



DEVELOPMENT OF STAD COOPERATIVE BASED LEARNING SET ASSISTED WITH ANIMATION MEDIA TO ENHANCE STUDENTS' LEARNING OUTCOME IN MTS

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ABSTRACT

This study aimed to develop a cooperative learning set (lesson plan, students' worksheet, and its evaluation) which is assisted with animation media to enhance students' learning outcome. The development of the learning set used 4D model, which had been tested to 30 students of grade VII at Roudlotun Nasyiin Mojokerto in even semester of academic year 2015/2016. The research was conducted by one group pretest-posttest design. Then, data was descriptive-qualitatively analyzed. The results of this study is as follow 1) Learning set validity is in valid category, 2) Practicability of the learning set is shown by implementatively qualified lesson plan and students' activity, 3) The effectiveness was judged from the raise of learning outcome. Conclusion of this study is that the cooperative based learning set assisted with animation media is proper and can be used to enhance students' learning outcome

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Keywords: animation media, cooperative learning, student's learning outcome

INTRODUCTION

National education which is based on Pancasila and 1945 constitution of Republic Indonesia serves to develop the ability and character development and civilization of the nation's dignity in the context of the intellectual life of the nation, aims to develop students' potentials to become a man of faith and fear of God Almighty, noble, healthy, knowledgeable, skilled, creative, independent, and become citizens of a democratic and accountable.

Learning materials which can support learning set include learning media, learning modul, and students' worksheet. Based on initial school observation, students' worksheet is the most chosen learning material to help students comprehend the concept. Students' worksheet is a set of compulsory learning task for students

(Depdiknas, 2004)

Learning media is a tool to elaborate teaching-learning process. Considering that many learning media can be used in the classroom, teachers have to be able to choose it carefully and precisely (Kustandi, 2011). Sutopo (2003) stated that one of learning media which can give a concrete learning experience through its audiovisual is the flash media. The software has many superiorities because its picture, animation and audio can be very attractive for the students to learn. Learning media animation by Adobe flash helps learning activity by giving students a figure for abstract concepts. The limitation of static pictures as a learning media can be improved by flash in various learning models and one of those is cooperative learning.

Learning media as stated by Gagne (in Ali 1992) is one of teaching-learning components which has a crucial role to support a success teaching-learning success. Media and animation

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using in a learning has many benefits and superiorities. Nowadays, more teachers tend to use animation in conveying information to attract students attention and help their comprehension. Hidayat (2010) stated that, generally, learning media help interaction between the students and the teachers so the learning can be efficiently and effectively done.

It also change the role of the teachers to be more positive and productive. A well media utilization, makes teachers as not the only one learning sources for students. A teacher do not need to explain all the material because media will also takes a part on it. So that the teachers will have more time to pay attention on other educative aspects such as helping students' difficulties, character buliding, and motivating students as well as to stimulate students' enthusiasm to learn. Miarso (2004) agreed that "Media learning is everything used to distribute messages and can stimulate the mind, attention and learning ability of students so as to encourage the process of intended and under-control learning ". According to Hidayat (2010), defined that media included teachers' teaching and messenger of information from the teachers to the students. As a presenter and channeling messages, media learning in certain cases, can represent teachers to give information for students.

As stated by Artawan (2010) the superiorities of animation media in biology learning are as follow. Help teachers to present information on a fairly complex process in life, such as the nitrogen cycle, aerobic respiration, circulatory system and other processes. Minimize the huge object and otherwise, such as animals animals and microbes. Motivating students to pay attention because the present appeal for students, especially animation equipped with a voice. Have more than a convergent, for example cobining the audio and visual.

According Kef, et al. (2006) that the use of animation can increase the speed of comprehension and Ainsworth (2008) stated strategy that students use to learn with animations depending on their cognitive resources, the motivation to strive on effective learning strategies and knowledge on the suitability of a particular strategy. According to Barak, et al. (2010) states that the use of animated films improve students' thinking skills, in terms of understanding, application of knowledge and reasoning ability. Cooperative learning model is a practical classroom techniques that can be used by teachers to help students learn skills ranging from basic to solving complex problems. Cooperative learning model, students work in small groups to help each other

learn from each other. The groups consisted of students with high learning results, average, and low; boy and girl; students with different ethnic backgrounds in the classroom. (Nur, 2008).

Based on research conducted by Lindarti (2010), showed that learning outcome quality was improved after applying the cooperative learning model STAD,. Moreover, according to research conducted by Nina (2013), show that the implementation of cooperative learning model STAD gave a positive effect and improved student learning outcomes, and according to research conducted by Armstrong (1998), that the coeprative learning type STAD can make a fun learing activity and provide positive effects.

METHOD

This research is *Development research* which is divided into two procedural stages. This stage was conducted by 4D (*four D models*). Development of this model set is composed of 4 steps as follow; *define, design, development, and disseminate*. This study only used three of those, until development stage. This stage was done by *one group pretest posttest design* (Sugiyono, 2011). The first step is measuring the students as *pretests*, then it was treated within a specific time duration, then finally had *posttest*. *One group pretest posttest design* can be visualized as follow :

O_1 : *Pretest* (Learning outcome measurement before the treatment)

O_2 : *Posttest* (Learning outcome measurement after the treatment) .

X: treatment (Cooperative learning assisted with animation media).

RESULT AND DISCUSSION

Table 1. Result of Developed Learning Set Feasibility

Learning Set	Average	Category
Lesson plan	3.41	Valid
Students worksheet	3.37	Valid
BAS	3.33	Valid
Animation media	3.36	Valid

The following explanation is the result of learning set practibility. Result of Lesson Plan implementation.

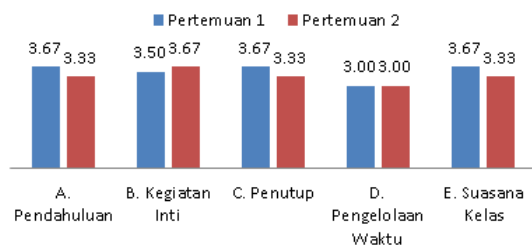
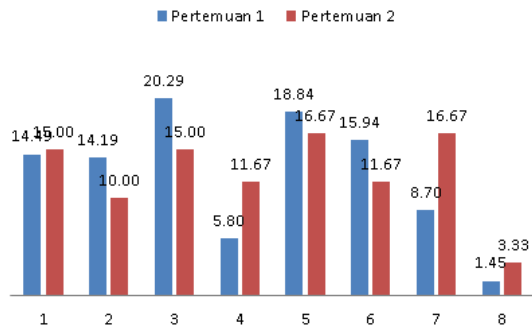


Figure 1. Diagram of Cooperative learning assisted with Animation Media Implementation.



Note

1. Reading (Modul and worksheet),
2. Doing experiments
3. Doing observation,
4. Taking note on observatio result,
5. Doing group collaboration,
6. Mendiskusikan tugas,
7. Communicating observation result,
8. Irrelevant action

Figure 2. Diagram of students activities in animation media assisted learning.

Questions’s sensitivity was derived from total of the right answer minus total the wrong answer the divided by test pasrticipants. As in Table 4.7, there are 10 questions has sensitivity ≥ 0.3 in a good sensitivity category.

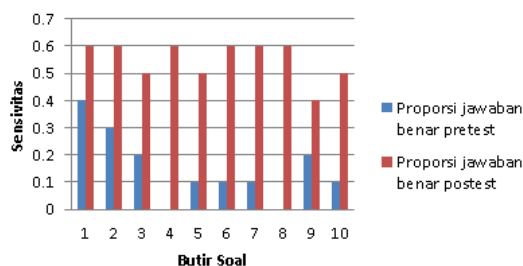


Figure 3. Diagram of Pretest and posttest sensitivity in cooperative learning assisted by animation media.

Test of learning outcome tested to 30 students as 10 items of multiple choices. Complete-

ness was measured from a student’s achievement to reach or exceed minimal completeness criteria (KKM) = 75%.

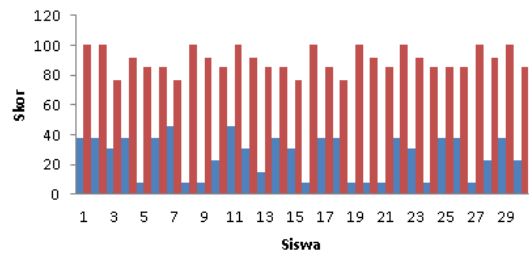


Figure 4 . Diagram of Learning Outcome Completeness.

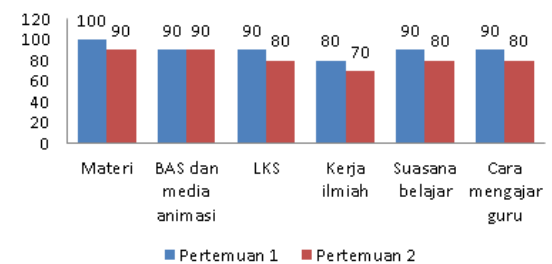


Figure 5. Diagram of Students’s Interest in Cooperative Learning assisted with Animation Media.

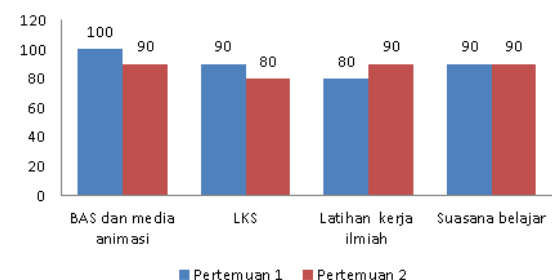


Figure 6. Diagram of Students’ New Experiences in Learning assisted with animation media.

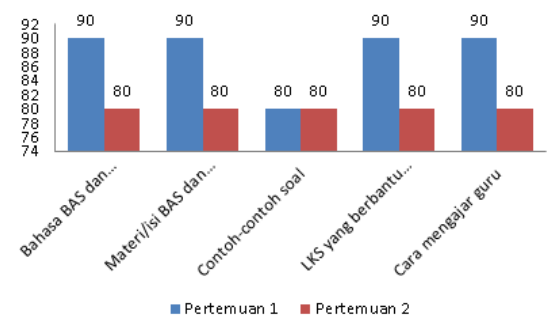


Figure 7. Diagram of facility given to Students in Learning assisted Animation Media.

This research results a cooperative learning set assisted with animation media to enhance seventh graders learning outcome in human circulatory system. The set was comprised of

lesson plan, students' worksheet, students learning modul, and animation media. First criteria of learning set feasibility was expert validation which showed that it is valid with $2,6 \leq P < 3,5$ and reliabel as it exceeds the minimal value given ($r \geq 0.75$).

Based on validator assesment, lesson plan learning modul and animation media is valid and can be used with minor revision. Lesson plan was developed according to cooperative learning syntaks as follow (1) inform learning golas and motivate student, 2) presenting / conveying information, 3) organizing students in a learning group, 4) guiding group of working and learning, 5) evaluation, 6) rewarding (Arends, 1997)

Stages in learning stress on students' centered active involvement. The teacher is only as fasilitator who provides guidance to students. This is in accordance with the opinion of the Nur Bruner (2000) and a similar statement by Raturmanan (2004) stated that the importance of students active involvement in learning and believe that the actual learning that occurs through discovery. The group shared learning gives students the opportunity to study, joint a discussion, read the instructions in the students' worksheet. In addition to the principle of direct involvement of student learning will remain longer in memory and be more meaningful if they experience, observe, try and practice.

Based on the assessment worksheets developed according to (Depdiknas, 2004) includes the students' worksheet contents, title, basic competence, completion time, brief information, equipment / material needed, a task that must be done, procedures, and the report should be done. According Darmodjo et al. (2009) requirements that must be met to be qualified worksheets include didactic requirements, construction standards and technical requirements. Terms of didactic worksheets contain the principle of learning effectively which has several provisions, namely 1) pay attention to their individual differences, so that worksheets can be used by students who are good at, which is being, or slow, 2) emphasis on the process of concept discovery so that students get driving directions to search know by LKS, 3) has a variety of stimulus through various media and student activities, 4) develop students' communication skills of social, moral, emotional, and aesthetic, and 5) learning experiences is not determined by the material lesson material but is determined by the focus of development includes intellectual, emotional, and so on. Terms construction includes 1) use language appropriate to the students' maturity level, 2) using clear sen-

tences structure, 3) the sort order of the lessons that are presented in accordance with the abilities of students, 4) avoid questions that are too open, 5) the book references is not beyond the students' legibility, 6) use simple sentences and short, 7) provide enough space for the students to write and illustrate the worksheet, 8) use more illustration than the words that will ease in capturing implied worksheet, and 9) contains a source of motivation through the clear learning objectives and benefit from that lesson. Technical requirements relating to 1) A good worksheet should have identity to facilitate its administration, topics use big bold letters, not regular underlined letters, using no more than ten words in one line, using frames to distinguish the command line with the answers, and try to get a great comparison with the case of the pictures match, 2) good image for a worksheet is the image that corresponds to the learning objectives, it can declare the message of the picture effectively. 3) A good worksheet appearance is it with interesting combination of images and text. Developed students' worksheet has superiorities of using colored images, communicative language, have clear instructions making it easier for students to work on the problems and the observation instructions. Students' worksheet activities are done in groups in order to create a well learning interaction between the teacher and the students, learning media and tools used have been provided by the researchers.

A goodof quality students' learning module based on Akbar (Akbar 2013), can be used as 1) a source of teaching material, 2) a reference book on the subject, 3) are arranged in a systematic structure and simple, 4) equipped by learning guide. The superiority of the developed textbook ie BAS equipped with extra media animation as a medium of learning that helps show the material abstract about the mechanism of action of the heart and blood function as transporters of oxygen and carbon dioxide on the circulatory system in humans, the images in BAS has a color display for easy study the material, especially the organs of the circulatory system, their concept maps, a summary of the material and a glossary of terms to help explain the meaning of the term in the material circulatory system.

Media animation developed can be an alternative learning tool. As the opinion Miarso (2004) "Media learning everything used to distribute messages and can stimulate the mind, attention and learning ability of students so as to encourage the process of learning a deliberate, aimed and controlled and animation media can stimulate students 'motivation'. According to

according to Gagne (in Ali, 1992) instructional media is one component of the learning process has an important role in supporting the success of the learning process. The use of learning media can also provide a stimulus for students to the spirit of the learning process. Another opinion, according to Rusman (2012) medium was used as: 1) as a tool in the learning process, learning media is a tool that can clarify, simplify, accelerate the delivery of the message or subject matter to students, 2) as a component of the sub-systems of learning. Learning is a system in which there has sub-components which are components of learning, 3) directing the learning, instructional media as messages or materials to be delivered, or what competencies are developed to have students, 4) as a game or arouse the attention and student motivation, learning media can raise awareness and motivation in learning, because the media can accommodate all skills students in learning, learning media can provide some help understanding of the students who lack proficiency heard or seen in the concentrations studied, 5) improve outcomes and learning process, In quality and quantity of learning media greatly contributed to the results and the process pembelajaran. Berdasarkan description above, it may be said learning device that was developed based on the individual assessment by the validator, the average belongs to the category valid making it feasible to use in the classroom.

The second criterion, the feasibility of a good device that is practical, practical learning tools can be analyzed through keterlaksanaan RPP for learning and student activity during learning. Based on Table 4.5 it can be seen that the coefficient of reliability of observation enforceability of learning and teaching to the test II exceeded 0.75 or 75%. According Borich (1994), an instrument well categorized and can be used to observe activities when reliability is greater than or equal to 75%.

Accomplishment of cooperative learning model is a practical classroom technique that can be used by teachers to help students learn skills ranging from basic to solving complex problems. Cooperative learning model, students work in small groups to help each other learn from each other. The groups consisted of students with high learning results, average, and low; male and female; students with different ethnic backgrounds in the classroom; and students with disabilities if any. Membered heterogeneous group stayed together for several weeks, until they can learn to work well together as a team (Nur, 2008). STAD, students are grouped in a group of 4-6 students'

learning. The students were combined in terms of performance levels, and gender. Teachers presented a lesson, and then students work in his teams to ensure that all team members have completed the lesson. After that, all students are subject to individual quiz about instructional materials, at that time they were not allowed to help each other (Nur, 2008).

Analysis of the students' activities observations in cooperative learning activities assisted animation media obtained first meeting and the meeting of two high activity most students to work together and make observations 17.76% 17.65%. Lowest student activity was behaviors that are relevant tidak 2.39% ie activities carried out outside learning. Activities of students in a group had very active role. It is the student's activity is in accordance with cooperative learning. The group shared learning gives students the opportunity to study a joint discussion, read the instructions in the LKS. In addition to the principle of direct involvement of student learning will be more meaningful to do last longer in memory if experiencing, observing, trying and practicing yourself (Raturmanan, 2004). Cooperative learning provides the opportunity for students to interact with other students and learn from other students. It encourages students' conceptual growth of growing student at a higher way of thinking or way of thinking that is more complex (Eggen & Kauchak, 2012).

Constructivist theory by Vygotsky (in Slavin, 2000), stated that there are four modern constructivist ideas that plays an important role in learning. 1) an emphasis on the social nature of learning is that students learn through interaction with adults or peers who are more capable. In the project cooperatively, students are exposed to the thought process of peers, this method does not make learning outcomes is open to all students, but also make the process of thinking of other students is open to all students, 2) development zone nearby (Zone of Proximal Development) who emphasized that the students learn best when the concept of it being in their nearest development zone. The tasks in the development zone nearby are tasks that can not be done by the students, but it needs help from peers or adults, 3) apprenticeship cognitive (Cognitive Apprenticeship), which outlines the process by which a person who is learning gradually by step acquire expertise in interaction with an expert in the form of an adult or an older person or a peer who control the problem, 4) Scaffolding, which emphasizes the support step by step to learn and solve problems. Students should be given the

tasks of complex, difficult and realistic and then given enough assistance to complete these tasks.

Based on the description above can be said that the media-assisted cooperative learning animation also had met the criteria of practicality, proven by a good category of lesson plan, and high students activities is cooperating in learning as the highest event. It is proved that the learning set had met the criteria of practicality.

The third criterion is the effectiveness of learning can be analyzed through the results of student learning, and student responses. Analysis of student learning outcomes was divided into two, namely the cognitive learning. The result of student learning is one indicator of the feasibility study was developed. Completeness of individuals in achieving learning goals can be undone by a well. If all serving the purpose of learning the magnitude of ≥ 75 in accordance with the standards of completeness in MTs Roudlotun Nasyiin Mojokerto. The completeness of learning outcomes individually exceeded 80 of the overall proportion of students reach the learning objectives magnitude of ≥ 75 .

Furthermore, pottest was given after the assisted cooperative learning animation conducted, completeness individually of 30 students has increased, with an average of 88. The raise / N-Gain of pretest and posttest score was in high category with an average of 0.70 (Hake, 1999). It is clear that the cooperative learning media-assisted animation has a positive effect on media-assisted cooperative learning animation. Furthermore, after being granted an assisted cooperative learning animation is done posttest, completeness individually of 30 students has increased, with an average of 88. The amount peningkatakan / N-Gain score pretest and posttest was done high category with an average of 0.70 (Hake, 1999). It is clear that the cooperative learning media-assisted animation has a positive effect on media-assisted cooperative learning animation.

Result students' cognitive learning outcomes analysis can be seen in Table 4.9, namely pretest of 30 students, no thorough investigation of the standard completeness set is 75, which is proof of the value of the average completeness class pretest only reached 27 Furthermore, after being given a cooperative learning-assisted animation, completeness individually of 30 students has increased and completed all, with an average 89 and the percentage of completeness 100% obtained show that the learning outcomes of the individual has been completed. The amount of the increase / N-gain scores on a pretest-posttest was done that cooperative learning media-assisted

animation has a positive effect on cognitive abilities of students. The completeness of students indicated that cooperative learning media-assisted animation to increased learning outcomes in the blood circulation system materials. Some research that samayas it Lindarti (2010), showed that after applying the cooperative learning model STAD, quality further improved learning outcomes. Nina (2013), show that the implementation of cooperative learning model STAD positive effect can improve student learning outcomes, Zaki, et al. (2013) showed an increase in science process skills and social skills of students through the implementation of cooperative learning STAD type-Based Experiments.

The analysis of student's response to learning can be seen in Table 4.11 The analysis was done by giving a questionnaire composed by 15 items declaration in accordance with a response rate of each student. Students' response to the learning obtained an average of 100 keen on materials developed, format of student textbook and media of 90%, students' worksheet of 90%, 80% of scientific work, the learning atmosphere of 90%. Based on those percentage, it can be categorized that students gave very good and positive response rate on media-assisted cooperative learning animation. Piaget cited by Nur (2004) stated that the process of cognitive development was also formed by the students' learning environment. If the student environment is an active environment, the students' cognitive will be patterned to be able to master the concepts and solve problems quickly. Implementation of cooperative learning media-assisted animation helps teaching and learning activities, as mentioned above also help the students to achieve mastery of learning outcomes. It is obtained as a cooperative learning model-assisted animation media appropriate research by Ainsworth (2008) which suggested a strategy that students use to learn with animated media depending on their cognitive resources, the motivation for trying on a particular strategy. Rusman (2012) stated that one of the functions of instructional media is as a game or encourage students' learning attention and motivation. Learning media can increase student motivation in learning, because the media can accommodate all students' skill in learning. Learning media can provide assistance understanding of students who lack proficiency to listen and observe in the concentrations studied. Students' interest about the content of learning material was different between the first (100%) and second meeting (90%), due to the learning material of the first meeting were more interesting because the observations

were made with the animation media. In the second meeting the observation were done by an experiment of influence of activity through the application of scientific work where some students were still had difficulties in determining the hypotheses and variables.

The Ease of students to understand the language component of learning modul and animation media in first meeting was 90% and second meeting was 80%, content of learning module and animation media in first meeting was 90% and second meeting was 80% showed one of the functions of media learning which can facilitate understanding by reducing the occurrence of verbal material. During the learning often found students experiencing verbal because what is explained or described more teachers are abstract, there is no real illustration. Therefore, instructional media play an important role, effective and efficient in clarifying the message delivered (Rusman, 2012). Based on the description above, it is known that cognitive learning outcomes and process skills the student has achieved completeness 100% interest in students' responses to the media-assisted cooperative learning animation 90% and 90% of high student interest materials developed by pemebelajaran cooperative. This shows that the cooperative learning device-assisted animation has fulfilled effectiveness. So it's worth and improve learning outcomes especially on the material circulatory system.

The findings showed that cooperative learning device meets the eligibility animation media can be used to improve learning outcomes at the MTS on the circulatory system concept. It is supported by the validity and reliability of the learning media. Animation media can help explain the abstract material and motivate students to learn. The media is said to be practical learning, as supported by the accomplishment of lesson plan that both categories, student activities during the implementation of learning is very active. Learning tools are developed is said to be effective, because it is supported by cognitive achievement of students who have increased as well as the responses of students towards learning is very positive and the response of students interested in learning the material content circulatory system with assisted animation media and students can easily understand the content of the material from the textbook and media animation in learning circulatory system.

Results of students' responses analysis to the learning is shown by Table 4.11. Analysis was done by giving questionnaire with 15 questions appropriate to the response level of each student.

Averages of students responses were 100% interested to the material, students' learning modul and media 90%, students worksheet 90%, scientific wor 80%, learning atmosphere 90%. Based on the percentage, it was considered that the students' response rates were very good and positive impact on media-assisted cooperative learning animation. Piaget cited by Nur (2004) stated that the process of cognitive development was also formed by the students' learning environment. If the student environment is an active environment, the cognitive students will be patterned to be able to master the concepts and solve problems quickly. Implementation of cooperative learning media-assisted animation helps in the process of teaching and learning activities, as mentioned above also help the students to achieve mastery of learning outcomes. It is obtained as a cooperative learning model-assisted animation media appropriate research Ainsworth (2008) suggested a strategy that students use to learn with animated media depending on their cognitive resources, the motivation for trying on a particular strategy. Rusman (2012) claimed that one of the functions of instructional media is as a game or arouse the attention and motivation of students. Media attention and learning can increase student motivation in learning, because the media can accommodate all students in learning skills. Learning media can provide assistance in the understanding of students who lack proficiency heard or seen in the concentrations studied. Interest in response to the students about the material content of different subjects on the outcome of the meeting to 1 (100%) and meetings to 2 (90%), due to the meeting of the first material that discuss rated more manarik because the observations were made with the aided animation media and meetings to two more downhill because at the meeting to two learning experiments conducted with melakungan influence activity through the application of scientific work that some students are still difficulties in determining the hypotheses and variables.

Students' easiness in understanding language component of learning modul and animation media in the first meeting was 90%, and second meeting was 80%, learning modul material and animation media was 90% and second meeting was 80%. It is shown that learning media help concept comprehension and reduce verbalism. During learning, verbalism was commonly happened because teachers tend to explain abstract concept without a real illustration. Therefore, the learning media has an effective, and efficient role to clarify information (Rusman, 2012). Based

on explanation above, it is known that students' cognitive outcome and scientific process have reached 100% completeness, students' anxiety responses to learning set assisted with animation media was 90% and student, students motivation is high with 90%. This findings shows that cooperative based learning set have met effectiveness criteria, feasible and enhance learning outcome especially in circulatory system topic.

This research finds that cooperative based learning set assisted with animation media had met the feasibility and can be used to enhance MTs students' learning outcome in circulatory system concept. This is supported by learning set validity and reliability. Animation media helps to explain abstract concept and motivate students to learn. The developed learning set is practical because it is supported by good category lesson plan implementation and active participation of the students in the classroom. The developed learning is said effective as it is supported by the raise of students' cognitive learning outcome and students' positive responses to the learning. Students were also interested to learn human circulatory system. Animation media helps students to comprehend the content of learning modul and animation media itself.

CONCLUSION

Based on the research has been done, it can be concluded that development of STAD cooperative learning set assisted with animation media is proper to use and can enhance students' learning outcome.

Based on the discussion and findings, it is suggested that teachers have to do a preparation to use developed media so they will fully understand learning steps to be done, and also can consider time allocation to get the best result.

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