

students earning the lowest and highest scores on each item are presented in the following table.

Table 2. Number of Students in the Lowest Score Category and Highest Score in Each Item

Category	Pecentage Number of Students in Each Category (%)			
	1	2	3	4
Lowest Score	23.81	57.14	28.57	33.33
Highest Score	76.19	19.05	7.94	41.27

According to Table 2 above, at number 1, the percentage of students who can answer correctly is more than 3 times the number of students who get the lowest score. It can be said that many students understand the concept of profit value on sale. At number 2, more than 50% of students cannot answer the questions given regarding the profit percentage value. At number 3, more than 1/4 students are not able to answer the questions given and only 5 people can answer the questions correctly. Thus, it can be said that the student has not understood well to set the sale price if the profit percentage is set. At number 4, 41.27% of students can answer correctly, but 33.33% of students are unable to answer the question. To see more clearly related to the problematic construction structures in the Prior Knowledge and social arithmetic material on problem solving, Figure 2 is presented.

Based on results of the prior knowledge test analysis and problem solving test, a quantitative analysis was conducted to see whether there was any prior knowledge influence on problem solving.

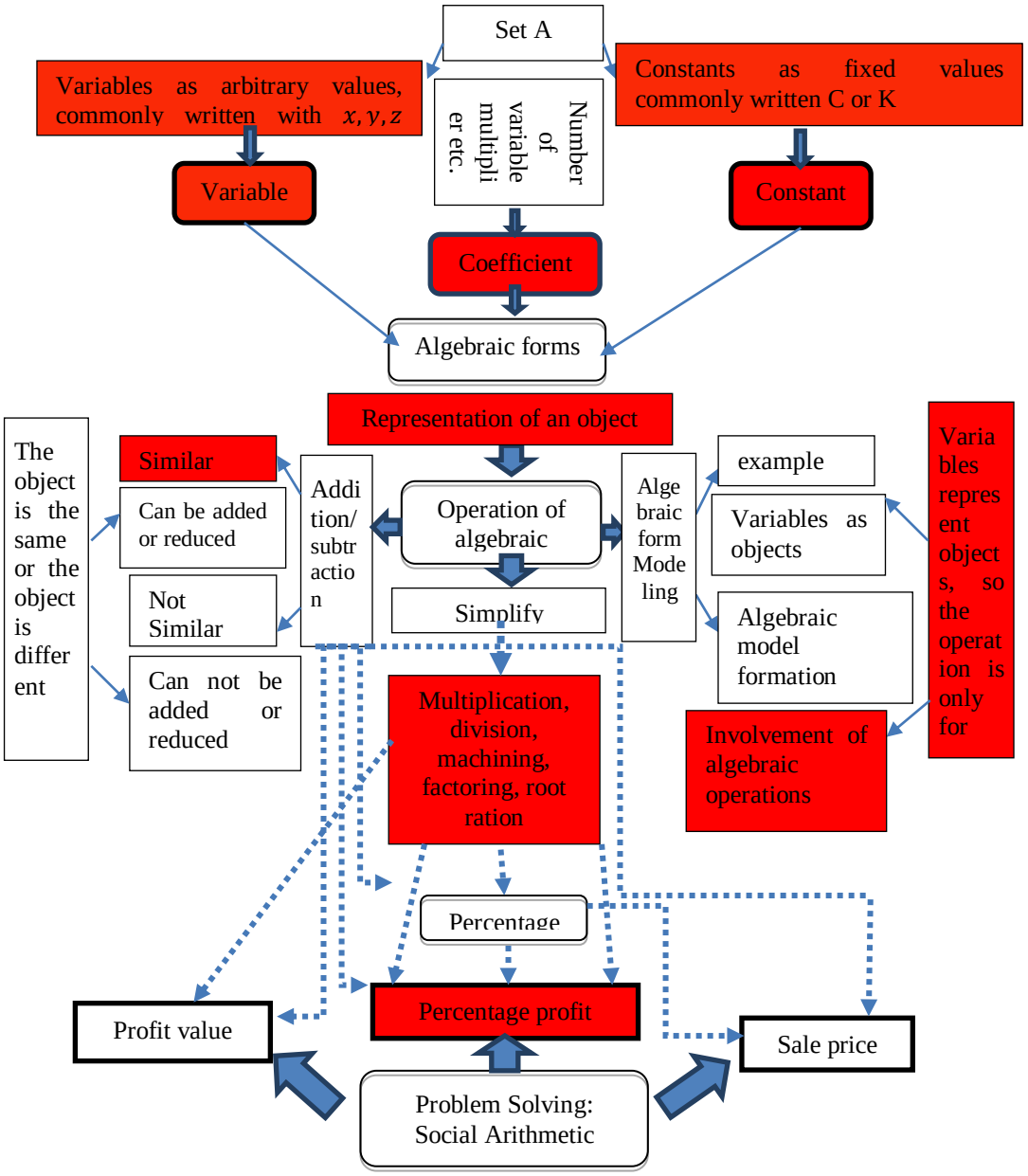

Figure 2. Construction Structures "Problematic" in Prior Knowledge

Arithmetic material requires a prerequisite for algebraic forms and percentages

: Frequently problematic construction

According to Table 3 above, from the number of students as much as 63, the minimum value of prior knowledge 33, maximum value 84, and Mean

60.73, while the minimum value of problem solving 14, the maximum value 90, and mean 44.89.

Table 3. Results of Descriptive Statistical Calculations Test Prior Knowledge and Problem Solving Results

	N	Minimum	Maximum	Mean	Std. Deviation
Prior Knowledge	63	33	84	60,73	14,629
Problem Solving Ability	63	14	90	44,89	24,013
Valid N (listwise)	63				

Test normality data from both test results and obtained a significant value of 0.3844. This Data is said to be a normal distribution because the significance value is greater than 0.05. Furthermore, test-t to see the influence of prior knowledge test to problem solving presented in Table 4.

Table 4. T-test Result

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-17,886	10,194		-1,755	,084
	Prior Knowledge	1,034	,163	,630	6,331	,000

Prior knowledge affects students' problem-solving skills because t-count 6.331 is greater than T-table (t-table = 0.6785) with the equivalent of α = 0.05 (see table 3).

To find out more about the students ' answers on the two tests related to the reasons written in the Prior Knowledge test and problem solving tests, it is analysed further qualitatively, that is by way of in-depth interviews. Table 5 is a breakdown of the scores of the two tests in the two selected subjects.

Table 5. Results of Prior Knowledge Tests and Problem Solving Tests on Research Subjects

Subject	Prior Knowledge Score Test	Problem Solving Score Test
S1	67	70
S2	59	34

Analysis of the results of the answers and the results of the interviews of the two students can be described as follows:

1. **First Subject (S1)**

a. Prior Knowledge S1 Test Results

Prior knowledge S1 test results get a score of 67. The answer for S1 can be seen in Table 6.

Table 6. Test Result of Prior Knowledge S1

The Number of Questions	Category
4, 5, 6, 9, 14, 15	5
1, 2, 3, 11, 12, 13	4
7, 10	3
8, 18,19	2
16	1
17, 20	0

From the 5 categories of prior knowledge diagnostic test assessment, S1 answers not knowing (category: 0) in questions number 17 and 20. Based on the reasons given and the results of the interview, on the two numbers above, S1 explained that he did not know how to count them and he forgot about the material. Category 1: S1 answered incorrectly and the reason given was incorrect on number 16. S1 said that both denominators have x together, so they can be added together, by multiplying directly by both the denominator and the numerator. Category 2 is S1 answered incorrectly but the reasons given are not quite right at numbers 8, 18 and 19. Similar to number 7, S1's answers incorrectly but the reasons given were less precise and based on the results of the interview, S1 said that everything stated with letters is variable, so all three are variables.

Category 3: S1 answered correctly but the reasons are not right at numbers 7 and 10. Based on the results of S1's answers, he answered correctly but the reasons given were not right and based on the results of the interview, S1 said that everything stated by letters is variable, so all three are variables. Even though a and b can also be variables. For category 4: S1

answered correctly but the reasons are less precise, namely at numbers 1, 2, 3, 11, 12 and 13. The answers of S1 are correct but the reasons put forward are less precise because S1 only provides an explanation of 22 and 12 different variables. In addition, based on the results of the interview, S1 said that -9 and -6 are also not of the same type because the variables are different, but he did not write them down because he thought the reason was the same as 22 and 12 which had different variables. From the results of this interview, it can be seen that S1 actually understands the concept of a similar tribe, but the reasons he wrote are incomplete.

To dig further into the reasons S1 gave in number 3, the following is an interview script with S1.

Q :Try to explain which one do you mean by 4 terms, 4 variables, 3 coefficients, and 5 constants?
S1 : 4 terms mean s2, a, a ^ 3, and t ^ 4; The 4 variables mean s2, a, a ^ 3, and t ^ 4; 3 the coefficient means 3 because a does not have rank; 5 constants mean the numbers 2, 3, 4, 5, and 7 (explain while pointing to the answer)
Q : So, are terms and variables the same?
S1 : Yes.
Q : Earlier you said that 3 is a coefficient and you also said that 3 is also a constant, so are the coefficients and constants the same?
S1: Looks like yes (with a confused expression)

Category 5: S1 answered correctly with the right reasons at number 4, 5, 6, 9, 14, and 15. Based on the answers and interview results in numbers 4 through 6, S1 answers correctly and he can express the reason precisely. Based on the results of the answers and the results of interviews number 14 and 15, S1 answers are correct and the reasons he gave are correct

b. Problem Solving S1 Test Results

S1 problem solving test results have a score of 70 with the following details.

Table 7. Score of Problem Solving Tests S1

Score of Each Item				Score
1	2	3	4	
14	0	36	20	70

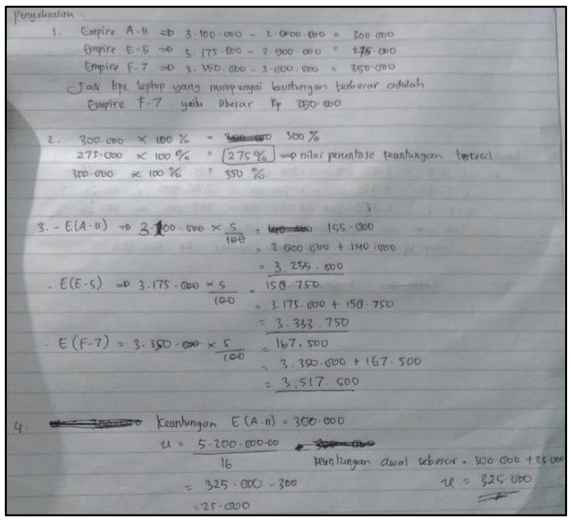

Figure 3. S1 Problem Solving Test Results

S1 can solve problem 1 correctly. In number 2, S1 answers wrong because to find the percentage of profit, he immediately multiplies the profit by 100% and then looks for the lowest percentage. In accordance with the results of the interview, S1 said that he did not understand how to calculate the percentage of profit. In number 3 and number 4, S1 can finish correctly and in the interview session, he can explain clearly.

2. Second Subject (S2)

a. Prior Knowledge S2 Test Results

Prior knowledge S2 test results get a score of 59. S2 answers can be seen as follows.

Table 8. Prior Knowledge Test Results S2

Question Number	Category
1, 2, 4, 5, 6, 12, 13, and 14	5
3, 11,15 and 17	4
-	3
-	2
8, 9 and 16	1
7, 10, 18, 19 and 20	0

Based on the results of interviews with 5 questions, S2 stated that he did not understand with question number 3, S2 did not agree with the statement given. but the reason S2 is not quite right. The reason S2 is not

complete is because he doesn't explain everything. Category 1: S2's answer is wrong and the reason given is wrong in numbers 8, 9, 16. Based on the results of the interview related to the reason for S2, it turns out that S2 does not understand the statement, so it is said that the statement is wrong. S2 stated that the statement was false, but could not correctly state the reason. Category 4: S2's answer is correct but the reasons given are incorrect in numbers 3, 11, 15 and 17. In number 3, S2 does not agree with the statement given. From the results of the interview, the reason for the S2 is incomplete because he did not explain everything. Category 5: S2's answer is correct and the reasons given are correct in numbers 1, 2, 4, 5, 6, 12, 13, and 14. Similar to the results of the interview, Master's Degree can explain the reasons he gave well. Likewise with other question numbers, S2 can state the reason correctly.

b. Problem Solving S2 Test Results

S2 problem solving test results have a score of 34 with the following details.

Table 9. Score of Problem Solving Tests S2

Score of Each Item				Score
1	2	3	4	
14	0	0	20	34

The S2 problem solving answer sheets and their analysis are described below.

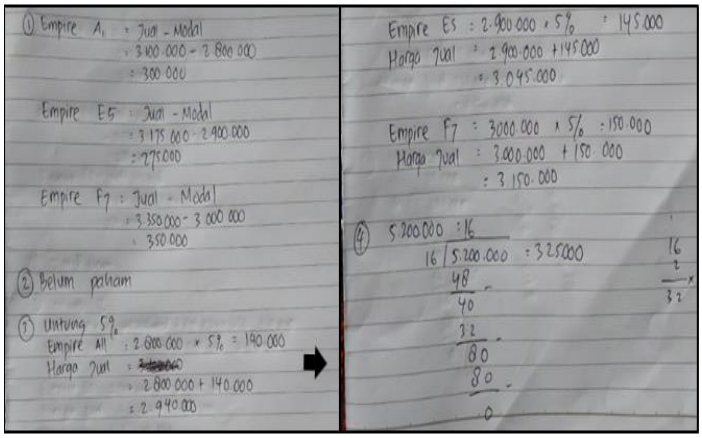

Figure 4. Results of Problem Solving Tests S2

In question number 1, S2 can solve the problem correctly and can state clearly the solution steps. In number 2, S2 does not answer the problem given, he only writes if he does not understand. Based on the results of the interview, S2 also revealed that he did not understand how to do it. In number 3, S2's answer is incorrect because what is asked is that the 5% profit from the company's sales price is not the profit from the production price, even though the completion step he did was right. Based on the results of the interview, he revealed that he did not understand the problems given. In number 4, S2 resolves the problem correctly and based on the results of the interview he can state the solution clearly.

Student's prior algebraic knowledge is a point that influences students' arithmetic problem solving abilities. So that prior knowledge of algebra becomes an important component in learning social arithmetic. This is consistent with the opinion of Pattee (2008:30) which confirms that background information (prior knowledge) for students remains an important component for student learning abilities. If students' prior algebraic knowledge is good, it is most likely that algebraic obstacles in solving social arithmetic problems will be overcome. This statement is supported by Shulman (2010) and Dong, et al. (2020) which says that if students apply their prior understanding to new experiences and ideas, they will build their world full of flavor. When students have mastered the algebraic component, the student will use his skills to find solutions in solving social arithmetic problems are in line with the opinions of Bringula, et al. (2016) who say that students can demonstrate or eliminate skills, depending on their prior knowledge about identifying the terms of the equation and the next step in solving the equation.

In solving social arithmetic problems, many students do not understand the problem so students cannot solve the problem. Difficulties in constructing understanding of new problems can be caused by lack of understanding in prior knowledge (Bodner, 2019; Gagné, 1968; Training, 2006). Students' low problem solving skills are partly due to their inability

to understand problems. The inability to understand this problem is one of the lacks of self-confidence in solving problems. According to Hailikari (2009) and Van Riesen, et al. (2022) there is a strong correlation between academic self-confidence and initial knowledge performance. Dochy, et al. (1999) also said that students' initial knowledge contributed significantly to post-test scores or learning gains.

Based on the above, students' prior knowledge has a positive effect on problem solving abilities. The student's low arithmetic score is caused by low initial knowledge. It can be seen from the initial knowledge mapping that the low initial knowledge is in the algebra section. Therefore, before starting learning, educators should first improve student algebra related to arithmetic. Educators must improve students' algebra skills so that learning goes as expected. If the skills possessed by students are in accordance with the new knowledge being taught, it will make students ready to learn and students will gain meaningful learning experiences.

Therefore, with the mapping of prior knowledge in solving arithmetic problems, this research has the implication that educators can obtain a complete picture of how to map students' prior knowledge before participating in a learning program. In addition, educators can also design an arithmetic problem learning program design in accordance with the description of students' initial knowledge mapping. This research also has a contribution to education in how to formulate education system policies, especially for students who will study social artifacts. In addition, this research can also be used as a reference for reviewing social arithmetic material.

CONCLUSION

Based on the explanation of the results and discussion above, it can be concluded: 1) Prior Knowledge influences the problem solving ability of students with t-count = 6,331 and; 2) Based on the analysis of the answers and interviews of the two subjects, Prior Knowledge is needed to solve social arithmetic problem

solving, however Low problem solving test scores are caused due to lack of students' initial knowledge and understanding of the given problem.

REFERENCES

Allison, B. (2000). *CAFE Strategy: Use Prior Knowledge to Connect With Text*. www.thedailycafe.com

Bodner, G. M. (2019). *Constructivism : A Theory of Knowledge*. *June*. https://doi.org/10.1021/ed063p873

Bringula, R. P., Basa, R. S., Cecilio Dela Cruz, M., & Rodrigo, M. T. (2016). Effects of Prior Knowledge in Mathematics on Learner-Interface Interactions in a Learning-by-Teaching Intelligent Tutoring System. *Journal of Educational Computing Research*, *54*(4), 462–482.

Dávila, L. T. (2015). " Dare I ask ?": Eliciting prior knowledge and its implications for teaching and learning. *The Electronic Journal for English as a Second Language*, *19*(2), 1–14.

Dochy, F. J. R. C., & Alexander, P. A. (1995). Mapping prior knowledge: A framework for discussion among researchers. *European Journal of Psychology of Education*, *10*(3), 225–242. https://doi.org/10.1007/BF03172918

Dochy, F., Segers, M., & Buehl, M. M. (1999). The Relation between Assessment Practices and Outcomes of Studies: The Case of Research on Prior Knowledge. *Review of Educational Research*, *69*(2), 145. https://doi.org/10.2307/1170673

Dong, A., Jong, M. S. Y., & King, R. B. (2020). How Does Prior Knowledge Influence Learning Engagement? The Mediating Roles of Cognitive Load and Help-Seeking. In *Frontiers in Psychology* (Vol. 11). https://doi.org/10.3389/fpsyg.2020.591203

Gagné, R. M. (1968). *Learning Hierarchies; Learning Hierarchies 3*. *2*, 1–9.

Gurlitt, J., & Renkl, A. (2010). Prior knowledge activation: How different concept mapping tasks lead to substantial differences in cognitive processes, learning outcomes, and perceived self-efficacy. *Instructional Science*, *38*(4), 417–433. https://doi.org/10.1007/S11251-008-9090-5

Hailikari, T. (2009). *Assessing University Students* (Vol. 38, Issue 1). Helsinki University Print. https://doi.org/10.1177/0033688206076156

Hasanuddin, M. I. (2020). Pengetahuan Awal (Prior Knowledge) : Konsep Dan Implikasi Dalam Pembelajaran. *EDISI : Jurnal Edukasi Dan Sains*, *2*(2), 217–232. https://ejournal.stitpn.ac.id/index.php/edisi

Hay, D., & Kinchin, I. (2008). Using concept mapping to measure learning quality. *Education + Training*, *50*(2), 167–182. https://doi.org/10.1108/00400910810862146

Kärner, T., & Warwas, J. (2015). Functional relevance of students' prior knowledge and situational uncertainty during verbal interactions in vocational classrooms: Evidence from a mixed-methods study. *Empirical Research in Vocational Education and Training*, *7*(1). https://doi.org/10.1186/s40461-015-0023-7

Pattee, A. (2008). What do you know? Applying the K-W-L method to the reference transaction with children. *Children and Libraries*, *6*, 30–31, 34–39.

Santyasa, W. (2005). *Model Pembelajaran Inovatif dalam Implementasi Kurikulum Berbasis Kompetensi* (pp. 1–26).

Shing, Y. L., & Brod, G. (2016). Effects of Prior Knowledge on Memory: Implications for Education. *Mind, Brain, and Education*, *10*(3), 153–161. https://doi.org/10.1111/MBE.12110

Shulman, L. S. (2010). Taking Learning Seriously. *Http://Dx.Doi.Org/10.1080/00091389909602695*, *31*(4), 10–17. https://doi.org/10.1080/00091389909602695

Training, N. C. of E. R. and. (2006). *Position Paper. National Focus Group on Teaching of Mathematics*. http://14.139.60.153/handle/123456789/228

Van Kesteren, M. T. R. (2013). Building on prior knowledge. *Psychologist*, *26*(3), 194–198.

van Riesen, S. A. N., Gijlers, H., Anjewierden, A. A., & de Jong, T. (2022). The influence of prior knowledge on the effectiveness of guided experiment design. *Interactive Learning Environments*, *30*(1), 17–33. https://doi.org/10.1080/10494820.2019.1631193

Wetzels, S. A. J., Kester, L., van Merriënboer, J. J. G., & Broers, N. J. (2011). The influence of prior knowledge on the retrieval-directed function of note taking in prior knowledge activation. *The British Journal of Educational Psychology*, *81*(Pt 2), 274–291. https://doi.org/10.1348/000709910X517425

Zakaria, E., & Yusoff, N. (2009). Attitudes and problem-solving skills in algebra among Malaysian matriculation college students. *European Journal of Social Sciences*, *8*(2), 232–245.