MATHE*dunesa*
Jurnal Ilmiah Pendidikan Matematika *Volume 2 No.7 Tahun 2018*
ISSN :2301-9085

MISCONCEPTION ON 3-DIMENSIONAL FIGURE WITH FLAT SIDES BY USING CERTAINTY OF RESPONSE INDEX (CRI) METHOD

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Abstract

Misconception is a mismatch between a person's conception of facts, concepts, principles and rules, and procedures with the conception of the relevant science expert. Misconceptions can occur because of poor understanding on the material that has been taught. This may occur in any material, including 3-dimensional figure with flat side. One method to identify misconception is CRI by measuring confidence level in answering questions. The aim of this research is to find and describe students' misconceptions on the 3-dimensional figure with flat side. This research was descriptive research with qualitative approach. Research data were obtained from 4 subjects who have most misconceptions and on different concepts. The subjects were taken from 9-grades who has studied 3-dimensional figure with flat side. The research was using written test with CRI scale and interview. The misconception that appears are on subject 1 misconceptions on 3 numbers consist of concept of cubes and cube's nets, surface area of cube, and surface area of prism. Subject 2 misconceptions on 4 numbers about surface area of cuboid, definition of prism, volume of prism, and relationship of cubes and cuboids with prism (concept of prism). Subject 3 misconceptions on 4 numbers about cube's nets, volume of prism, and on cube and cuboid relations with prisms (prism concepts). Subject 4 misconceptions on 5 numbers relating to concept of cuboids, surface area of cuboid, definition of prism, volume of prism, and relationship of cubes and cuboids with prisms (prism concepts).
Keywords: misconception, 3-dimensional figure with flat side, Certainty of Response Index (CRI

INTRODUCTION

There are many things that must be prepared by students to learn mathematics, one of them is know and understand about mathematics' concept. Concept is one of four objects of learning mathematics. According to Morrison (2011), Concepts are used to group similar or related ideas, events, or objects. Mathematics is made up of concepts, by know and understand mathematics concepts student will be able to learn mathematics in easiest way. This is reinforced by Permendikbud No. 24 tahun 2016 which states that knowing, understanding, analyzing, and applying concept is a competence that must be owned by students. This indicates that concepts understanding is very important and needed by students.

Concepts understanding is very important and needed by students to learn mathematics. Because it is so important, therefore students' problems that can be obstruct their understanding must be removed. One of a kind of students' problems is the occurrence of misconceptions.

From Ibrahim's arguments (2012:13) that argue misconception is an incorrect idea that someone's has about concept and different from the concept that agreed by the expert, this incorrect view usually resistant and persistent. But misconception can be interpreted not only in concept but also in four object of learning mathematics. Then in this research, misconception is known as a mismatch between a person's conception of facts, concepts, principles and rules, and procedures with the conception of the relevant science expert.

The existence of misconception on the material of 3-dimensional figure with flat side is reinforced from previous research conducted by Ainiyah (2015) about student misconception in mathematics learning of geometry material (on prism and pyramid) on 8-grades. Ainiyah's research showed that students still have misconception on material 3-dimensional figure with flat side on prism and pyramid concept. However, misconception on material 3-dimensional figure with flat side hasn't explored yet. Therefore, the researcher want to do same research to know the students' misconception but different from the previous research, the focus of this research is not only on the concept of prism and pyramid but on all concepts in the material of 3-dimensional figure with flat side, because misconception can happen on any

concept in that material and the researcher wants to get evidence of a misconception on all concepts on 3-dimensional figure with flat side.

According to Edogawatte (2011) misconception is one of three types of errors, such as faulty algorithms, misconception, and error. So, it is necessary to identify students' knowledge to know students experiencing misconception or not. One method to identify misconception is CRI by measuring confidence level in answering questions. Besides that, CRI can also detect whether students have actually mastered the concept or not from their confidence in answering the question.

Based on the explanation above, this research is done to know and describe students' misconceptions on the material of 3-dimensional figure with flat side using Certainty of Response Index (CRI) method.

METHODOLOGY

The type of this research was descriptive research with qualitative approach with the aim to know and describe students' misconceptions on the material of 3-dimensional figure with flat side. The data was collected at SMP Negeri 1 Gresik in 9-grade (had taken the material of 3-dimensional figure with flat side). Subjects used in this study are 4 students who had the following criteria:

1. students who are chosen to be subject could represented misconceptions on different concepts (subjects were considered to have misconceptions on a concept if they met at least 1 misconception indicator on the concept).
2. minimally has misconception on 1 number of test-1, because each test question number represented at least 1 misconception indicator.
3. if founded many students who had misconception then the chosen subject were 4 students who had most misconception.

there were several data collection techniques used in this research, namely:

Test

The test was a test with CRI scale (Certainty of Response Index). The CRI scale was used to analyze student's level of confidence in answering questions, detect misconceptions, and determine the subject of research. The test used in this study was essay test. The questions consist of answers, reasons, and levels of confidence in answering questions. For answers and reasons there were two possibilities of student answers that were correct answers and wrong answers, whereas for the level of confidence was divided into low confidence (0-2) and high confidence (3-5). The test consists of test-1 and test-2 (each test consists of 10 problem numbers). Test-2 was equivalent to test-1. However, if necessary, it was possible to give test-3 that was also equivalent to the previous test (for triangulation or data validity purposes). Test-1 was used to determine the subject of the study. If had got 4 subjects, then the subject was asked to did the test-2. If the data obtained on test-1 and test-2 were same then the interview will be continued, but if not then would be given test-3.

Interview

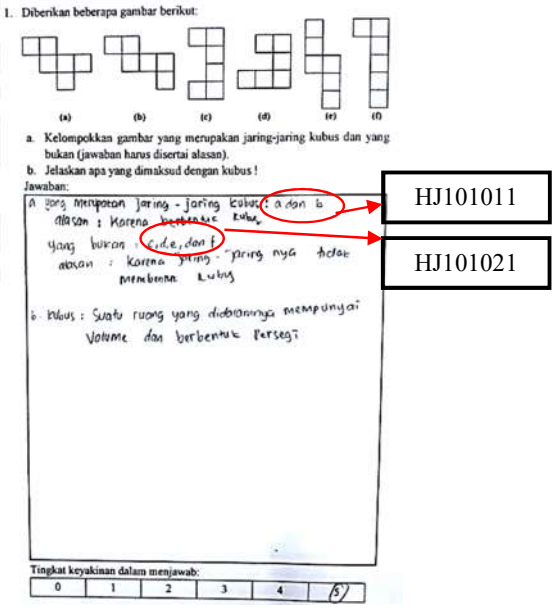
Interviews used in this research were unstructured interviews based on the analysis of test results. That means the sequence of questions, the sentences used and the way of delivery was not the same for each research subject. That because the interview was very dependent on the results of the test/subject job. Interviews were conducted after the subjects did the test-1 and test-2. The interview was conducted to find out the students' misconception in doing the test. After the interview, the data of the interviews reduced to choose which one can be used and not, then presented in the form of transcript for easy understood and obtained conclusion.

RESEARCH DATA AND DISCUSSION

1. Subject 1 (AMR)

   In this research can be seen misconception by subject 1 is as follows.

   a. On test number 1, subject 1 misconception about the concept of cube and cube nets.



Picture 1. Subject 1's answer on test-1 number 1

From the Subject 1's answer, she chooses pictures a dan b (HJ101011) that show cube's net and pictures c, d, e, and f (HJ101021) for the non-example of cube's net. This answer actually wrong. Because the correct answer is pictures a,

d, and e, but subject 1 confidence with her answer which is showed in high confidence in choose CRI scale (5).

From Subject 1's answer, the research does an interview to know the reason and the explanation of the answer, here the interview excerpt between the researcher and subject 1:

Researcher : Please read the question and your answer on test-1 number 1 !

Subject 1 : Given following pictures. Group the pictures that show the example and non-example of cube's net and give the explanation. The pictures that shows the example of cube's net is a and b because it has cube's shape. And the non-example is c, d, e, and f. Cube is a 3D figure which has square shape.

Researcher : 3D figure which has square shape. Can you mention the conditions of a cube !

Subject 1 : It has 18's edges.

Researcher : Is there anything else?

Subject 1 : Has 6 square sides.

Researcher : Okay, is there anything else?

Subject 1 : No.

Based on the explanation given, subject 1 actually knows the definition of cube. While the cube requirement according to subject 1 are to have space in it, 6 square sides, and have 18 edges. In addition, subject 1 is always less precise in determining pictures that include cube nets of 2 given types of test. But subject 1 is very sure with the answer and chooses a high degree of confidence. This is in accordance with the opinion of Hasan (1999: 296) which states the wrong answer but high CRI means misconception. In addition, the students have different understanding with the understanding that has been agreed by expert also shows that students experiencing misconception, this is in line with the opinion of Ibrahim (2012: 13). The alternative way given by the researcher to reduce misconceptions is by conducting a discussion, the researcher invites the subject to discuss from any given picture that belongs to the cube nets and not try to wrap them into a single cube one by one. This is in line with Ibrahim (2012) regarding one way to overcome misconceptions that is with constructivism strategy or students are guided to find the concept. While on this alternative the researcher gives constructivist strategy with step PDEODE or predict (P), discus (D), explain (E), observe (O), discus, and explain.

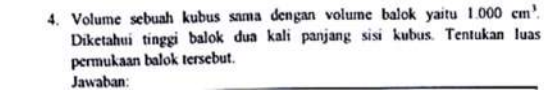
b. On test number 2, subject 1 misconception on the surface area of cube. Subject 1 is quite sure that the formula of surface area of cube is $6s$. This is certainly contrary to the theory. In accordance with Ibrahim (2012: 13) subject 1 can be categorized as misconception. Despite misconceptions on the surface area of cube, subject 1 does not experience a misconception on the volume of cube. This can be seen from the correct answer in solve the problem of cube's volume. The alternative way given by the researcher to reduce the misconception of subject 1 on test number 2 is by providing a re-explanation of the cube surface area starting from the definition until how to find the formula with the help of the cube nets. Alternatives are given in accordance with the POE constructivist strategy of predict, observe, and explain.

c. On test number 9, subject 1 mis-concepts of the surface area of cube and prism. According to the answer of subject 1, the relations that can be found from cube, cuboid, and prism are have same sides of base and top. It is not wrong but not quite accurate because the explanation is too general and can be ambiguous. Because the meaning of the sentence can also be represented in the form of another figure like a cylinder. However, subject 1 believes that the answer is correct. This causes subject 1 to be considered misconception in accordance with Hasan's statement (1999: 296) about the possible answers and interpretation through the CRI method. Besides, based on interview result, subject 1 mentioned the formula of prism surface area is $2La \times t$. The alternative given by researchers to reduce misconceptions on subject 1 is re-explain the relationship between cubes, cuboids, and prisms. The researchers also provide an explanation of the formula of cube and prism surface area which subject 1 also misconception. Similar to previous alternatives, this alternative uses a constructivist strategy to help students find the right concept.

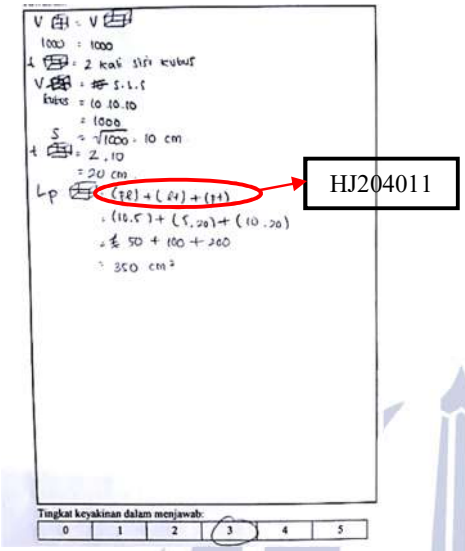
2. Subject 2 (DSP)

In this research can be seen misconception from subject 2 is as follows.

a. On test item number 4 about the surface area of cuboid


4. Volume sebuah kubus sama dengan volume balok yaitu 1.000 cm^3. Diketahui tinggi balok dua kali panjang sisi kubus. Tentukan luas permukaan balok tersebut.
Jawaban:

Picture 2. Subject 2's answer on test-1 number 4



Continued from Picture 2. Subject 2's answer on test-1 number 4

From the Subject 2's answer, actually she does right strategy to solve the problem. But the formula that she used to find the surface area of cuboid is $(p.l) + (l.t) + (p.t)$ (HJ204011). This formula is wrong, but subject 2 confidence with her answer which is showed in high confidence in choose CRI scale (3).

From Subject 2's answer, the research does an interview to know the reason and the explanation of the answer, here the interview excerpt between the researcher and subject 2:

Researcher : Please read the question and your answer on test-1 number 4 !

Subject 2 : A cuboid has volume 1.000 cm^3 which same with a cube volume. Given the cuboid's height is 2 times the cube's length. Find the surface area of the cuboid. The answer is the first find the length of the cube from the volume. Then find the height of the cuboid from the information given. And the next find the length and width of cuboid. Last, find the surface area.

Researcher : Do you know the meaning of surface area?

Subject 2 : The area of the bottom and the… (thinking)

Researcher : And what?

Subject 2 : I don't know the name.

Researcher : Okay, then do you know the meaning of volume?

Subject 2 : Side of 3D figure.

Subject 2 mis-concepts in cuboid surface area. Subject 2 strongly believes that the formula of the surface area of cuboid is $(p.l) + (l.t) + (p.t)$. Although the volume formula is correct, subject 2 did a mistake in assuming the length and width of the cuboid from volume and height that already known. In addition, the misconceptions that seen through incorrect answers with high confidence (Hasan, 1999), subjects also have an understanding that does not fit with expert's understanding of the concept. (Ibrahim, 2012). The alternative given by the researcher to reduce the misconception of subject 2 on test number 4 is providing a re-explanation of the cuboid surface area starting from the definition until how to find the formula with help of cuboid nets. The strategy to overcome misconceptions by researchers at that time was to use a conceptual change strategy in which the researcher wanted the subject to change his conception of a phenomenon by restructuring and assimilating new information into the conceptual framework already held (Ibrahim, 2012).

b. On test question number 5, subject 2 has misconception about the definition of prism. From some pictures given on test-1 subject 2 only choose pentagon prism while on test-2 choose cube and triangular prism. According to subject 2, cuboids and cubes are not a prism. Based on the opinion of Fowler (Suparno, 2013) this shows that the subject misconception on the concept. The alternative given by the researcher to reduce the misconception of subject 2 on test number 5 is by conducting discussion and re-explanation related to the definition of prism. In this alternative, the researcher gives constructivist strategy with step PDEODE or predict (P), discus (D), explain (E), observe (O), discus, and explain.

c. On test question number 6, subject 2 has misconceptions about the volume of the prism. Subject 2 states that the prism volume formula is $\frac{1}{3} \times La \times t$. This is certainly contrary to the theory. So, it can be considered that students having misconceptions (berg, 1991). In addition, subject 2 also misconception on the trapezoid area formula. According to subject 2's answer, the trapezoid area formula is $\left(\frac{1}{2}(a + b)\right)$. The alternative given by researchers to reduce the misconception of subject 2 on test number 6 is providing a re-explanation about the volume of prism. Alternative given by this researcher

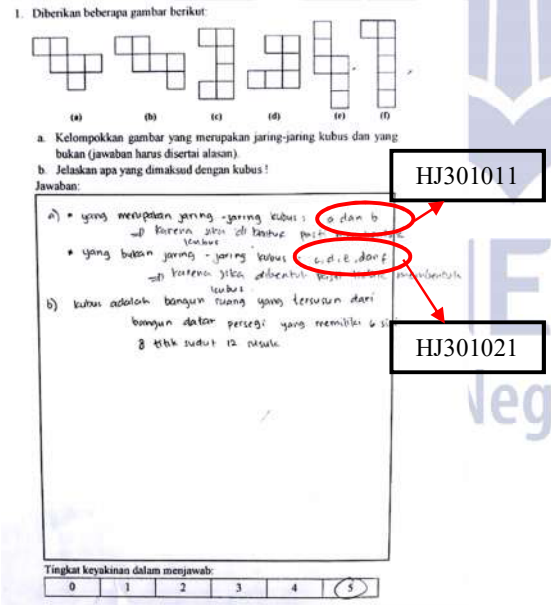
according to POE constructivist strategy is predict, observe, and explain.

d. On test item number 9, subject 2 has misconceptions about the relationships between cube-cuboid and prisms (prism concepts). According to subject 2 the relationship that can be found from cubes, cuboids, and prisms is having the same formula $La \times t$. Subject 2 does not mention what the formula is and other explanation. However, after interviewing, subject 2 reveals that the other relationships that can be found are the same but different in shape and have the same base side with the upper side and also have the opposite sides facing each other and parallel. The subject gives an inaccurate explanation of the concept of prism, and according to Fowler (in Suparno, 2013) the student experiences misconceptions. The alternative given by the researcher to reduce the subject's misconception on test number 9 is providing a re-explanation of the relation of prism, cubes and cuboids. In this alternative, researchers also use POE constructivist strategies.

3. Subject 3 (N)

In this research can be seen misconception by subject 3 is as follows.

a. On test question number 1, about cube's net



Picture 3. Subject 3's answer on test-1 number 1

From the subject 3's answer, she chooses pictures a dan b (HJ301011) that show cube's net and pictures c, d, e, and f (HJ0301021) for the non-example of cube's net. This answer actually wrong. Because the correct answer is pictures a, d, and e, but subject 3 confidence with her answer which is showed in high confidence in choose CRI scale (5).

From Subject 3's answer, the research does an interview to know the reason and the explanation of the answer, here the interview excerpt between the researcher and subject 3:

Researcher : Please read the question and your answer on test-1 number 1 !

Subject 3 : Given following pictures. Group the pictures that show the example and non-example of cube's net and give the explanation.

Researcher : Then what is your answer?

Subject 3 : The example of cube's net are pictures a and b because it can make a cube.

Researcher : And for the non-example?

Subject 3 : The non-example of cube's net are pictures c, d, e, and f because it can not make a cube.

Researcher : What is the meaning of cube?

Subject 3 : Cube is a 3D figure made from square and has 6 sides, 8 angle points, and 12 edges.

Researcher : Are you sure with your answer?

Subject 3 : Yes

Subject 3 has misconceptions on cube's nets. According to subject 3, the pictures can be included to cube nets when it is assembled to form a cube. Choosing the right pictures belong to cube nets is not a difficult thing for the subject 3. It is proven when subject 1 is always less precise in answering questions about cube's net on test-1 and test-2. However, the level of confidence of subject 3 in answering the question is very high. When viewed from beliefs and answers can be directly seen that the subject has misconceptions (Hasan, 1999). In addition, other misconception characteristics are also seen from the clarification of less precise examples, in accordance with Fowler's opinion (in Suparno, 2013). The alternative given by the researcher to reduce the misconception of subject 3 on test question number 1 is by discussing the given problem by trying each given picture. The alternatives are given in accordance with the constructivist strategy by step PDEODE or predict (P), discus (D), explain (E), observe (O), discus, and explain.

b. On test question number 6, subject 3 experiences misconceptions about the volume of prism. Subject 3 used the right strategy using the Pythagoras formula to find trapezoid's height.

Next is find the trapezium area for determining its volume. Subject 3 strongly believes that the prism volume formula is $2 \times La \times t$. The subject has a contrary understanding with a generally agreed of the concept of the prism volume formula (Ibrahim, 2012). So, it can be said that subject 3 has misconception on the volume of prism. The alternative given by the researcher to reduce the misconception of subject 3 on test number 6 is providing a re-explanation of the prism volume formula. The alternative given by the researcher is to use POE constructivist strategy.

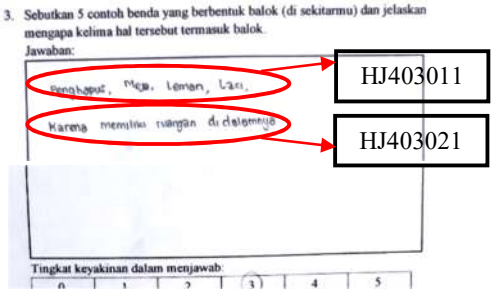
c. On the question test number 8, the misconception experienced by subject 3 on the surface area of pyramid. The surface formula of pyramid according to subject 3 is $Ka \times t$ with the formula of volume $\frac{1}{3} \times La \times t$. It can be seen immediately that the understanding of subject 3 is different from the understanding agreed by the expert (berg, 1991). So it can be directly concluded that subject 3 has misconception on the concept of surface area of pyramid.

d. In test number 9, the misconception experienced by subject 3 occurs in the relationship of cubes and cuboids with prisms (prism concepts). Subject 3 mentions the relationships that can be found from cubes, cuboids, and prisms are equally devoid of culmination. But no other explanation related to it. The subject provides an inaccurate explanation of the concept of the prism, and according to Fowler (in Suparno, 2013) with such characteristics the student is considered to be misconception. The alternative given by the researcher to reduce the misconception of subject 3 is providing a re-explanation of the relation of prism to cubes and cuboids. The re-explanation here is using the POE constructivist strategy.

4. Subject 4 (RA)

In this research can be seen misconception by subject 4 is as follows.

a. On test item number 3, subject 4 misconceptions about the concept of cuboid.



Picture 4. Subject 4's answer on test-1 number 3

From the subject 4's answer, she mentions 4 objects from 5 objects that the question asked (HJ403011). Besides that, she writes that the definition of cuboid is 3D figure (HJ403021). She can not complete the answer besides that her explanation is to general to define a cuboid. It makes her answer become wrong but subject 4 confidence with her answer which is showed in high confidence in choose CRI scale (3).

From Subject 4's answer, the research does an interview to know the reason and the explanation of the answer, here the interview excerpt between the researcher and subject 4:

Researcher : Please read the question and your answer on test-1 number 3 !

Subject 4 : Mention 5 objects that have cuboid shape ! Give explanation you're your answer. My answer is eraser, table, cupboard, and desk. I am only mention 4 from 5.

Researcher : It is okay. Then what is your reason?

Subject 4 : The reason is because it has 12 sides with same length and same width.

From the 5 objects in the form of cuboids requested to be mentioned only 1 were missed. Also, according to subject 4, the cuboid is a figure that has space in it. Of course, the definition is very general and less specific to define a cuboid. Also, when asked to select an picture showing the cuboid nets, subject 4 is also less precise in answering. However subject 4 gives a high degree of confidence in the answer. Based on the answers and level of conviction, then subject 4 can be categorized as misconception (Hasan, 1999). The alternative given by the researcher to reduce the misconception of subject 4 is by discussing the given problem by trying each given picture. The strategy to overcome misconceptions by researchers at that time was to use a conceptual change strategy in which the researcher wanted the subject to change her conception of a phenomenon by restructuring and assimilating new information into the conceptual framework already held (Ibrahim, 2012).

b. On test item number 4, subject 4 mis-concepts on the surface area of cuboid. According to the subject 4 the formula of surface area of cuboid is $(p.l) + (l.t) + (p.t)$. Subject 4 also makes a mistake in assuming the length and width of a cuboid from volume and height that already known. The formula is not same as the understanding given by the experts must have shown that subject 4 indeed misconception on the

surface area of cuboid (Ibrahim, 2012). In addition, improper assuming which according to Fowler (in Suparno, 2013) can be considered as something inaccurate about a concept can also indicate that subject 4 has misconception. The alternative given by the researcher to reduce the misconception of subject 4 is providing a re-explanation of the area of the cuboid surface area starting from the definition until how to find the formula with the help of drawing the cuboid nets. The alternative given by the researcher is called POE constructivist strategy.

c. On test item number 5, subject 4 misconception about the definition of prism. According to the subject of 4 cubes and cuboids it is not a prism that makes she choose a triangular prism on test-1 while on test-2 choose cube and triangular prism. The subject's answer indicates that subject 4 provides an inaccurate clarification of examples, besides the apparent chaos of different concepts of prism, cuboid and cube. It indicate subject 4 to misconception, this is supported by Fowler's opinion (in Suparno, 2013). The alternative given by the researcher to reduce the misconception of subject 4 is by conducting discussions and providing re-explanations regarding the definition of prism. In this alternative it is seen that the researcher gives constructivist strategy with step PDEODE or predict (P), discus (D), explain (E), observe (O), discus, and explain.
d. On test item number 6, subject 4 has misconceptions on the volume of the prism. Subject 4 states that the prism volume formula is $\frac{1}{3} \times La \times t$. In addition, subject 4 mentions the trapezoidal area formula is $\left(\frac{1}{2}(a + b)\right)$. Both are contradictory to the theories studied in order to infer the subject 4 to misconception. Expose to Ibrahim's opinion (2012, 13) and berg (1991: 13). The alternative given by researchers to reduce the subject's misconception is providing a re-explanation about volume of prism. Alternatives are given in accordance with the POE constructivist strategy of predict, observe, and explain.
e. On test number 9, subject 4 mis-concepts about the cube and cuboid relationships with prisms (prism concepts). The relation that can be found from cubes, cuboids, and prisms is equally having the formula La × t. There is no explanation of what formulas is or how they can have the same formula. On the other hand, subject 4 chooses a high level of confidence. This indicates that the subject is misconception. Because according to Hasan (1999: 293) an inappropriate answer and high CRI confidence level can categorize a person experiencing misconception. Subject 4 also reveals that the relationships that can be found are different contents and shapes and have the same base side and also have the sides perpendicular. The alternative given by researchers to reduce misconceptions of subject 4 on test number 9 is providing a re-explanation of the relationship of prisms to cubes and blocks. Similar to previous alternatives, this alternative use POE constructivist strategies.

CONCLUSIONS AND SUGGESTION

Conclusion

Based on the data analysis that has been done by the researcher, it can be concluded the student misconception on the material of 3-dimensional figure with flat side using Certainty of Response Index (CRI) method is as follows.

1. The misconceptions experienced by S1 (AMR) occurred in three numbers of problems that is on the concept of cubes and cube nets, surface area of cube, and surface area of the prism. S1 mentioned that one of the cube requirements is have 18 edges with a surface area formula is $6s$, whereas the formula of prism's surface area is $2La \times t$. In addition, S1 is difficult to distinguish pictures that included cube nets and do not included.
2. Misconceptions experienced by S2 (DSP) are seen in four numbers of problems that occur in the concept of the surface area of the cuboids, the definition of prism, the volume of prism, and the relationship of cubes and cuboids with prism (prism concept). According to S2's answer, the relationship that can be found from cubes, cuboids, and prisms is equally having the formula $La \times t$. But what the formula is and how the formula can be the same is not explain in more detail. In addition, S2 is convinced that the formula of surface area of cuboid is $(p.l) + (l.t) + (p.t)$, while the formula for the prism volume is $\frac{1}{3} \times La \times t$.
3. The misconceptions experienced by S3 (N) are in the four numbers of problems that occur in the concept of cube nets, the volume of prisms, the surface area of pyramids, and on the cube and cuboid relations with prisms (prism concepts). S3 mention the connections that can be found from cubes, cuboids, and prisms are equally devoid of peak. But no other explanation related to it. In addition, S3 had difficulties in distinguish pictures that included cube nets and not, but S3 believe that the answer is correct

and that misconceptions arose. S3 also mentioned that the formula for the prism volume is $2 \times La \times t$, whereas for the formula of pyramid's surface area is $Ka \times t$. Surely it was against the expert theory but S3 believe the answer is correct.

4. The misconceptions experienced by S4 (RA) are detected in five numbers about the concept of cuboid, the surface area of cuboid, the definition of prism, the volume of prism, and the relationship of cubes and cuboids with prisms (prism concepts). The relation that can be found from cubes, cuboids, and prisms is equally having the formula $La \times t$. There is no explanation of what formulas is or how they can have the same formula. Even so S4 states that cubes and cuboids are not prisms because they have different shapes and volumes. S4 defines a cuboid as a figure that has a space in it with the formula of its surface is $(p.l) + (l.t) + (p.t)$. S4 has difficulty in distinguishing pictures that include cuboid and non-cuboid nets. However, S4 convinced that the answer is correct and gives value to the level of confidence in answering at high point. In addition, S4 also mentions that the formula for prism volume is $\frac{1}{3} \times La \times t$.

Suggestion

Based on the research result and conclusions that have been mentioned, there are several suggestions that can be mentioned by researchers as follows.

1. Teachers need to find out students' difficulties in learning concepts to prevent misconceptions. Having known the existence of students who have misconception, teachers should find out also the factors causing them to misconception. It is expected that the teacher can handling to students who suffered misconception in accordance with the cause factor, one that can be done is providing re-explanation related material that caused misconception in students. It should be immediately undertaken to prevent misconceptions where the material that creates misconceptions is a prerequisite for other materials.
2. For the percentage of students' confidence level in selecting CRI that cannot yet be detected with certainty, should be given other criteria than the percentage of confidence level for each choice of CRI scale so that students can understand the purpose of choice.
3. For making the latticework of problem should be made related to the misconception indicator and made before preparing the questions so that each indicator can be achieved in each item question.

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