



REMEDICATION OF EXPONENT NUMBERS MISCONCEPTIONS IN SEVENTH GRADE STUDENTS THROUGH A PROBLEM POSING APPROACH

Priscilla Josierra Liora*¹, Sugiarno², Hamdani³
^{1,2,3} Universitas Tanjungpura

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ABSTRACT

This study aims to remediate students' misconceptions about exponent numbers using a problem posing approach among seventh-grade students at SMP Negeri 26 Pontianak. Misconceptions in mathematics are a fundamental issue that can hinder students' understanding of more advanced concepts if not addressed effectively. The problem posing approach offers an innovative solution by encouraging active student participation, creative thinking, and deeper conceptual understanding. This research employed Pedagogic Action Research with a qualitative approach. The subjects were five seventh grade students who selected based on diagnostic test results that identified specific misconceptions related to the concept of exponents, such as powers of zero, negative exponents, and the order of operations. Data were collected through diagnostic tests, interviews, observations, and posttests. The misconceptions are concepts of exponent, powers of zero, exponent with negative numbers, and the order of counting operations. The results revealed that the post-solution posing type of problem posing approach effectively reduced students' misconceptions. After the remediation, misconceptions among the five subjects were reduced to only one, specifically regarding the concept of zero exponents. These results indicate that the problem posing approach can be a powerful strategy in helping students overcome persistent misconceptions in mathematics through active engagement and reflective learning.

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Corresponding Author:

Priscilla Josierra Liora,

Departement of Mathematics Education,

Universitas Tanjungpura, Indonesia

Email: priscillajl17@gmail.com

Phone Number: 08978309772

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1. INTRODUCTION

Each student has a different background, ability, and experience so that there can be gaps in understanding in learning mathematical concepts (Unveren Bilgic & Danisman, 2023). This can be an obstacle to students' progress, because they experience difficulties or misconceptions in understanding the material (Suparno, 2013; Hidayah & Maemonah, 2022). This condition emphasizes the need for appropriate interventions to overcome misconceptions and difficulties experienced by students.

One example of misconceptions that often occur among students is misconceptions in exponent of numbers (Sari & Pujiastuti, 2022). Exponent of numbers involve the use of exponents or powers used to describe the recurrence or repetition of numbers. Examples of common misconceptions that occur to students are errors in understanding the rules of exponent such as considering exponent notation as multiplication and considering every negative number that has a exponent as the result is in negative form (Meldawati & Kartini, 2021). The example of misconception is 3^3 which is actually $3 \times 3 \times 3 = 27$ considered to be $3 \times 3 = 9$.

Positive integer exponent of numbers are one of the basic materials in mathematics, but misconceptions related to these numbers can hinder students' ability to understand more complex mathematical concepts that depend on a strong understanding of these operations (Jayanthi et al., 2017). In addition, these misconceptions can impact students' ability to solve mathematical problems, perform accurate calculations, and connect mathematical concepts to real-world situations (Pacheco-Muñoz et al., 2023).

Remediation in mathematics learning aims to provide special attention and additional assistance to students who need it. It involves identifying and understanding misconceptions and difficulties faced by students in understanding mathematical concepts. By detecting misconceptions, mathematics teachers can adopt remediation approaches tailored to individual needs (Listiwati et al., 2023). This means teachers can provide more detailed explanations, give additional practice, or use different teaching materials to help students improve their understanding.

Remediation in mathematics learning has become very important. Through remediation, mathematics teachers can identify misconceptions experienced by students related to a material and provide additional assistance tailored to individual needs (Morgan et al., 2015). In the remediation process, teachers have various strategies that can be used to correct students' misconceptions by providing more detailed explanations, providing concrete examples, and providing additional practice (Doğan & Yıldırım Sır, 2022).

The implementation of remediation learning according to Karyanto (2011) can be implemented through several types of remediation learning. This research uses the small group teaching type, where the teacher as a tutor provides guidance in small groups to provide additional assistance in the subject.

Innovative learning approaches can make learning more interesting and can increase learning motivation. One of them is the problem posing approach. The problem posing approach was chosen as an innovative learning strategy because it is considered an effective strategy in helping students understand and improve their skills in creative and independent thinking (Toheri et al., 2020). Problem posing is the ability to generate new questions relevant to a situation or context, involving complex mental processes (Wawat, 2022). Students are not only faced with facts or information that has been determined, but they are also invited to investigate, question, and design their own problem solving.

Based on the results of interviews with mathematics teachers at SMP Negeri 26 Pontianak, it was found that students in class VII still experienced conceptual errors when given problems about the material of exponent numbers. The remediation learning carried out by the math teacher was to restudy the problems that were incorrectly done by students. However, this is still rarely done because there are obstacles that hinder the implementation of remediation activities, both from the teacher and from the students. In addition, students in grade 7th SMP Negeri 26 Pontianak are often not given tasks or exercises that are used to train their understanding and thoughts. This is what causes students to experience misconceptions.

The math teacher also revealed that 80-85% of seventh grade students who only come to school but have no interest in learning, especially in math. To overcome these problems, efforts are needed from teachers to create an interesting learning atmosphere for students. Using an innovative approach such as problem posing can be one way to stimulate students' interest and enthusiasm in learning.

Researchers chose problem posing because there are still not many studies that remediate using problem posing in mathematics. In contrast to previous studies that mostly used lecture methods or conventional exercises, this study involves students actively in formulating and composing their own problems after learning. Based on research conducted by Restu Tri Yuwono et al. (2014), remediation through problem posing approach of pre-solution posing type is considered effective to remediate students' misconceptions. Problem posing in this study is a form of approach that emphasizes the submission of problems or the creation of problems by students accompanied by answers to problems. Among the three types of problem posing approaches, the post-solution posing type is applied in this study, where students modify the objectives or conditions of the problems that have been solved to create new problems similar to the previous explanation.

Based on the problem above, the purpose of this study is “to find out whether remediation through a problem posing approach can reduce exponent numbers misconceptions of SMP Negeri 26 Pontianak seventh students”. As for the specific objectives of this study are to find out the misconceptions that occur in 5 seventh students in the material of exponent numbers and to find out the misconceptions of the material of exponent numbers in 5 seventh students after remediation through the problem posing approach.

2. METHOD

This research uses qualitative research methods with the type of Pedagogical Action Research (PTP). Pedagogical Action Research (PTP) is a research approach that focuses on developing teaching and learning practices (Cheeseman, 2022). According to Norton (2019), PTP can be applied to small groups with the aim to focus on a specific context. Through an action research cycle consisting of planning, action, observation and reflection, PTP allows teachers to identify student learning problems, find appropriate solutions, and improve teaching practices.

The subjects in this study were students of class seventh SMP Negeri 26 Pontianak. The researcher selected 5 students who had worked on the diagnostic test on the material of exponent numbers that the researcher provided and also the consideration of the mathematics teacher to remediated.

In a research, data collection technique is the most strategic step. Data collection techniques in this study were through written tests, observations, and interviews. The written tests conducted were diagnostic tests and posttests, where the diagnostic tests were used to identify students who had misconceptions, while the posttests were used to see the results of students' misconceptions after remediation through the problem posing approach. Observation is done by observing behavior, interactions, or events that occur in the research environment. Interviews were conducted to explore the extent of students' understanding of the material and gain further insight into the misconceptions that occur in students and students' experiences during the remediation process of students' misconceptions through the problem posing approach.

The data collection instruments used were written test sheets (diagnostic test and posttest), student worksheets, observation sheets, and interview guidelines. The diagnostic test was given before the remediation was conducted and aimed to analyze the learners' initial understanding and misconceptions of the concepts. The posttest was given after the remediation was completed and aimed to evaluate the extent to which the intervention or remediation had succeeded in reducing or eliminating the misconceptions held by the research participants. The student worksheet contains problems that students need to solve and the creation of problems by students, where students are asked to create problems based on their understanding of the problems that have been discussed. The observation sheet is useful to assess the extent to which students are involved in the implementation of learning that has been planned by the researcher. The interview guideline allows researchers to have more in-depth conversations about how students respond to the ongoing learning process.

The data obtained from this research is qualitative. The qualitative data analysis method developed by Miles et al. (2014), there are data collection, data reduction, data display, and conclusion. Qualitative data collection in this study was obtained through various sources relevant to the research, there are test questions (diagnostic tests and posttests), observation sheets, student worksheets, and interviews. At the data reduction stage, the researcher looks for important points when conducting research, discards data that is thought to be not really needed in writing the results and gets pictures in every process carried out during the research. Display data in qualitative research is displayed through narrative sentences as new knowledge and knowledge gained based on research data. Conclusion is based on the findings that have been found and involves verification of existing data.

The research was conducted through two meetings after conducting a diagnostic test. In the first meeting, the researcher and the subjects discussed the difference between exponential with multiplication and exponent involving negative signs. In the second meeting, the researcher and the subjects discussed the order of mathematical operations involving exponent numbers.

3. RESULTS AND DISCUSSION

3.1. Results

Based on the results of the diagnostic test given to 32 seventh students, the researcher selected 5 students who had the most misconceptions to analyze their answers and to remediate them.

Table 1. Misconceptions of Five Subjects in Diagnostic Test

No.	Subject Initials	1	2	3	4	5
1	S1	-	✓	-	✓	✓
2	S2	✓	✓	✓	✓	✓
3	S3	✓	✓	✓	✓	✓
4	S3	✓	✓	✓	✓	✓
5	S5	-	✓	-	✓	✓

Based on Table 1, the researcher presents the diagnostic test results of the five students on each question who experienced misconceptions as follows.

Table 2. Diagnostic Test of S1

No.	Diagnostic Test Result	Misconceptions
1	$2. \quad -5^2 = -5 \times -5$ $= +25$ <p>S1 was not understand the basic concept of exponents that have negative bases, so subject always think that the negative in the question also be multiplied. S1 think that -5^2 and $(-5)^2$ was same too.</p>	Conceptual misconceptions
2	$4. \quad 5^2 - (-4)^2$ $5^2 = 5 \times 5 = 25 \quad (-4)^2 = -4 \times 4 = 16$ $= 25 - -16$ $= 11$ <p>S1 was not understand the rules of mathematical counting sequence and was not know that the exponents must be done first.</p>	Procedural misconceptions
3	$5. \quad 6^0, 3^2, 2^4, 5^2, 4^3$ $= 9, 16, 25, 64$ <p>S1 encountered an error in zero exponents. S1 stated 6^0 is 0 because they assume that zero exponents have the same result with multiplication of zero.</p>	Conceptual misconceptions

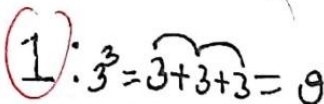

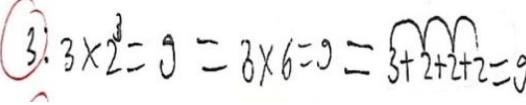
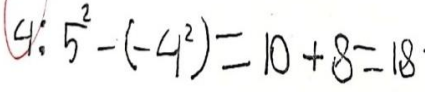
The first subject (S1) showed a fairly good understanding of some problems, but still experienced conceptual and procedural misconceptions in certain problems, namely in the part of exponent with negative numbers, the order of counting operations, and powers of zero. Based on the results of the interview, S1 has a wrong understanding due to an in-depth understanding of exponent numbers and S1's lack of interest in learning, especially in math.

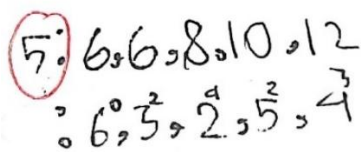
Table 3. Diagnostic Test of S2

No.	Diagnostic Test Result	Misconceptions
1	$3^3 = 3 \times 3 = 9$ <p data-bbox="316 421 975 636">S2 answered 3^3 is 3×3. When researchers interviewed them, S2 stated that they still having trouble in working on the question because they did not understand the concept of exponents and stated the exponents is the same as ordinary multiplications.</p>	Conceptual misconceptions
2	$-5^2 = -5 \times -5 = 25$ <p data-bbox="316 728 975 949">S2 provided an incorrect answer when calculating -5^2. S2 believes that the negative sign in the exponent affects the result itself, leading them to assume that -5^2 is the same as $(-5)^2$. This mistake indicates that the student has not fully grasped the concept and the rules of exponents.</p>	Conceptual misconceptions
3	$3 + 2^3 = 3 + 6 = 9$ <p data-bbox="316 1070 975 1211">S2 also gave an incorrect answer when calculating 2^3. S2 thought that 2^3 equals 6. This shows that S2 does not have a solid understanding of the concept of exponents.</p>	Conceptual misconceptions
4	$5^2 - (-4)^2 = 5^2 + 4^2$ $= 10 + 8 = 18$ <p data-bbox="316 1384 975 1599">S2 made conceptual errors (performing exponentiation by multiplying the base and its exponent) and procedural errors (multiplying two negatives in the case of 4). S2 admitted they didn't know the order in which to perform the exponentiation, so they multiplied first.</p>	Conceptual and procedural misconceptions
5	$6^0 - 3^2 - 2^1 - 5^2 - 4^3$ $0 \quad 6 \quad 8 \quad 10 \quad 12$ <p data-bbox="316 1758 975 1975">Although S2 correctly ordered the results of the powers from smallest to largest, their understanding of how to calculate powers is still inaccurate. S2 has consistently understood that exponents involve multiplication but has not fully comprehended that this represents repeated multiplication.</p>	Conceptual misconceptions

The second subject (S2) experienced significant misconceptions in all questions, both conceptual and procedural misconceptions. S2's errors showed a lack of fundamental understanding of the concept of exponents. The results of the interview with S2 were that S2 did not understand the concept of exponents correctly, namely that exponent numbers involve multiplication only.

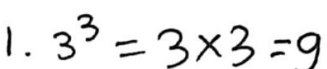
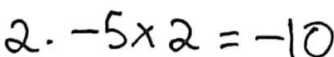
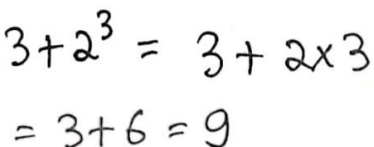
Table 4. Diagnostic Test of S3

No.	Disgnostic Test Result	Misconceptions
1		Conceptual misconceptions
	<p>S3 answered that 3^3 is 9. From the given answer, it is clear that S3 still has misconceptions in understanding the concept of exponents. When interviewed about how the subject thinks of calculating exponents, S3 stated that an exponent represents the multiplication of the base number and its exponent. Therefore, the subject approached question number 1 using repeated addition, which is a term for multiplication. It appears that S3 does not understand the meaning of exponents</p>	
2		Conceptual misconceptions
	<p>S3 answered that $-5^2 = -15$. During the interview, S3 admitted to misreading the problem, leading the subject to repeat -5 three times. However, another misconception occurred: the minus sign (-) was also included in the repetition. When interviewed, the subject assumed that -5^2 means the square of -5.</p>	
3		Conceptual misconceptions
	<p>S3 answered that $2^3 = 2 + 2 + 2$, indicating that the subject still has misconceptions in understanding the concept of exponents</p>	
4		Conceptual and procedural misconceptions
	<p>In addition to conceptual misconceptions, S3 also has procedural misconceptions, such as performing multiplication before exponentiation. The subject assumes that $-(-4)^2$ can be handled first by multiplying the minus sign and the negative, resulting in $+4^2$.</p>	

No.	Disgnostic Test Result	Misconceptions
5		Conceptual misconceptions
<p>Based on the results of the exponentiation provided and the interview, S3 believes that exponents represent the multiplication of the base number and its exponent. However, one interesting point noted by the researcher is that the result of 6^0 is 6. S3 stated that an exponent of 0 means there is no exponent, leading to a result of 6</p>		

The third subject (S3) experienced significant conceptual misconceptions in all questions. When interviewed, the subject knows that a exponent is a repeated multiplication of the base number as much as the power, but always forgets it because his thinking always remembers that a exponents is a multiplication between the base number and the power, so the subject works on the problem of exponent with repeated addition which is the term of multiplication.

Table 5. Diagnostic Test of S4

No.	Diagnostic Test Result	Misconceptions
1		Conceptual misconceptions
<p>During the interview, S4 appeared to have a misunderstanding of the concept of exponentiation. S4 understands that exponentiation is simply multiplication, rather than repeated multiplication based on the exponent.</p>		
2		Conceptual misconceptions
<p>S4 made a conceptual error regarding exponentiation, which led the subject to multiply the base and the exponent, as their understanding of exponentiation is limited to multiplication only.</p>		
3		Conceptual misconceptions
<p>S4 experiences a conceptual misconception where the subject believes that exponentiation is just multiplication, resulting in them multiplying the base by the exponent.</p>		

4	$5^2 - (-4)^2 = 5 \times 2 + 4 \times 2$ $= 10 + 8 = 18$	Conceptual and procedural misconceptions
<p>S4 exhibits both conceptual and procedural errors. When asked about exponentiation, S4 responded that it is like regular multiplication, which caused confusion. S4 also does not understand the order of operations well, as they only know that multiplication should be done first.</p>		
5	$3^2, 2^4, 6^0, 5^2$	Conceptual misconceptions
<p>S4 provided incorrect answers. During the interview, S4 expressed that they do not understand the concept and answered carelessly.</p>		

The fourth subject (S4) also experienced conceptual and procedural misconceptions in all questions. S4 had a very limited understanding of the concept of exponents. S4 considers that exponent only involves multiplication, which the subject considers between the base number and the power, not repeated multiplication.

Table 6. Diagnostic Test of S5

No.	Diagnostic Test Result	Misconceptions
1	$\textcircled{2} (-5 \times -5) = 25$	Conceptual misconceptions
<p>S5 thinks that -5^2 and $(-5)^2$ are the same, so the negative sign in the problem is treated as part of repeated multiplication. When the researcher interviewed S5 and asked about the answer, S5 realized the mistake but still struggled to remember that -5^2 and $(-5)^2$ are different.</p>		
2	$5 \times 5 = 25 + 4^2 = 4 \times 4 = 16$ $= 16 + 25 = 41$	Procedural misconceptions
<p>S5 made errors in the order of operations. S5 also made a mistake in handling the negative sign in $(-4)^2$, causing the negative sign to become positive</p>		
3	$6^0, 3^2, 2^4, 5^2, 4^3$ $0 \quad 9 \quad 16 \quad 25 \quad 64$	Conceptual misconceptions
<p>S5 answered that $6^0 = 0$. S5 assumed that zero means nothing, so the subject thought that 6^0 would also result in zero or nothing.</p>		

The fifth subject (S5) showed a fairly good understanding of some problems, but still experienced misconceptions in the exponent by negative numbers, the order of operations, and the power of zero. This is because S5 had a lack of interest in learning which caused S5 to pay less attention to the teacher's explanation when teaching. In addition, S5 guesses and assumes a lot, such as in the power of zero, S5 assumes that zero means nothing, so the subject thinks 6^0 the result will also be zero or nothing.

After analysis the subject misconceptions, researcher gave remediation. The remediation of students' misconceptions was carried out with an explanation of the material on exponent numbers and with the help of Student Worksheets, students were directed to create similar problems after the problem solving and discussion (post-solution posing). The remediation that was carried out adjusted to the misconceptions detected in the subjects in the diagnostic test. This study uses a problem posing approach to overcome the misconceptions experienced by students, namely making problems after being explained about the exponent numbers where misconceptions occur.

After the remediations, researchers gave subjects a posttest to see how much their understanding. The results of the post test after remediation were a very significant decrease in student misconceptions in the exponent of numbers. Of the 5 research subjects, only 1 research subject still had problems in answering power of zero.

$$\begin{array}{l}
 4^3 = 64 \\
 3^3 = 27 \\
 6^2 = 36 \\
 7^0 = 0 \\
 5^2 = 25
 \end{array}
 \quad
 \begin{array}{l}
 4^3, 6^2, 3^3, 5^2, 7^0
 \end{array}$$

Figure 1. The Misconception in Posttest

S2 answered that $7^0 = 0$. Before the remediation, S2 also answered this question incorrectly. During the interview, S2 explained that this answer came from a persistent belief that exponentiation is the same as regular multiplication, even though S2 understands that exponentiation is repeated multiplication of the base by itself according to the exponent.

3.2. Discussion

The diagnostic test results showed that there were some students who still had conceptual and procedural misconceptions. The misconceptions were the concepts of exponent, powers of zero, exponent with negative numbers, and the order of counting operations.

The first subject (S1) showed a fairly good understanding of some problems, but still experienced conceptual and procedural misconceptions in certain problems, in the parts of exponent with negative numbers, the order of counting operations, and powers of zero. Based on the results of the interview, S1 has a wrong understanding due to a lack of understanding of the material of exponent numbers and a lack of interest in learning, especially in mathematics. This is in accordance with the opinion of Suparno (2013), the wrong concept can occur due to students who have the wrong initial concept and lack of interest in learning and lack of attention to the teacher's explanation making it easier for students to misunderstand and form a misconception.

The second subject (S2) experienced significant misconceptions in all questions, both conceptual and procedural misconceptions. The S2's error showed a lack of fundamental understanding of the concept of exponent numbers. The results of the interview with S2 were that S2 did not understand the concept of exponent numbers correctly, namely the exponent numbers involving multiplication only. . This is in accordance with Suparno (2013) opinion, namely the information obtained or incomplete data obtained can cause students to draw wrong conclusions and misunderstand the concept of exponent numbers.

The third subject (S3) experienced significant conceptual misconceptions on all questions. When interviewed, the subject knew that exponent number was a repeated multiplication of the base number as much as the power, but always forgot it because of their constant thinking that a power number is a multiplication between the base number and the power, so the subject worked on the exponent numbers problems with repeated addition which is the term of multiplication. This is in accordance with Suparno (2013) opinion, if the wrong concept is deeply embedded, students tend to reject or find it difficult to accept new information that contradicts the concept.

The fourth subject (S4) also experienced conceptual and procedural misconceptions in all questions. S4 has a very limited understanding of the concept of exponent. S4 considers that exponent only involves multiplication, which the subject considers between the base number and the power, not repeated multiplication. This is in accordance with Suparno (2013) opinion, the information obtained or the incomplete data obtained can cause students to draw wrong conclusions and this causes student misconceptions to arise.

The fifth subject (S5) showed a fairly good understanding of some problems, but still experienced misconceptions in the exponent with negative numbers, the order of counting operations, and powers of zero. This was because S5 had a lack of interest in learning which caused S5 to pay less attention to the teacher's explanations. In addition, S5 guesses and assumes a lot, as in the power of zero, S5 assumes that zero means nothing, so the subject thinks the result will also be zero or nothing. This statement is in line with Suparno (2013) who states that a lack of attention to the teacher's explanation can make it easier to misunderstand the material and form a misconception and students who often bring experience and understanding from informal contexts to formal contexts, and without adequate guidance can cause misunderstanding.

The learning method that the teacher choose can also cause misconceptions. Teachers who focus on explaining the material only through lectures do not provide opportunities for students to ask questions and express ideas and can make students feel bored. This is in accordance with the opinion of Richard Mora (2011), the lack of student-teacher interaction and the lack of opportunities for students to ask questions or collaborate often leads to boredom.

This study uses a problem posing approach to overcome misconceptions experienced by students, making questions after being explained about the exponent numbers that has occurred. This is in accordance with Sutame & Harpinto (2012) who stated that the problem posing approach is a learning approach that involves students in formulating or presenting problems.

The problem posing approach in this study begins with an explanation of the concept of exponent numbers, then continues with student activities to make problems similar to the questions that have been done before. In this process, students are invited to formulate questions based on their understanding, then answer the questions or

exchange questions with friends. This activity helps students identify their own misconceptions while improving understanding. This is in line with McDonald & Smith (2020) who argue that by formulating problems from problem posing, students can explore mathematical concepts in depth so that students can understand mathematical concepts better.

The activity of creating new problems also encourages students to understand the concept of exponent numbers more deeply by engaging in discussion and exploration of the concept of power during the problem creation process, where Birgili (2015) states that active learning that involves students in the process of exploration and concept creation is more effective than passive learning. According to Rades Kasi (2023), actively involving students in the learning process can help them build deep understanding. When students create problems, students are not only required to understand concepts, but also to reformulate their knowledge in the form of meaningful problems.

The application of the problem posing approach in remediation activities has good results in reducing student misconceptions in exponent numbers. This is evidenced by 4 out of 5 students who answered all posttest questions correctly. S2, the subject that has one wrong answer, answered like that because they kept remembering that the exponent operation is the same as the ordinary multiplication operation even though he already knew that the exponent is a repeated multiplication of the base number as many times as the power. In line with Piaget (1952) opinion which states that when an incorrect scheme has been formed, it is difficult for students to accept information that contradicts the scheme, even if the new information is correct, this is because students have an initial scheme that is often the basis for interpreting new information.

In the context of mathematics, students often get stuck on the rules or concepts they first learn because they are more "familiar" than the new information. When students repeatedly use of incorrect concepts without adequate correction, those misconceptions become more difficult to change because they have been reinforced through experience. This is in line with Suparno (2013) who states that students often bring experience and understanding without adequate guidance, this can lead to misunderstanding.

The posttest results show that problem posing is an effective approach to remediate misconceptions, because it not only improves understanding but also improves students skills. According to Silver & Cai (2020), problem posing facilitates students to think critically and creatively, as they have to understand the concepts deeply to be able to create correct problems.

4. CONCLUSION

The remediation of students' misconceptions through the problem posing approach can reduce students' misconceptions on the material of exponent numbers. Students showed significant improvement in recognizing and correcting their previous misconceptions.

The diagnostic test results show that students experience conceptual and procedural misconceptions in understanding the concept of exponent numbers. The most common conceptual misconceptions are in the understanding of the concept of exponent, exponent with negative numbers, and powers of zero. Meanwhile, procedural misconceptions are mainly related to the correct sequence of mathematical operations. Conceptual and procedural misconceptions experienced by students are caused by a lack of understanding of basic concepts, previous learning experiences that are wrong, or a

lack of mastery of procedural skills in solving problems involving mathematical operations.

The posttest results show that there are still misconceptions that occur, namely conceptual misconceptions in the exponent of negative numbers. This is due to students who still remember the concept before remediation.

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