



Mathematics Teacher's Scaffolding Patterns Applied to Cooperative Learning Settings to Facilitate Students' Problem Solving

Dwi Priyo Utomo¹, Nurul Irawati², and Tika R. Kamil³

^{1,2,3}Universitas Muhammadiyah Malang

Corresponding Author: dwi_priyo@umm.ac.id¹, nirawati3@gmail.com²,
rifkykamil@gmail.com³

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Abstract

This current research was aimed at analyzing and describing teacher's scaffolding patterns applied to cooperative learning setting to help students solve mathematical problems. This research was designed qualitatively, recruiting a mathematics teacher of the eighth grade as the subject. Further, the instruments used to carry out the research comprised a test with HOTS questions, observation sheet, and interview guide. To identify the teacher's scaffolding patterns, the target students were required to work on the HOTS test. Afterwards, they were grouped based on the level of difficulty they faced during working on the test. Next, the teacher provided the students with the scaffolding based on the students' needs in each of the created groups. This research indicated that the scaffolding given to the group of students with no difficulty in solving the problem only covered a reviewing component. Meanwhile, to the group with the difficulty in executing the plans as arranged, the scaffolding comprised explaining, restructuring, and developing conceptual thinking components. At last, to the group with a sole ability to understand the problem, the whole components of scaffolding were of great necessity, including environmental provisions, explaining, reviewing, restructuring, and developing conceptual thinking.

Abstrak

Tujuan dari penelitian ini adalah untuk menganalisis dan mendeskripsikan pola scaffolding guru pada setting pembelajaran kooperatif untuk membantu siswa memecahkan masalah. Penelitian ini adalah penelitian kualitatif dengan subjek guru matematika kelas VIII. Instrumen yang digunakan dalam penelitian ini adalah lembar tes soal HOTS, lembar observasi dan pedoman wawancara. Untuk mengetahui pola scaffolding guru, siswa diminta untuk mengerjakan tes HOTS. Kemudian siswa dikelompokkan sesuai dengan tingkat kesulitan yang dialami saat mengerjakan soal tersebut. Selanjutnya guru memberikan scaffolding sesuai dengan kebutuhan siswa pada masing-masing kelompok. Hasil penelitian ini menunjukkan bahwa scaffolding pada kelompok siswa yang tidak mengalami kesulitan dalam menyelesaikan masalah, hanya pada komponen reviewing. Scaffolding pada kelompok siswa yang mengalami kesulitan pada tahap mengerjakan sesuai rencana, pada komponen explaining, restructuring dan developing conceptual thinking. Siswa yang hanya mampu memahami masalah, scaffolding yang diperlukan pada semua komponen yaitu environmental provisions, explaining, reviewing, restructuring dan developing conceptual thinking.

Keywords: High Order Thinking Skills, problem-solving, cooperative learning, scaffolding.

BACKGROUND

Mathematics is a universal science holding crucial roles in numerous disciplines and contributing advancement to how humans are thinking. For that reason, mathematics is of great necessity to be taught to students at the whole education levels, effectively from elementary school, in an attempt to get students equipped with logical, analytical, systematic, critical, and creative thinking, which is deemed helpful for them to carry over their cooperativeness (Ahdiyati & Sarjaya, 2014; Lince, 2016). Through problem-solving activities, students are able to develop their other mathematical competences, such as mathematical understanding and representation (Minarni et al., 2016). Problem-solving is, accordingly, considered crucial in mathematics instructions, which requires students to enhance their prior competences in order to obtain adequate experiences so that they can overcome any given mathematical problems effectively (Supiyani et al., 2013). In essence, the ultimate goal of problem-solving for students is to acquire as many experiences as possible regarding prior knowledge and skills they have owned (Indriyana et al., 2017).

One of various skills students must acquire in solving problems is mathematical thinking, yet only few teachers put more attention to such a case. As a matter of a fact, many students get lost in given problems and fail to solve them, even for the most common and easy cases. It is of urgency that teachers comprehend the process of students' thinking in solving problems. Such a role is extremely necessary to help students express how their thinking flows to achieve the best solutions for specific problems (Indriyana et al., 2017; Khasanah et al., 2018)

Thinking skills, moreover, vary. They include critical, logical, reflective, metacognitive, and creative thinking, renowned as 'Higher Order Thinking Skills' (HOTS) (Mogi, 2018; Rahmawati et al., 2018). Various problems in mathematics needing HOTS have been referred to non-routine issues of which answers remain mystified that students are to be highly motivated, enthusiastic, and willing to solve the given problems (Sumarmo & Nishitani, 2010; Wibowo & Setianingsih, 2016).

With respect to the explored cases, the most decisive solution teachers can offer for any problems needing HOTS is to give their students the most precise scaffolding. Scaffolding is one of instructional strategies effective to improve the quality of mathematics instructions in terms of building concepts and critical thinking skill amidst students (Verenikina, 2008). Scaffolding, adding to that, in this present research is referred to an adequate assistance provided by teachers, necessarily, for any students with lower levels of competence. The assistance can be in the forms of guidance, encouragement, and hints to convert any specific problems into other possible forms. More, in this current research, scaffolding is given to a cooperative instruction so as to build a supportive learning environment that is active, effective, and conducive. In addition, students can cooperate in solving problems that seem hard to solve independently (Hammond & Gibbons, 2005). Scaffolding, further, can also provide students with chances to define any problems according to their background knowledge and experiences (Kim, 2017). What is more, the presence of scaffolding helps students' thinking skill level improve, primarily related to problem solving (Wibowo & Setianingsih, 2016). Explicitly, scaffolding is used dur-

ing in the classroom activities to carry over effective instructional sessions (McKinnon, 2012).

Cooperative learning constitutes a strategy that enables all group members to share their knowledge to discuss further (Yassin et al., 2018). Cooperative learning has been widely implemented by a number of researchers as a learning strategy contributing positive learning results (Gull & Shehzad, 2015). It is evident that students who are equipped with cooperative learning strategy actively get involved in solving any given problems (Dendup & Onthanee, 2020).

Scaffolding embedded into cooperative learning has been proven to be more effective than other types of learning (Ghorbani, 2016). Scaffolding strategy improves students' achievement upon their learning (Koes et al., 2015).

It is consistent with the previous study carried out by Muhtarom & Sugiyanti (2016) claiming that students' thinking skill is shown to improve after a scaffolding treatment through problem-solving activities so that students can represent any information stated in the given problems correctly. Next, another study from Indriyana et al. (2017) indicates that students' thinking skill, primarily after a scaffolding treatment, has successfully achieved four major stages of problem-solving as the indicator that students have been able to understand and solve a certain problem satisfactorily. Parallel with it, a study of Mayangsari & Mahardhika (2018) avers that scaffolding can help students solve non-routine problems by means of Polya's approach. Besides, Agustina & Setianingsih (2017) also proclaim that scaffolding can be used to solve PISA problems that require different levels of HOTS in different groups with differing needs.

Regarding the abovementioned elaborations, there are some patterns of

scaffolding practice applied in this current research as presented in the following Table 1.

Table 1. Scaffolding Patterns

No.	Components of Activities	Teacher's Scaffolding
1	Environmental provisions	Providing worksheet in structured ways
2	Explaining	Requesting students to reread the problem Giving a directive question to lead students to the answer so that they can get the main point of the problem
3	Reviewing	Requesting students to reflect the answer Requesting students to make up the mistakes if any
4	Restructuring	Giving a directive question to help students re-find some facts implied in the problem Requesting students to rearrange the correct answer for the problem under investigation
5	Developing Conceptual Thinking	Requesting students to find some alternatives possible to solve the problem Giving a directive question to help students find some other possible concepts consistent with the given problem

Source: (Sjaifullah, 2015).

This current research, subsequently, was aimed at analyzing and describing a scaffolding process carried out by a teacher in order to help the students solve any problems requiring HOTS, specifically in the context of cooperative learning at Madrasah Tsanawiyah (Islamic Junior High School) level.

METHODS

This research deployed qualitative approach by means of descriptive research design, which was in the form of case study. It was conducted at Madrasah Tsanawiyah Negeri (MTsN) 2 Pasuruan, Indonesia, involving a mathematics

teacher of the eighth grade. The research data, furthermore, covered the results of: a) observation of scaffolding practiced by the teacher; and b) semi-structured interview with students to obtain necessary information related to the scaffolding practice applied by the teacher. It was the researcher himself taking a role as the main instrument to collect the data. Supplementary data were obtained from six eighth graders who had received scaffolding treatment. The other instruments comprised interview guide and two items of problem-solving task using HOTS that had been made equal, between pre- and post-treatment using scaffolding.

The validity of the data was assured through triangulation. To probe the scaffolding practice applied by the teacher, the students were required to work on the problem-solving task requiring HOTS. Then, the students were dichotomized based on the stages of problem-solving performed by referring to the nature of Polya's conception. Group 1 comprised those who were able to solve the problem. Group 2 consisted of those who failed in answering-the-question stage. Group 3, at last, included those who could only understand the problem. Further, the teacher executed to give the scaffolding based on the needs of the students in each group.

The data analysis technique carried out in this current research covered: 1) reducing the data; 2) presenting the data; and 3) drawing conclusion (Miles & Huberman, 1992). Reducing the data was concerned on each student's answer after being compared to the others' answers within the same group. Furthermore, the data presented were the same data as obtained so that conclusion could be drawn subsequently.

Now that this research implemented case study design, the results of which cannot generalize the entire and broader

learning contexts. The variants of scaffolding patterns have been influenced by both the differing characters of teachers and students' needs.

RESULTS AND DISCUSSION

Results

Teacher scaffolding process in problem-solving activities: Group 1

For the question number 1, the section is focused on a process carried out by FU, one of the members in Group 1. In understanding the problem, FU could do it very well. The student could understand by jotting down anything identified and questioned in details. In structuring the plans, it seemed that FU did not have any problem to worry about, nor in executing the plans. FU could answer the problem carefully. Nonetheless, in the middle of his working, FU got difficulty in defining the symbol of "not more than" in spite of the fact that he could make a correct conclusion as shown in the following Figure 1.

Jika keliling taman tidak lebih dari 140
 maka
 $K > 140$
 $28x - 28 > 140$
 $28x > 168$

$x > 6$
 $P: 8x + 2$
 $= 8(6) + 2$
 $P > 48 + 2$
 $P > 50$

Jadi panjang taman tersebut tidak lebih dari 50

Figure 1. FU's work before the scaffolding

The teacher gave a directive question to help FU and the other members of Group 1 understand the symbol or mark to use. The teacher asked the students to recheck their work. One of the students uttered that the circumference was not more than 140 m. Then, the teacher probed the right symbol representing

'not more than' or 'less than'. FU suddenly realized the mistaken symbol.

The scaffolding given to the students in Group 1 was only in a form of reviewing. It means that the students only received a direction to recheck their former answers more carefully (*reviewing*). After having the direction from the teacher, Group 1 was aware of their mistake, and they appeared to fix it up. In the rechecking stage, Group 1 drew a conclusion according to their answers. After the scaffolding, the members could answer the other question precisely well as shown in the following Figure 2.

In solving the problem number 2, Group 1 also did the problem-solving procedure in details. The next focus was AN's work, one of the members in Group 1. AN had answered the problem very well based on the problem-solving procedure shown in Figure 3.

Nama : Fatmahan ulul Atami
Kelompok : 7

1. Diketahui : $p = 2x + 4$
 $q = 8x - 12$
Jumlah taman tidak lebih 64

Ditanya : $p \dots ?$

Jawab : $k = 2(p + q)$
 $k = 2((2x + 4) + (8x - 12))$
 $k = 2(10x - 8)$
 $k = 20x - 16$

Jika jumlah taman tidak lebih dari 64 maka

$k \leq 64$	}	$p = 2x + 4$
$20x - 16 \leq 64$		
$20x \leq 80$		
$x \leq \frac{80}{20}$		
$x \leq 4$		

$= 2(4) + 4$
 $= 8 + 4$
 $= 12$
 \therefore Jadi panjang taman tersebut tidak lebih dari 12 m.

Figure 2. FU's work after the scaffolding

diketahui

ditanya : $AB \dots ?$

Jawab : $C^2 = a^2 + b^2$
 $EA^2 = EO^2 + OA^2$
 $100^2 = 80^2 + OA^2$
 $10.000 = 6.400 + OA^2$
 $OA^2 = 10.000 - 6.400$
 $OA^2 = 3.600$
 $OA = \sqrt{3.600}$
 $OA = 60 \text{ m}$

Jawab : $C^2 = a^2 + b^2$
 $EB^2 = EO^2 + OB^2$
 $170^2 = 80^2 + OB^2$
 $28.900 = 6.400 + OB^2$
 $OB^2 = 28.900 - 6.400 = 22.500$
 $OB = \sqrt{22.500}$
 $OB = 150 \text{ m}$
 $OB - OA$
 $= 150 - 60$
 $= 90 \text{ m}$
jadi jarak antara kapal A dan B : 90 m.

Figure 3. AN's work without the scaffolding

As a matter of fact, the student would not need any scaffolding from the teacher when he got the same problem. It is exhibited in Figure 4.

Nama : Afifah Najwa

2. ditanya : $AB \dots ?$

Jawab :

1. $C^2 = a^2 + b^2$ $PA^2 = PO^2 + OA^2$ $150^2 = 120^2 + OA^2$ $16900 = 14400 + OA^2$ $OA^2 = 16900 - 14400$ $OA^2 = 2500$ $OA = \sqrt{2500}$ $OA = 50 \text{ m}$	2. $C^2 = a^2 + b^2$ $PB^2 = PO^2 + OB^2$ $170^2 = 120^2 + OB^2$ $22500 = 14400 + OB^2$ $OB^2 = 22500 - 14400$ $OB^2 = 8100$ $OB = \sqrt{8100}$ $OB = 90 \text{ m}$	$AB = OB - OA$ $= 90 - 50$ $= 40 \text{ m}$ jadi jarak kapal A dan B : 40 m.
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Figure 4. AN's work without the scaffolding

Teacher scaffolding process in problem-solving activities: Group 2

For the question number 1, the students did not finish the given problem well. A work of a member of Group 2 is further shown, coded as EN. In Figure 5, it is evident that EN could understand the problem well. In addition, EN also made use of a rectangle concept correctly. Nevertheless, EN did not complete the work as expected.

diketahui : $p = (8x + 2)$
 $l = (6x - 16)$
 $K = 140$
 ditanya : p
 Jawab : $2(p+l) = 140$
 $2(8x+2 + 6x-16) = 140$
 $16x + 4 + 12x - 32 = 140$
 $28x - 28 = 140$
 $28x = 140 + 28$
 $28x = 168$
 $x = 6$
 $\therefore \text{Panjang} = 6 \text{ m}$

Figure 5. EN's work before the scaffolding

The teacher gave the scaffolding through explaining, in which EN and the other members of Group 2 were to re-read the given problem. The students were required to prove if the values of the length and width had been correct (*develoing conceptual thinking*). Besides, the teacher also requested the students to make sure that the answer they made was certainly correct. After the scaffolding, EN and the other members of Group 2 could solve the problem well as denoted in Figure 6.

diketahui : $p = (8x + 2)$
 $l = (6x - 16)$
 $K = 140$
 ditanya : p
 Jawab : $2(p+l) = 140$
 $2(8x+2 + 6x-16) = 140$
 $16x + 4 + 12x - 32 = 140$
 $28x - 28 = 140$
 $28x = 140 + 28$
 $28x = 168$
 $x = 6$
 $\therefore \text{Panjang} = 6 \text{ m}$

Panjang : $8x + 2$ $= 8 \times 6 + 2$ $= 48 + 2$ $= 50 \text{ m}$	lebar : $6x - 16$ $= 6 \times 6 - 16$ $= 36 - 16$ $= 20$	$K = 2(p+l)$ $= 2(50+20)$ $= 2(70)$ $= 140 \text{ m sama}$
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Karena tidak lebih, maka panjang juga tidak lebih dari 50 m.

Figure 6. EN's work after the scaffolding

After the scaffolding was given, EN and the other members could succeed in working on the other problem satisfactorily as shown in Figure 7.

1. diketahui : $p = (2x + 4)$
 $l = (8x - 12)$
 $K = 64$
 ditanya : p
 Jawab : $2(p+l) = 64$
 $2(2x+4 + 8x-12) = 64$
 $4x + 8 + 16x - 24 = 64$
 $20x - 16 = 64$
 $20x = 64 + 16$
 $20x = 80$
 $x = 4$

Panjang : $2x + 4$ $= 2 \times 4 + 4$ $= 8 + 4$ $= 12 \text{ m}$	lebar : $8x - 12$ $= 8 \times 4 - 12$ $= 32 - 12$ $= 20 \text{ m}$	$K = 2(p+l)$ $= 2(12+20)$ $= 2(32)$ $= 64 \text{ (sama)}$
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Karena tidak lebih, maka panjang juga tidak lebih dari 12 m

Figure 7. EN's work after getting the scaffolding

For the question number 2, the problem-solving process performed by the students had not met the concept as it was supposed to be. MT's work would be exposed as the representative of Group 2 members. MT, principally, could understand the problem well. It was proved by the fact that MT could make a graphic sketch to represent the given problem. In defining plans, MT had used an appropriate concept. However, he could not execute the work according to the standard concept he applied. In fact, MT appeared to make use of Pythagoras concept, but with erroneous calculation. Therefore, the final answer remained mistaken as shown in Figure 8.

Diketahui :
 Ditanya : A dan B = ?
 $100 = \sqrt{80^2 + A^2}$
 $100 = 80 + A$
 $A = 100 - 80 = 20$
 $170 = \sqrt{80^2 + AB^2}$
 $170 = 80 + AB$
 $AB = 170 - 80 = 90$
 Jarak kapal A dan kapal B : $90 - 20 = 70 \text{ m}$

Figure 8. MT's work before the scaffolding

During the application of scaffolding, the first stage performed by the

teacher was explaining. It was when the teacher requested MT and the other members of Group 2 to revisit the graphic sketch they created based on the given problem and to mention the number of triangles they were supposed to draw. Afterwards, the teacher invited MT and the other members to recall the basic formula of Pythagoras. Further, MT was requested to perform reviewing over the formerly done calculation and was given directive hints for correct calculation procedures. The students were required to testify if $A = 20$ was truly correct (*developing conceptual thinking*). They committing a mistake in using a particular formula.

After all members of Group 2 were enlightened about how to apply better calculation procedures, the teacher requested them to recheck their works. Henceforth, MT and the other members of Group 2 were able to work on the other task given and to draw a conclusion according to what was expected to find in the given problem as demonstrated in Figure 9.

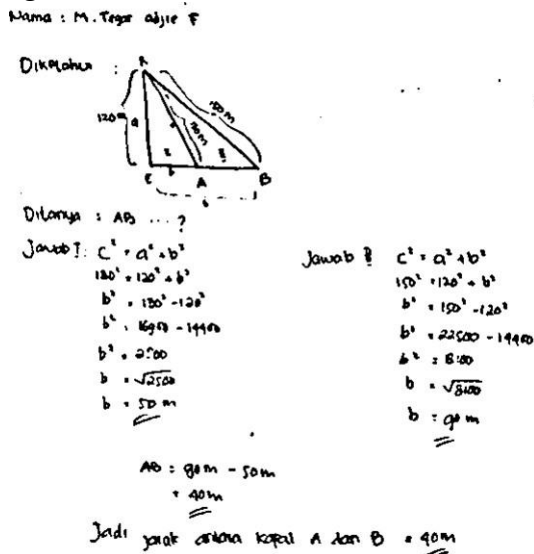


Figure 9. MT's work after the scaffolding

Teacher scaffolding process in problem-solving activities: Group 3

For the question number 1, the students

appeared to not be able yet to answer the question correctly. Being the representative of Group 3, SY could only understand the problem without being able to answer it correctly. Consequently, it was necessary for the teacher to give the scaffolding according to the stages of problem-solving. It was meant, actually, to make SY and the other members of Group 3 at ease in solving such a problem.

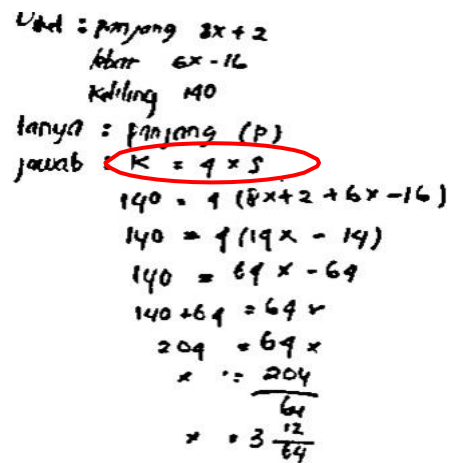


Figure 10. SY's work before the scaffolding

Referring to Figure 10, SY could understand the given question. Nonetheless, in making plans, SY made use of less appropriate concept so that it resulted in inaccurate calculation results. In addition, SY remained unable to complete the answer faultlessly that it was beyond expectation, inconsistent with the problem given. The scaffolding was given by the teacher in the forms of explaining, reviewing, and restructuring.

The students were required to re-read carefully what was to find (*explaining*). Then, they were required to reexamine, restructure, and substitute any identified elements in order to find out the exact value of the circumference (*reviewing, restructuring*).

Unlike previously, SY did not find any value for the length under investigation in the problem, but the circumference that remains with an 'x' element as

explicated in the Figure 11.

1. Diket : panjang $8x+2$
 lebar $6x-16$
 Keliling 140
 tanya : panjang (P)
 jawab : $K = 2(p+l)$
 $= 2(8x+2) + (6x-16)$
 $= 2(8x+6x) + (2-16)$
 $= 2(14x) + (-14)$
 $K = 28x - 14$

Figure 11. SY's work after the initial scaffolding

To make it better, the teacher gave extraneous scaffolding. After receiving the scaffolding, SY and the other members of Group 3 could answer the problem properly. The teacher also gave the other form of scaffolding through directive hints so that their final answers could be consistent with the expected goal of the given problem. Moreover, the teacher also directed SY and the other members to review their works. Then, a good conclusion fitted the ultimate goal of the given problem. After the scaffolding, SY and the other members could perform on the other task fairly well. The result shown by SY after the scaffolding is presented in Figure 12.

nama : setiyawan sygi
 kelas : 8m
 1. Diket : panjang $2x+4$
 lebar $8x-12$
 Keliling 69
 tanya : panjang (P)
 jawab : $K = 2(p+l)$
 $= 2(2x+4) + (8x-12)$
 $= 2(2x+8x) + (4-12)$
 $= 2(10x) + (-8)$
 $K = 20x - 8$
 Jika keliling taman tidak lebih dari 69
 maka $K \leq 69$
 $20x - 8 \leq 69$
 $20x \leq 77$
 $x \leq 77 : 20$
 $x \leq 4$
 Jadi panjang taman tersebut tidak lebih dari 12 m
 $P = 2x+4$
 $= 2(4)+4$
 $= 8+4$
 $= 12 \text{ m}$

Figure 12. SY's work after the further scaffolding

For the question number 2, the answer made by one of the members of Group 3, AD, was further explored. Before the scaffolding, AD could merely understand the problem through a graphic sketch completed with the given information. AD was unable to define a certain concept to apply for solving a specific problem. AD was also shown to do an inconsequential procedure without considering its appropriateness with the genuine concept as shown in Figure 13.

Jadi Jarak Kapal A dan B
 adalah
 $AB = 2D - AD$
 $AB = 150 \text{ m} - 60 \text{ m}$
 $AB = 90 \text{ m}$

Figure 13. AD's work before the scaffolding

The teacher tried to scaffold AD and the other members of Group 3. After slightly having the scaffolding as denoted in the abovementioned excerpt, all the Group 3 members could answer the problem carefully. They performed a calculation by means of Pythagorean formula correctly despite some scratched marks due to mistaken steps they committed. It is further demonstrated in Figure 14.

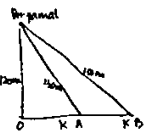
ditanya : $J = AB$... ?
 Jawab : $c^2 = a^2 + b^2$
 $PA^2 = PO^2 + OA^2$
 $100^2 = 80^2 + OA^2$
 $10.000 = 6.400 + OA^2$
 $OA^2 = 10.000 - 6.400$
 $= 3.600$
 $OA = \sqrt{3600}$
 $OA = 60$

ditanya : $J = AB$... ?
 Jawab : $c^2 = a^2 + b^2$
 $PB^2 = PO^2 + OB^2$
 $170^2 = 80^2 + OB^2$
 $28.900 = 6.400 + OB^2$
 $OB^2 = 28.900 - 6.400$
 $= 22.500$
 $OB = \sqrt{22500}$
 $OB = 150$

~~AB = OB - OA~~ jadi jarak antara kapal
~~A dan B~~ sekitar 90 m
~~= 90~~

Figure 14. AD's work after the scaffolding

Without any directive hints from the teacher, AD was considerably responsive to recheck his work from the beginning to the ending, completed with the concluding remarks for the given problem. After the scaffolding from the teacher, AD and the other members of Group 3 could answer the other question. It is shown in the following Figure 15.



ditanya : AB ... ?
 Jawab : $c^2 = a^2 + b^2$
 $PA^2 = PO^2 + OA^2$
 $130^2 = 120^2 + OA^2$
 $16.900 = 14.400 + OA^2$
 $OA^2 = 16.900 - 14.400$
 $OA^2 = 2.500$
 $OA = \sqrt{2500}$
 $OA = 50$

$AB = OB - OA$
 $= 90 - 50$
 $= 40 \text{ m}$

Jarak antara kapal A dan B
 sekitar 40 m.

ditanya : $c^2 = a^2 + b^2$
 $PB^2 = PO^2 + OB^2$
 $170^2 = 120^2 + OB^2$
 $28.900 = 14.400 + OB^2$
 $OB^2 = 28.900 - 14.400$
 $OB^2 = 14.500$
 $OB = \sqrt{14500}$
 $OB = 90$

Figure 15. AD's work after the scaffolding

Discussion

Before the scaffolding, the students could not answer the given questions according to the standard procedure of problem-solving. This is consistent with a

study of Indriyana et al. (2017) which claims that all of the students, before receiving the scaffolding, cannot successfully pass through four major stages of problem-solving. In general, most students deal with the issues, especially when using mathematical concepts. The provision of scaffolding, moreover, in the present study, was based on the students' needs and referred to the theory of Anghileri (2006) comprising: 1) environmental provisions; 2) explaining, reviewing, and restructuring; and 3) developing conceptual thinking.

Those who could solve the given problem well only needed very basic scaffolding to answer the question number 1, specifically through reminding them to recheck their works. Regarding the question number 2, they were not in need of any scaffolding from the teacher. In line with Sujati (2011) it is found that those belonging to the highly-competent group basically suffer from such difficulties as rechecking the results of calculation and communicating the results.

Moreover, those who found it difficult to execute the plans were given the scaffolding by the teacher for more than once. In the question, the scaffolding was given when they could find some facts in the problem and reexamine through testing the obtained answer. This is parallel with the result indicated by Sujati (2011) that those with average competence level found it relatively difficult particularly after reading through and understanding the problem. For that reason, in response to it, the teacher gave them a directive question and commands to understand the problem, specifically by requesting them to reread the given problem. Chairani (2015); Prayitno et al., 2017, in their researches, denote that when the subjects find it difficult to understand specific problems, the most appropriate scaffolding to be given can be

in the form of questions or directions. Meanwhile, regarding the question number 2, the group needed the scaffolding when they came to the use of concept and its application to solve the problem, completed with rechecking the obtained answer as well. The given scaffolding was that the teacher requested the students to recall and restructure the plans correctly. Parallel with Prayitno et al. (2017) the subjects who find it hard to structure a strategy will need a scaffolding pattern that encourages them to recall the strategy as planned. Besides, the teacher also invited the students to discuss their works and asked them to recheck the procedure, be it in line with the concept in use. This practice is basically in the same light as that of in Chairani (2015) research, that teachers are supposed to direct and supervise their students in using any specific concepts needed for calculation procedures.

Referring to the group of students who could only understand the problem, the whole stages of scaffolding proposed by Anghileri (2006) were crucial to help them. In respect to the environmental provisions, the students needed a series of figures important for the given problem. Consequently, the teacher asked the students to draw a two-dimensional figure related to the problem, completed with the explanation. Further, in explaining, the students were required to reread the given problem. Moving to reviewing and restructuring stages, the students were facilitated to find necessary facts related to the problem, and they were asked to restructure the expected answer precisely. As for developing conceptual thinking, both the teacher and students were discussing the students' answer as well as giving them chances to recheck the answer. According to the research carried out by Sujati (2011) some groups of students who find it difficult since the

beginning of problem-solving process must face the same issues to carry over the next steps, which requires the scaffolding for several times to solve specific problems.

CLOSING

Conclusion

It can be summed up that the scaffolding given to the group of students with no difficulty in solving the problem only covered a reviewing component. Meanwhile, to the group with the difficulty in executing the plans as arranged, the scaffolding comprised explaining, restructuring, and developing conceptual thinking components. At last, to the group with a sole ability to understand the problem, the whole components of scaffolding were of great necessity, including environmental provisions, explaining, reviewing, restructuring, and developing conceptual thinking.

Suggestion

A number of recommendations are inclusively proposed in this present research. Firstly, teachers are to understand what kinds of scaffolding are necessary to support their students in solving the specific problems so that the assistance fully meets their students' needs. For the next researchers, it is of urgency to conduct further investigations with in-depth discussions on other types of problems in mathematics due to the fact that this current research has been mainly limited to the specific problems.

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