Reducing Student's Misconceptions With Simple Media Based On Cognitive Conflict In Junior High School

Gigih Besar Mukti Raharja*, Wasis*, Leny Yuanita*

* Postgraduate Study of Science Education, Postgraduate, State University of Surabaya, Indonesia

DOI: 10.29322/IJSRP.9.10.2019.p9446
http://dx.doi.org/10.29322/IJSRP.9.10.2019.p9446

Abstract- This research aims to: (1) describing mapping of concepts that experience misconceptions on the subject of liquid pressure; (2) Describing learning implementation using simple media; and (3) describing the shift in student's conceptions before and after treated with using simple media based on the cognitive conflict on the subject of liquid pressure. The type of this research is pre-experimental research. The research population are students of VIII-A and VIII-B at SMPN 1 Sukodadi Lamongan. This research was conducted through two stages, preparation phase is the stage of preparing learning instruments and implementation stage research using based on cognitive conflict to find out mastery of concepts and reduce student's misconceptions on the subject of liquid pressure. Data collection techniques from this research were observation and tests. Based on the results of research and discussion, it can be made the conclusion that learning using simple media based on cognitive conflict can be used to reduce student's misconceptions on the subject of liquid pressure.

Index Terms- Reducing Student's Misconceptions, Simple Media, Cognitive Conflict

I. INTRODUCTION

Education is the subject matter for creating resources quality human beings and can be used in advancing the nation. Quality of education in Indonesia always gets attention in change system, obviously by changing the curriculum. In concept curriculum, an educational program must change teaching methods and learning to accommodate the needs that are different, individual preparation and student learning styles. Physics is part of science, which understands everything about natural phenomena through the five senses. As part of science, physics have dimensions of scientific attitudes, scientific methods, and scientific products include theories, concepts, and principles. Also, according to the facts on the ground, physics is a difficult subject to understand, boring, and scary. During this time, physics is seen as a scourge or a lesson must be shunned because physics lessons there are many formulas and it is difficult to memorize so that it causes deep seriousness study physics. Most of the principles and concepts of physics are expressed in forms mathematical formula. Ability to understand and relate principles and the concept of physics taught by natural events in everyday life are important because both of these can prevent misconceptions in among students. Often such learning problems arise in opportunities for class discussion involving both individual students between groups of students. It is often found that students who have followed the learning process teaching has not shown optimal learning outcomes and a lot of fun. Students answer the tests given in contrast to the concept that has been understood by scientists. Allegations that can be raised are students do not understand the concept well or students have conceptions which is not following the actual concept (misconception) which causing students to have difficulty in using concepts owned to explain various natural phenomena. Misconceptions are ideas or views wrong about a concept that someone has that is different from concepts agreed upon and assumed to be true by experts, usually this different (wrong) view is resistant and persistent [1].

According to observations in the field the use of instructional media less optimized because it is given variations in the learning model in SMPN 1 Sukodadi Lamongan. Expectations of a learning model is that leads to appropriate technological progress with the times. The learning model must make students interested in learning. So that it can realize student learning achievement is maximum. Meanwhile, learning achievement depend on several wrong factors only from the teacher who teaches. Learning activities built by teachers and students are purposeful activities, then everything that is conducted by the teacher and students should be directed to achieve determined goals. Therefore a teacher needs to improve his teaching skills. Based on the results of the pre-research conducted on 20 students at In SMP Negeri 1 Sukodadi in class VIII the results were obtained: (1) there were 13 students who experience misconceptions in solving problems, (2) the results of the activity it can be concluded that his insight many students in the class still experiencing misconceptions in learning. Based on the facts above, the researcher needs to do it research relating to the use of simple media for motivate students. Simple media was chosen because it is instruments for teaching that can be used in physics teaching and learning activities. The thing this is caused by the activities experienced by students at the time conduct experiments relevant to scientific activities and obtain physical concepts. Also,

students will be trained to make decisions in choices that are quite difficult, identify arguments logical and illogical and also identifies information.

Misconception is an inaccurate state of understanding for certain concepts, the use of wrong concepts and hierarchical relationship's concepts that are not true [2]. Misconception more than a mistake of fact in memory. Misconceptions are often replaced as alternative concepts that are students. Also, misconceptions were replaced as own understanding or cognitive error that is different from a theory which is actually. The cause of misconception, namely the initial understanding that student-owned, student language or mindset, concept difficulties and mistakes teacher in conveying concepts [3]. Student learning difficulties lead to low student mastery of concepts [4]. Mastery of physics concepts the low causes the low quality of physics education. Two factors who play a role in student learning problems are preconceptions and misconception. Student's preconceptions are obtained before students get a correct concept about a certain topic in physics learning from the teacher class. If student's preconceptions about a topic in learning physics following the correct concept of physics, then it will not cause problems. The opposite can happen, that is when student's preconceptions do not match the correct concepts of physics. A situation like this is often known as a misconception. Student misconceptions arise will constantly disrupt the formation of scientific conceptions and resulting in learning problems that can affect student learning achievements. Teachers must care about student's preconceptions and misconceptions, due to these two factors these are important factors for improving student learning achievement [5]. Student misconceptions can be prevented through the physics learning process good and right.

Based on the background above, so the writer is motivated to conduct research about reducing student's misconceptions with simple media based on cognitive conflict in senior high school.

II. EXPERIMENTAL METHOD

2.1 General Background of Research

The main purpose of this research to describing mapping of concepts that experience misconceptions on the subject of liquid pressure, describing learning implementation using simple media, and describing the shift in student's conceptions before and after treated with using simple media based on the cognitive conflict on the subject of liquid pressure. This research was conducted in students at SMP Negeri 1 Sukodadi Lamongan academic year 2018/2019.

2.2 Sample of Research

The sample in this research was 40 students of class VIII-A and VIII-B at SMP Negeri 1 Sukodadi Lamongan academic year 2018/2019.

2.3 Instrument and Procedures

This research was conducted through two stages, preparation phase is the stage of preparing learning instruments and implementation stage research using based on cognitive conflict to find out mastery of concepts and reduce student's misconceptions on the subject of liquid pressure.

2.4 Data Analysis

a. Observation

Observation is used to determine implementation of the lesson plan and student activities during learning activities with cognitive conflict approach take place. Observers directly observe learning activities up close so that all activities that take place can be observed. This observation was carried out by two independent observers namely science teacher and independent observer who others.

b. Test

This test is a technique used to obtain data quantitative form of student test scores. The test in this study consisted of pretest and posttest. A pretest is used to know the concept beginning (preconceptions) of students to the subject of liquid pressure given before learning activities with cognitive conflict approach. Posttest was used to find out the students' final concept of the pressure material on liquid and to find out the student's concept shift from not knowing concepts and misconceptions become know concepts

c. Conception analysis

The method used to identify misconceptions is CRI (Certainty of Response Index) method. CRI (Certainty Of Response Method) Index) is a technique for measuring someone's misconceptions in a way measure the level of confidence or certainty someone in answering each question given. Besides being used to identify misconceptions, CRI can also distinguish between students who know the concept, do not know the concept and misconceptions. The scale used in CRI ranges from 0-5 i.e. 0 = guessed answer (just guessing), 1 = almost guess (almost guessing), 2 = not sure, 3 = sure, 4 = almost certain, and 5 = certain (certainly true) [6]. The results of the analysis with CRI are used to distinguish students who know concepts, don't know concepts, and misconceptions. CRI interpretation matrix results can be seen in Table 1.

Table 1. Recapitulation of Observation Results

Response Quality Scale (CRI)	**Answers to Concept Questions**	
	Correct	**Incorrect**
Less than 2.5 (Low)	Respondents do not know concept	Don't understand the concept
More than equal to 2.5 (High)	Experiencing misconception	Understand concepts so well

Identification of misconceptions by individually and in groups. Identification of individual misconceptions is done by counting the percentage of students experiencing misconceptions. Calculation of the percentage obtained from:

$$\%misconceptions = \frac{the\ number\ of\ students\ experiencing\ misconceptions}{the\ total\ number\ of\ students} x100\%$$

Identification of misconceptions as a group is done to establish the most misconception concept. Identification based on the average CRI index of students who answered correctly (CRIB) and average CRI index of students who answered incorrectly (CRIS), and Fb (fraction of students who answered correctly). CRIB, CRIS, and Fb calculations use the formula:

$$CRIB = \frac{the\ total\ number\ of\ student's\ CRI\ who\ answered\ correctly}{the\ number\ of\ students\ who\ answered\ correctly}$$

$$CRIS = \frac{the\ total\ number\ of\ student's\ CRI\ who\ answered\ incorrectly}{the\ number\ of\ students\ who\ answered\ incorrectly}$$

$$Fb = \frac{the\ total\ number\ of\ student's\ CRI\ who\ answered\ correctly}{the\ number\ of\ students}$$

Misconception occurs if the value of CRIS ($2.5 < CRIS \leq 5$) and misconception is said to have high intensity if the CRIS and Fb values are small.

d. Analysis of Learning Achievement Observation Results

Observation sheet of the implementation of lesson plans with cognitive conflict is used by observers to observe the implementation of the lesson plan during teaching and learning activities is taking place. The Implementation sheet of lesson plans contains the steps that are the teacher must do, the score the observer must give according to instructions existing assessments and supplemented by observer suggestions. Percentage of compatibility this observation sheet is tested using the following formula:

$$percentage\ of\ agreements = \left(1 - \frac{A-B}{A+B}\right) x100\%$$

Information:

A = number of frequency aspects of behavior observed by the observer which gives a high frequency

B = number of frequency aspects of behavior observed by the observer others that provide low frequencies.

The category of a good instrument is an instrument has a value of $R \geq 0.75$ or $\geq 75\%$ [7].

e. Data Analysis for Calculating Validity

To find out how far each item can measure the effect of learning, sensitivity needs to be sought. The sensitivity of the item is calculated by formula [8] as follows

$$sensitivity = \frac{Ra - Rb}{T}$$

Information :

Ra = Number of students who answered correctly on the test post

Rb = Number of students who answered correctly on the pre-test

T = Number of students taking the test

The item is said to be good if the sensitivity is between 0 and 1, criteria which is used to state that the items are sensitive to learning if $S \geq 0.30$.

f. Conception Shift Analysis (Reduction of Misconception)

The pattern of shifting student's misconceptions (reduction of misconceptions) was analyzed based on student answers that are equipped with a certainty level of Confidence of Response Index (CRI) on pretest and posttest.

III. RESULT AND DISCUSSION

3.1 Learning Instrumen Validation

Learning instrument thats developed are Learning Implementation Plan (RPP), Student Activity Sheet (LKS), and Misconception Identification Test Misconception. Learning instruments was validated by two validators and revised. Next will be described the results of the validation of each instruments which was developed.

a. Learning Implementation Plan (RPP)

Learning Implementation Plan (RPP) is used as a guide in the implementation of learning activities in classes that contain scenarios delivery of material. Learning Implementation Plan (RPP) which developed by researchers as much as 1 RPP; namely the first meeting about liquid pressure and hydrostatic pressure; the second meeting about the Law Archimedes. The developed lesson plans have followed the stages in approach to cognitive conflict strategies. Based on the results of the validation conducted by two validators seen from the aspect of format, content, and language, the format aspect is obtained to get a score of 4.00 with a very valid category, the content aspect gets a score of 3.80 with the category very valid, and the language aspect gets a score of 3.70 with the very category valid. The lesson plans developed by researchers are very valid and can be categorized used for testing I. The lowest score is obtained in the language aspect. In the preparation of RPP must use good language so that it can used in learning activities. The lesson plan must be arranged systematically so that learning takes place in an interactive, inspiring, fun, challenging, motivate students to participate actively, as well as provide a space enough for initiative, creativity and independence according to talent, interests and physical and psychological development of students [8]. Researchers revised the RPP according to the suggestions of the validator so it is hoped that these lesson plans can be effective and help researchers in learning activities.

b. Student Activity Sheet (LKS)

Other learning instruments developed by researchers is Student Activity Sheet (LKS). LKS has an important role in activities learning is as a support that can optimize student's learning achievements and help students to discover science concepts by themselves for their

own activities through observation and investigation. LKS got it to train student's creativity in finding problems, problems solving, and formulate concepts that are built on their own experience. LKS which was developed as many as 2 worksheets according to the learning implementation plan. Viewed from the aspect of students, according to level Piaget's cognitive development is in the formal operational stage, students able to think abstractly, can solve problems and be able to compile hypothesis and make methods of things that are abstract [9]. Based on the results of the analysis of the validation scores Student Activity Sheets (LKS) from two validators obtained: the average score for the format aspect 3.88 with the category is very valid, the language aspect is 3.5 with a valid category, and the content aspect is 3.79 with a very valid category. Student Activity Sheet (LKS) developed researchers can be used in the first trial with several revisions.

c. Misconception Identification Test

Misconception identification test was intended to map out the concepts that experienced misconceptions, amounting to 10 multiple choice questions with reasoned answers. This misconception perception identification test is completed with CRI (Certainty of Response Index) confidence level and coding argumentation [10]. Misconception identification test is given to students before learning activities with cognitive conflict strategies (pretest) for mapping concepts that experience misconceptions on the subject of liquid pressure. Besides this test is also given to students after learning activities take place to find out effectiveness the strategies applied to students can reduce the concepts experienced misconception on the principle of liquid pressure. Based on the results of the validation of the misconception identification test conducted by two validators in terms of content and language, an average was obtained content aspect validation is 3.55 with 95.71% compatibility, aspect language obtained an average of 3.6 with a matching percentage of 94.29%, meaning the test it can be categorized as valid and can be used to find out student's misconceptions on the subject of liquid pressure. Suggestions from validators namely, the use of language must be considered so that the problem is easy understood by students and the suitability of indicators with compiled questions.

3.2 Trial Results

Learning instruments developed and validated by experts then used it later in trials.

a. The implementation of Learning Implementation Plan (RPP)

RPP is observed by two observers by using the Observation Sheet. The observed activities consist of introduction, core activities, and closing. In the preliminary activity, which is preparing students to join the activity learning, uncovering students' initial concepts by presenting phenomena or the questions. As stated by Piaget that someone integrate perceptions, concepts, or new experiences into patterns or the scheme that was already in his mind [11]. It means students already have preliminary knowledge before entering class. At the core activities of students work in groups to solve problems and find themselves scientific concepts through experimental activities. This is consistent with learning theory the findings put forward by Bruner. In the closing activity the students work together to make conclusions and reflections from the learning activities as well refine initial concepts (preconceptions) that are not in accordance with the concepts scientific and provide feedback on the process and learning achievements. The observations show that learning instruments are developed can be run consistently by the teacher. Carrying out their duties a teacher must mastering the material being taught and the methods used in learning [12]. Analysis of the results of observations of the implementation of the plan implementation of learning. Average teacher's ability to implement learning activities with cognitive conflict which include good categories preliminary aspects, core activities, and closing. These results indicate the teacher has carry out preliminary activities and core activities well containing about the phases of cognitive conflict in accordance with the steps of RPP that has been developed. According to Borich, a good instrument category is an instrument that has matching percentage ≥ 0.75 or $\geq 75\%$. Percentage calculation results compatibility all aspects of learning obtained an average percentage match of 95.5%, meaning that this instrument is in good category and can be used in learning.

b. Misconceptions Identification Test Results

The concepts of science taught at school are not always acceptable by students as a whole as expected. Each student constructs the concept itself is in accordance with the initial concept or the initial knowledge available in the cognitive structure. This causes differences in understanding concepts by students and grouped into students who know the concepts, not knowing the concept, and misconception. Misconceptions experienced by students are identified individually and groups using CRI's level of confidence. Identification of individual misconceptions aims to determine the percentage misconceptions experienced by students on each concept. Misconception identification as a group aims to find out which concepts experiencing the highest misconception. Group analysis is based on the average CRI of students who answered right (CRIB) and the average of CRI of students who answered wrong answer (CRIS) as well as the right fraction (Fb), ie the number of students who answer right. The misconception identification test consists of 10 multiple choice questions equipped with a level of CRI confidence and open reason. But there are some students who don't write down the reason for various reasons, for example just guessing answers or writing reasons that are not relevant to the answers the selected. Based on the analysis results obtained that there are several concepts on the subject of pressure on liquids that are not suitable. These concepts that don't fit are called misconceptions. Misconceptions are wrong ideas or views about the concept that someone has that is different from the concept that agreed and considered true by experts. Students are categorized as misconceptions when answering questions wrong with a high level of CRI confidence > 2.5 based on CRI interpretation. From the results of the analysis obtained an average of students who experience misconceptions write a CRI confidence level of 3 to 5. It can be seen that there are variations in misconceptions in each of 5 indicator. Misconception analysis is carried out individually and in groups each item with CRI interpretation. The biggest percentage of misconception is in questions number 2, 4, 5, 6, and 8 each by 40%, the indicator explains the concept of pressure liquid substances, analyze the pressure of a liquid at a certain depth, applying the pressure of liquid in daily life, explains Archimedes's law and analyze the application of Archimedes's law to floating objects. The average student answers incorrectly with a confidence level of CRI> 2.5, ie ranging from 3-5. The smallest percentage of misconception is in problem number 1 and 3 that is 20%, which explains the concept of liquid pressure, analyzes liquid pressure at a certain depth. All the questions tested experience

misconception. Of the 10 MCQs tested there were no yams not experiencing misconceptions. The biggest percentage of misconception is in questions number 1, 2, 3, and 8 each of them at 35%, which is an indicator explaining the concept of substance liquid pressure, analyze liquid pressure at a certain depth, analyze the application of Archimedes's law to floating objects. Average student answer incorrectly with a confidence level of CRI> 2.5, which ranges from 3-5. The smallest percentage of misconception is in questions number 4 and 5 that is equal to 20% ie analyzing the pressure of the liquid at a certain depth, applying liquid pressure in everyday life. All questions tested experiencing misconception. Of the 10 multiple choice questions tested no found a matter that does not experience misconceptions. Besides individually, identification of misconceptions is also analyzed individually group. Analysis in groups is based on the average CRI of students who are correct answer (CRIB) and the average CRI of students who answer incorrectly (CRIS) and the true fraction (Fb), i.e. the number of students who answered correctly. If average CRIS values are close to or equal to 2.5 and the true fraction is low (< 0.5), then the CRIS can be classified as high CRI because of the proportion of students who answers greater wrong. Conversely, if the CRIS is a fraction rightly high (> 0.5), then the CRI can be classified as low CRI the proportion of students who answered correctly is greater. Based on data analysis shows that the CRIS value is in the range of 2.5 <CRIS ≤ 5, that is most students in answering questions experience misconceptions. Based on the results of the analysis shows that there are differences in student's initial level of knowledge. The cognitive structure of children is formed based on experience and interaction with the environment. Students are not a tabularasa or blank paper clean, which in the learning process will be written by the teacher or lecturer they. Students, before following the formal learning process at school, apparently already carrying certain concepts that they developed through previous life experiences. The concept that they brought can be suitable with scientific concepts but also can not be in accordance with scientific concepts. The final misconception identification test is carried out after the learning activities with cognitive conflict approaches takes place. Based on the results data analysis, it was found that the percentage of students who experienced individual misconceptions smaller than the percentage of students who know the concept. This matter indicated by an average CRI> 2.5. But there are still students who don't know the concept after learning with the cognitive conflict approach. There are students who initially experienced a misconception, but after learning remained experiencing a misconception. Students experience confusion with concepts that have been trusted so far, but do not yet fully believe in new concepts it forms correctly [13]. The student is in the accommodation phase new knowledge to turn wrong concepts into new ones in accordance with scientific concepts. Based on constructivism theory which explains that student knowledge is fickle and misconception is the process of changing concepts that have not been completed. The results of the analysis of group misconception identification data show CRIB values are higher than CRIS and Fb values> 0.5. This matter shows that after learning activities with cognitive conflict most students answered correctly and some students still answered is wrong.

3.3 Decreased Misconception (Reduction of Misconception)

Decreased misconception in students can be observed by comparing the percentage of students who experience misconceptions on the initial test (pretest) with the percentage of students who experience misconceptions on the final test (posttest). Based on the data, obtained that there was a decrease in student misconceptions in almost all concepts on the subject liquid pressure after learning with cognitive conflict. Decrease student misconceptions can be due to learning using cognitive conflict causing internal and intensive processes in students. Cognitive conflict in the students brain will then produce changes in the concept network in the student's brain or changes in cognitive structure [14]. According to Posner, the concept changes in students through two stages, namely assimilation and accommodation. After learning with cognitive conflict still found students who continue to experience misconceptions or there is no shift in the concept of the problem numbers 2, 5, 6, 8 and 10. This is possible because of the strength of the misconception inherent in students. Usually the views are different (wrong) is resistant and persistent. Causes of resistance a misconception because everyone builds knowledge exactly with his experience. Once we have built up knowledge, it is not easy to let you know that it is wrong by just letting you know to change the misconception. A number of misconceptions are very resistance, although efforts have been made to deny it by reasoning logical by showing the difference from observations actually, obtained from specially designed demonstrations and experiments for that purpose. The results of the reduction of misconceptions analyzed by CRI show a decrease in misconceptions experienced by students after learning with cognitive conflict approach. The results of data analysis on the pretest and posttest when in the class of VIII-A can the following results were obtained in the pretest for questions 1 and 3 found there were 4 students who experienced misconceptions, in questions no. 2, 4, 5, 6 and 8 were found 8 students who experience misconceptions, in questions no. 7 and 10 found 6 students who experienced misconceptions and in question No. 9 found 5 students who experiencing misconception. The results of data analysis can be obtained in the posttest for questions no. 1, 2, 3, 4, 5, 6, and 10 not found students who experience misconceptions, in questions no. 7, 8, and 9 were found 1 student who experienced misconceptions. From the results of the pretest and posttest above can be concluded that there is a decrease in students' misconceptions. This is shown when class of VIII-B do pretest for questions no. 1, 2 and 6 found there are 7 students who experience misconceptions, in question no. 3 found 4 students who experience misconceptions, in questions no. 4,5,7 and 8 found 6 students who experienced misconceptions and in question No. 10 found 5 students who experiencing misconception. The results of data analysis following results can be obtained in the posttest for questions no. 1, 3, 4, 7 and 9 not found students who experienced misconceptions, in question no. 2 was found 1 students who experience misconceptions, in problem number 5 find 3 students who experiencing misconceptions and in questions no. 6 and 8 found 2 students who experiencing misconception. The results of the reduction of misconceptions analyzed by the CRI show a decrease in misconceptions experienced by students after learning with cognitive conflict approach. Finally students understand the concept after it is given learning after the pretest. This is indicated by a decrease in the number students who experience misconceptions. The results of data analysis on the pretest and posttest in class of VIII-A can the following results were found in the pretest for questions 1 and 3 found there were 4 students who experienced misconceptions, in questions no. 2, 4, 5, 6 and 8 were found 8 students who experience misconceptions, in questions no. 7 and 10 found 6 students who experienced misconceptions and in question No. 9 found 5 students who experiencing misconception. The results of data analysis can be obtained in the posttest for questions no. 1, 2, 3, 4, 5, 6, and 10 not found students who experience misconceptions, in questions no. 7, 8, and 9 were found 1 student who experienced

misconceptions. From the results of the pretest and the posttest above can be concluded that there is a decrease in student's misconceptions. This is shown in class of VIII-B the following results can be obtained in the pretest for questions no. 1, 2 and 6 found there are 7 students who experience misconceptions, in question no. 3 found 4 students who experience misconceptions, in questions no. 4,5,7 and 8 found 6 students who experienced misconceptions and in question No. 10 found 5 students who experiencing misconception. The results of data analysis in the posttest for questions no. 1, 3, 4, 7 and 9 not found students who experienced misconceptions, in question no. 2 was found 1 student who experience misconceptions, in problem number 5 find 3 students who experiencing misconceptions and in questions no. 6 and 8 found 2 students who experiencing misconception.

IV. CONCLUSION

Based on the results of research and discussion, the following findings were obtained: (1) According to the results of the pretest, misconceptions experienced by students occur in almost all aspects on the subject of liquid pressure. (2) The implementation of learning with cognitive conflict can be implemented well by the teacher, observed by different observers in each the meeting and the teacher master every aspect of observation even though it still exists deficiency. (3) There is a change in concept in students who experience misconceptions changed the understanding of the concept to the condition of knowing the concept through cognitive conflict even though it doesn't change completely. (4) After learning with cognitive conflict a decrease in misconceptions occurs or reduction of misconceptions in students observed based on the results of the pretest and posttest. In the class of VIII-A can be obtained the results as follows in the posttest for questions no. 1, 2, 3, 4, 5, 6, and 10 no found students who experience misconceptions, in questions no. 7, 8, and 9 found 1 student who experienced a misconception. In the class of VIII-B posttest for questions no. 1, 3, 4, 7 and 9 were not found students who experience misconceptions, in question no 2 found 1 student who experiencing misconceptions, in the question no. 5 find 3 students who have experienced misconceptions and in questions 6 and 8 found 2 students who experienced misconception. Students who are still experiencing misconceptions are suspected caused by students not concentrating on learning. (5) Obstacles or obstacles found during the study are: (a) When the teacher does the illustration stage as a stage of conflict cognitive, students are shy in expressing their opinions. If this continues so learning cannot work with so that the solution given is giving other questions as assistance when answering the illustrations that have been was given. (b) The scientific method is needed when practicum. The practice is one form of activity that can help students to understand the concepts learned. (c) Another obstacle is found when practicing student activities crowded. The solution provided is before the practicum activities of researchers with students make the rules agreed during the activity the practicum takes place. It can be made the conclusion that learning using simple media based on cognitive conflict can be used to reduce student's misconceptions on the subject of liquid pressure.

ACKNOWLEDGMENT

Authors wishing to acknowledge assistance or encouragement from supervisor, colleagues and Acknowledgments section immediately following the last numbered section of the paper.

REFERENCES

[1] Ibrahim M 2010 *Seri Pembelajaran Inovatif Konsep, Miskonsepsi Dan Cara Pembelajarannya* Surabaya: Unesa University Press
[2] Suparno P 2008 Metode Eksperimen Bebas Untuk Meningkatkan Pengertian Dan Menghilangkan Miskonsepsi Mahasiswa Tentang Konsep Termodinamika *Jurnal widya dharma* Vol 19 No 1
[3] Pathare & Pradhan 2010 *Student's Misconceptions About Heat Transfer Mechanisms And Elementary Kinetic Theory* Iopscience
[4] Trumper R 1990 Being Conctructive: An Alternatif Approach To The Teaching Of Energy Concept *International Journal Of Science Education* Vol 12 No 4 Pp 343-354
[5] Dilber R & Duzgun B 2007 An Investigation Of Effectiveness Of Conceptual Change Text-Oriented Instruction On Student's Understanding Of Brigthness Concepts *Journal Of Science Education - Proquest Education Journals* Vol 8 No 1 2007 Pp 46-52
[6] Hasan Bagayokon & Kelley 1999) M*isconception And The Certainty Of Response Index (CRI)*
[7] Borich G D 1994 Observation Skill for Effective Teaching New York: Mac Millian Publishing Company
[8] Permendiknas No 41 Tahun 2007 tentang Standar Proses Untuk Satuan Pendidikan Dasar dan Menengah
[9] Piaget J 1988 *Antara Tindakan Dan Pikiran* disunting oleh Agus Cremers Jakarta: PT. Gramedia
[10] Hasan S D Bagayako D & Kelley E L 1999 Misconceptions and the Certainty of Response Index (CRI) *Physics Education* 34 (5) 294-299
[11] Suparno P 1997 *Filsafat Konstruktivisme Dalam Pendidikan* Yogyakarta: Kanisius
[12] Djamarah & Zain 1996 Strategi Belajar Mengajar Jakarta : PT Rineka Cipta
[13] Effendy O U 2002 Ilmu Komunikasi Teori Dan Praktek Bandung: PT Remaja Rosdakarya
[14] Berg V D 1991 *"Miskonsepsi Fisika dan Remediasi*. Sebuah Pengantar Berdasarkan Lokakarya di Universitas Kristen Satya Wacana Salatiga: Universitas Kristen Satya Wacana

AUTHORS

First Author – Gigih Besar Mukti Raharja, M.Pd., Postgraduate Study of Science Education, Postgraduate, State University of Surabaya, Indonesia, and gigihbesarmr@gmail.com
Second Author – Prof. Dr. Wasis, M.Si., Postgraduate Study of Science Education, Postgraduate, State University of Surabaya, Indonesia, and wasis@unesa.ac.id
Third Author – Prof. Dr. Leny Yuanita, M.Kes., Postgraduate Study of Science Education, Postgraduate, State University of Surabaya, Indonesia, and lenny.yuanita@hotmail.co.id