Improving Students' Mathematics Learning Outcomes Through the Cooperative Learning Webbed Model at the Second Grade of SMP Negeri 3 Kolaka

AUTHORS INFO

Andi Mariani Ramlan
Universitas Sembilanbelas November Kolaka
Indonesia
marianiramlan@gmail.com

Irfan
Universitas Sembilanbelas November Kolaka
Indonesia
irfanmatematika@gmail.com

Fitriyani Hali
Universitas Sembilanbelas November Kolaka
Indonesia
fitriyanihali@gmail.com

Suggestion for the citation and bibliography
Citation in text:
Ramlan, A.M., Irfan., & Hali, F. (2020)

Bibliography:
Ramlan, A.M, Irfan & Hali, F. (2020). Improving Students' Mathematics Learning Outcomes Through the Cooperative Learning Webbed Model at the Second Grade of SMP Negeri 3 Kolaka. *Journal of Mathematics Education*, 5(1), 76-81. http://doi.org/10.31327/jme.v5i1.1749

Abstract

This study aims to improve the mathematics learning outcomes of class VIIB students of SMP Negeri 3 Kolaka through the Webbed type of cooperative learning model. This type of research is classroom action research with research procedures covering planning, implementing actions, observing and reflecting. The implementation of the action consists of 2 cycles. Each cycle is carried out in accordance with the changes to be achieved and adjusted to the factors being investigated. Sources of research data are teachers and students of class VIIB, totaling 25 students. The types of data obtained are quantitative data obtained from learning outcomes tests and qualitative data obtained through observation sheets. The results of the study refer to the Minimum Completeness Criteria (KKM), namely at least 80% of students have obtained a minimum score of 70. From the results of the evaluation of the first cycle of action, classical completeness achieved is 63.6% (14 students from 25 students) who get a score of 70 with an average value of 68.4. From the results of the second cycle test evaluation, classical completeness was obtained as much as 86.4% (19 students from 25 students) obtained a score of 70 with an average value of 78.2. The implementation of the second cycle of action gave an increase of 22.8% from the first cycle evaluation test. So it was concluded that the mathematics learning outcomes of class VIIB students of SMP Negeri 3 Kolaka could be improved through the webbed type of cooperative learning model.

A. Introduction

Education programs in Indonesia are inseparable from efforts to develop human resources that are potential, critical, qualified and able to compete in the future technological era, especially in the field of education, because one of the main factors determining progress in a nation is education. Therefore, it is necessary to foster and develop education, especially education in schools. Educational development begins at school, where students are fostered to develop an ability, expertise and skills they have, to master a concept from the subjects they are engaged in at school.

Based on initial observations in the form of interviews with class VIIB math teachers, that in SMP Negeri 3 Kolaka, there are still teachers applying conventional methods where teachers provide information to students and pose questions to students, while students only receive information from the teacher. As a result, students are less active in the learning process, this is seen in the lack of students asking questions even though the teacher gives the opportunity to ask questions. This is likely due to the teacher not giving time or asking students to solve and discuss a problem, so students are less motivated to learn and think independently and in groups. Also, sometimes math teachers explain the material to their students just by explaining existing theories and giving examples of questions only as numbers without relating them to everyday life, so that students find it difficult to apply mathematics in real life. From the average learning achievement of Mathematics especially in Class VIII SMP Negeri 3 Kolaka given by the teacher based on information is 64.4. This shows that the average learning outcomes achieved by these students are still very low compared to the mastery learning level, it is said to be low if <70. According to (Fatimah, 2016) another factor that affects the low level of mathematical abilities of students is the way teachers teach less effectively. Teachers should consider individual student differences, as not all students are the same. Every student has differences in various aspects including intelligence, talents, interests, needs, willingness to learn, learning styles, etc. Teachers should re-examine traditional teaching methods which are often incompatible with students' learning styles and teachers' pedagogical skills should be improved by presenting math lessons in different ways to provide teachers with greater opportunities meet the diverse needs of their students.

The implementation of learning in schools still tends to be abstract theoretical where the teacher is still a conduit of information or transfer of knowledge and the learning process runs in one direction, less related to the environment and students' daily lives. So that the abilities obtained by students are the ability to remember, memorize, they are less able to apply, analyze, evaluate, and be creative, and students are less able to utilize the knowledge gained to solve problems of everyday life (Marzuki, 2017)

The success of the process of learning mathematics at school is influenced by various factors. Among these factors are teachers and students. Teachers play a very important role in teaching and educating students while students are the target of education as well as one of the barometers to determine the level of success in the learning process. by various factors. Among these defining factors are teachers and students. Teachers play a very important role in teaching and educating students, while students as educational targets are also one of the barometers to determine the level of process (Syahri, 2012).

Learning mathematics is learning mathematical concepts and structures and the relationship between mathematical concepts and structures. Mathematics is about abstract ideas or concepts that are assigned symbols and organized hierarchically. As stated (Hasratuddin, 2014) that mathematics studies regularity, organized structure, mathematical concepts are hierarchical, structured and systematic, starting from the simplest concepts to the most complex concepts.

Improving the cognitive abilities of students requires changes in the following learning models that have been performed. Where traditional learning includes: a) teacher-centred; b) one-way communication; c) environmental, passive, abstract isolation; d) personal learning, unique taste stimulation; e) the use of a single tool or medium, mass production; f) centralized control, factual reflection and knowledge transfer. Meanwhile, modern learning includes: a) child-centred; b) interactive, cooperative; c) openness and networking; d) actively investigate; e)

real-world context; f) team learning, stimulation in all directions; g) multimedia; h) knowledge of several disciplines; i) independence or autonomy and trust, and (j) critical thinking and knowledge exchange (Marzuki, 2017).The importance of mathematics however in fact has not been realized correctly by most students. They still view math as hard to learn, which impacts student learning outcomes which are still low (Ulfah, 2012).

Efforts by teachers, lecturers, and educational observers should investigate and apply theories and learning to improve student learning outcomes, where learning outcomes are a measure of success or of a student's failure in the learning process. According to (Prasojo, 2016), mathematics learning outcomes are the end result of a process of learning mathematics as a manifestation of the efforts that have been made during the process. Meanwhile, the achievement of learning outcomes is more often associated with the value of student acquisition after the teaching and learning process and the assessment given. For example, designing Webbed-like learning that is implemented cooperatively to improve math learning outcomes.

Cooperative learning uses students' tendency to interact. A number of studies show that in the classroom, students learn more from friend-to-friend among other students compared to learning from the teacher. Research also shows that cooperative learning has a very positive impact on students with low learning outcomes. Cooperative learning trains students to find and understand concepts considered difficult by exchanging ideas (discussion) with their friends. Discussion is a method that can activate students and allow them to master a concept or solve a problem through a process that provides opportunities for reflection, social interaction and the practice of a positive attitude. According to (Rifanty, 2019) by using cooperative learning, students will become more active and work together during learning due to group formation. Student activity in the group may arise because each member of the group has a different role.

The lesson begins with the delivery of lesson objectives and motivating students to learn, followed by the presentation of information usually with reading material rather than verbally. Additionally, students are grouped into study teams, which are monitored by teacher guidance as students work together to complete their assignments. As the last stage of cooperative learning includes the presentation of the final results of group work. Moreover, the Webbed model is one of the appropriate models in the competency-based curriculum because in the curriculum there are thematic learning strategies in line with the features or characteristics of the Webbed model (Windarti, 2007). The next step is to use the subtopics to plan the learning activities for the students to do. The advantage of Webbed-like integrated learning for students is that they get a comprehensive relational view of the activities of different sciences (Syafriliato, 2019).

B. Methodology

This type of research is classroom action research. This research was conducted at SMP Negeri 3 Kolaka class VIIB with a total of 25 students, 16 male students and 9 female students. This study consisted of 2 cycles, each cycle was conducted for 3 meetings, 2 meetings were used as a learning process and one meeting was for a test cycle. The formation of student groups is not based on different origins, academic abilities, genders and races, where others are homogeneous. Furthermore, it has been specified (Yahya et al., 2013) that action research in class was planned in two cycles, each cycle being carried out according to the changes to be made. The success criteria of the action are the taking into account of the learning achievements of the pupils individually and classically.

Cycle I and Cycle II action using the Webbed-type cooperative learning model can increase students' motivation and enthusiasm even if at the beginning students are still adapting to the learning used. Based on the observations of the observer using the observation sheet during the learning process, the second cycle of action was better than the first cycle. The teacher of the second cycle of the second meeting had implemented all the learning scenarios contained in the implementation of the lesson plan well, reaching 90.9%. While the results of the observations of the students during the second meeting showed an increase where all the stages in the observed aspects were well carried out and reached 87.5%.

Based on the results of the first observations made, the action used to improve mathematics learning outcomes is a Webbed-type cooperative learning model. The implementation of these actions follows the following classroom action research procedures, namely: (1) Planning; (2) Implementation of actions; (3) Observation and evaluation; (4) Reflection (Iqram, 2014). The flowchart is as follows:
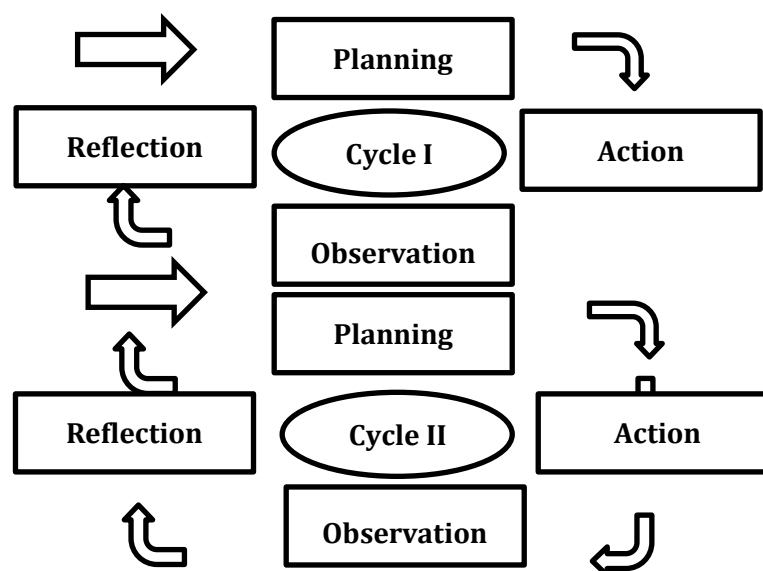
Figure 1. Classroom Action Research Flow (Arikunto, 2010)

In detail, the procedure for this in-class action research is described as follows:

1. Action planning

The activities carried out in this activity are: a) carrying out initial observations in the class where the research takes place; b) create learning tools (RPP) and student worksheets (LKS); vs. make observation sheets to observe the learning process; d) make evaluation questions for the end-of-cycle test; d) prepare the necessary learning aids.

2. Execution of actions

At this stage, researchers carry out learning activities based on the plans prepared in the learning scenario, in this case the learning implementation plan.

3. Observation and evaluation

Observation and evaluation at this stage carried out observations on the implementation of the action and to evaluate. Observations are made using the observation sheet that was created. The observation process is carried out by observers to observe the researchers in the classroom while performing actions in the learning process through the application of the Webbed type of cooperative learning model. The observation sheet used consisted of observation sheets of teacher and student activities in the learning process.

4. Reflection

The results obtained at the observation stage were collected and analyzed. At this stage of the results, a reflection is carried out, namely an evaluation of the success or failure of the achievement of the objectives. During this time, determine the action for the next activity in the context of the final achievement goal. The results of the reflection can be used as a reference to improve the next learning activity. Therefore, a reflection will be conducted at the end of each action at the end of each cycle.

C. Findings and Discussion

Before carrying out the action, the researcher first requested data on the daily test results of students in class VIIB to be used as a reference for the implementation of these actions, after seeing the results of the initial test, students obtained an average score of 64.4 with a learning completeness of 56.5%. This shows that the students still do not understand the material that has been taught.

According to the observations of the observer using the observation sheet during the learning process in the first cycle of the first meeting, the mastery of the learning scenarios carried out by the teacher reaches 54.5% . Completeness of students' activities on the basis of the observer using the observation sheet in the first cycle of the first meeting, the mastery of the learning scenarios made by the students reaches 37.5%. The results of the observation of the first cycle of the second session, that the mastery of the learning scenarios carried out by the teacher reaches 72.3%. While the results of the first cycle observations of the second meeting, that the completeness of the learning scenarios carried out by the students reached 62.5

Based on the assessment test, it showed that student learning outcomes on material taught with the Webbed-like cooperative learning model achieved an average value of 68.4 while classical completeness was 63. .6%. There are 14 out of 25 students who obtained a minimum score of 70.

In the reflection phase of the first cycle, the researcher and the observers evaluated and discussed the weaknesses found in the first cycle that would be corrected in the second cycle. Based on the results of observations and evaluations on the implementation of the first cycle of action, the researchers assumed that the students did not fully understand the teaching materials. This is evidenced by the few students who are active in the learning process. Thus, it can be clearly seen that the implementation of the first cycle of actions did not achieve the indicators that were set and did not comply with what is expected in the learning plan, in this case there are still gaps that occur in the implementation of these actions, including: a) the teacher does not convey learning objectives; b) in terms of student orientation, the teacher does not give students the opportunity to solve the problem with their friends in the respective group; c) the teacher fails to manage his time effectively so that there are steps of activities in the learning scenario that are not implemented; d) students have difficulty solving the problems contained in the LKS; e) some students do not pay attention to the teacher's explanations and there are still some who are rigid towards their classmates; f) some students still lack the courage to ask if there is a problem in their group, so that the problems encountered are not immediately solved; g) there are still many students who pay less attention to the tutor group when delivering materials and there are still many who play into the learning process.

In general, the results of observations in the implementation of actions in the second cycle of the first meeting were better than in the first cycle, in the second cycle of the first meeting, almost all lesson plan scenarios were well implemented and reached 81.8% and then 90.9%. While the results of the observations of the students of the second cycle of the first meeting showed an increase because almost all the stages contained in the observed aspects had been well carried out so that it reached 75% and then 87.5%.

Based on the evaluation test, it showed that the results of the second cycle of action showed an increase compared to the results of the first cycle of action. It can be seen that out of 25 students, 86.4% or 19 students had obtained a score of 70 and above, while 6 people did not reach the minimum standard value that had been set, which was 70.

Based on the results of observations and assessments, at the end of the cycle there was a significant increase in learning outcomes. This is due to the application of the Webbed type cooperative learning model where the teacher asks the students to study in groups. Students actively participate in teaching and learning activities, so that they have more learning experiences in the teaching and learning process. The material taught is related to the daily life of the students, which facilitates the understanding of mathematics by the students.

E. Conclusion

Based on the results obtained in this study, it was concluded that: 1) learning using the Webbed-type cooperative learning model can improve students' mathematics learning outcomes in the basic skill of calculation of the area and volume of cubes and blocks of class VIIB SMP Negeri 3 Kolaka as evidenced by the increase in marks: the average of test scores in the first cycle from 68.4 to 78.2 in the second cycle from the ideal score of 100; 2) there is an increase in the learning outcomes of students in class VIIB of SMP Negeri 3 Kolaka, 14 students (63.6%) are in the full undergraduate category to 19 students (86.4%) who are completing their second cycle studies; 3) the results of observations on the implementation of actions in the second cycle are better than in the first cycle In the second cycle of the second meeting, the teacher implemented all the learning scenarios contained in the implementation plan implementation of planned learning and reached 90.9%. While the results of the observations of the students during the second meeting showed an increase because all the stages contained in the aspects observed had been well carried out so that it reached 87.5%.

.

G. References

Arikunto, S. (2010). *Prosedur Penelitian Suatu Pendekatan Praktik*. Rineka Cipta.

Dirgantoro, K. P. S. (2018). Kompetensi Guru Matematika dalam Mengembangkan Kompetensi Matematis Siswa. *Scholaria: Jurnal Pendidikan Dan Kebudayaan*, *8*(2), 157–166. https://doi.org/10.24246/j.js.2018.v8.i2.p157-166

Fatimah, A. E. (2016). Peningkatan Kemampuan Pemecahan Masalah Matematis dan Kemandirian Belajar Siswa Smk Negeri 1 Percut Sei Tuan Melalui Pendekatan Differentiated Instruction. *MES (Journal of Mathematics Education and Science)*, *2*(1), 11–23. https://jurnal.uisu.ac.id/index.php/mesuisu/article/view/111/88

Hasratuddin. (2014). Pembelajaran Matematika Sekarang dan yang akan Datang Berbasis Karakter. *Didaktik Matematika*, *1*(2), 30–42. https://doi.org/10.24815/jdm.v1i2.2059

Iqram, W. (2014). Upaya Meningkatkan Hasil Belajar Matematika Melalui Penerapan Model Pembelajaran Kooperatif Problem Posing Smp Negeri 2 Baraka, Kabupaten Enrekang. *Nalar Pendidikan*, *2*(1), 47–52.

Kamarullah, K. (2017). Pendidikan Matematika Di Sekolah Kita. *Al Khawarizmi: Jurnal Pendidikan Dan Pembelajaran Matematika*, *1*(1), 21. https://doi.org/10.22373/jppm.v1i1.1729

Marzuki. (2017). Pembelajaran Tematik Model Webbed Berbasis Saintifik Terhadap Kemampuan Berpikir Tingkat Tinggi Di SD. *Sekolah Dasar: Kajian Teori Dan Praktik Pendidikan*, *26*(2), 159–168.

Maulid, M. (2020). Meningkatkan Hasil Belajar Matematika Siswa Kelas VII Melalui Metode Guided Discovery Learning. *DIDAKTIKA : Jurnal Pemikiran Pendidikan*, *27*(2), 113. https://doi.org/10.30587/didaktika.v27i2.2068

Prasojo, T. (2016). Peningkatan Aktivitas dan Hasil Belajar Matematika dengan Metode Tutor Sebaya Pada Siswa Kelas X IPA 7 Materi Trigonometri SMA Negeri 1 Kudus. *Kreano, Jurnal Matematika Kreatif-Inovatif*, *7*(1), 91–98. https://doi.org/10.15294/kreano.v7i1.5049

Rifanty, E. (2019). Peningkatan Keaktifan Belajar Menggunakan Model Pembelajaran Kooperatif Tipe Make a Match Pada Peserta Didik Kelas VB SD Muhammadiyah Condongcatur. *JURNAL JPSD Vol.x No. x Tahun 20xx ISSN 2356-3869 (Print), 2614-0136 (Online)*, *1*(1), 6.

Syafriliato. (2019). Pembelajaran Terpadu Tipe Connected. *Forum Paedagogik*, *11*(01), 64–76. https://journal424.wordpress.com/2013/02/10/pembelajaran-terpadu-tipe-connected/

Syahri, A. A. (2012). Penerapan model pembelajaran kooperatif kelas VII SMP Nasional Makasar. *JURNAL MATEMATIKA DAN PEMBELAJARAN (MAPAN)*, *1*(1), 41–54.

Ulfah, A. M. dan R. M. (2012). *Meningkatkan Hasil Belajar Matematika Siswa dengan Pembelajaran Menggunakan Aplikasi Moodle*. *7*(1), 73–82.

Windarti. (2007). Model Webbed dalam Pembelajaran Ipa Terpadu di Madrasyah Tsanawiyah. In *Tesis Universitas Negeri Semarang*.

Yahya, Septiwiharti, D., & Imran. (2013). Meningkatkan Hasil Belajar Siswa Kelas IV Mata Pelajaran Pkn melalui Media kliping di Sd Inpres Despot Posona Kecamatan Kasimbar. *Jurnal Kreatif Tadulako Online*, *1*(3), 118–130. https://media.neliti.com/media/publications/116243-ID-meningkatkan-hasil-belajar-siswa-kelas-i.pdf