The Effectiveness of Ion Tangkel Media Based on Cooperative Learning Models in Increasing Motivation and Understanding of Mathematics Concepts for Grade 6 Students at SDN 9 Taliwang

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Abstract
This research aims to find out the effectiveness of the ion tank media on cooperative learning models and find out what factors influence the effectiveness of ion tank media on cooperative learning models in increasing students' motivation and understanding of concepts. The research method used is an experiment used to determine students' motivation and understanding of concepts after the implementation of cooperative learning model-based ion tank media. The experimental method design used is a group Pretest-Posttest Design. The data collection procedures used include students' responses and documentation. Data analysis used includes analysis of students' motivation, concept understanding tests, and analysis of students' responses. The results of research using six indicators obtained an average value of 81 and were in the effective category. The results of the concept mastery test show an increase from the pretest, with an average score of 54 and the posttest, with an average score of 85. This data shows that students' concept mastery is in the complete category according to the KKM $\geq$ 70. The results of students' responses using cooperative learning model-based ion learning media can increase students' learning motivation and understanding of concepts. The conclusion obtained is that the ion tank media based on the cooperative learning model is effective in increasing students' motivation and understanding of concepts. The role of teachers, cooperative learning models and interactive learning media are factors that influence the effectiveness of increasing motivation and understanding of concepts for grade 6 students at SDN 9 Taliwang.

Keywords: Ion Tank, Motivation, and Concept Understanding..

Abstrak
Tujuan penelitian ini yaitu ingin mengetahui efektivitas media tangkel ion terhadapmodel pembelajaran kooperatif dan mengetahui faktor-faktor apa saja yang mempengaruhi efektivitas media tangkel ion terhadap model pembelajaran kooperatif dalam meningkatkan motivasi dan pemahaman konsep peserta didik. Metode penelitian yang digunakan yaitu eksperimen yang digunakan untuk mengetahui motivasi dan pemahaman konsep peserta didik setelah diterapkannya media tangkel ion berbasis model pembelajaran kooperatif. Adapun Rancangan metode eksperimen yang digunakan yaitu *One Group Pretest-Posttest Design.* Prosedur pengumpulan data yang digunakan meliputi respon peserta didik, dan dokumentasi. Analisis data yang digunakan meliputi analisis motivasi siswa, tes pemahaman konsep, dan analisis respon siswa. Hasil penelitian menggunakan enam indikator didapatkan nilai rata-rata 81 dan masuk kategori efektif. Hasil tes penguasaan konsep menunjukkan peningkatan dari *pretest* dengan skor rata-rata 54, dan *posttest* dengan skor rata-rata 85. Data tersebut menunjukkan penguasaan konsep siswa masuk kategori tuntassesuai dengan KKM $\geq$ 70. Hasil respon siswa menggunakan media tangkel ion berbasis model pembelajaran kooperatif dapat meningkatkan motivasi belajar dan pemahaman konsep siswa. Kesimpulan yang didapatkan yaitu media tangkel ion berbasis model pembelajaran kooperatif efektif dalam meningkatkan motivasi dan pemahaman konsep siswa. Peran guru, model pembelajaran kooperatif dan media tangkel ion merupakan faktor yang mempengaruhi efektivitas peningkatan motivasi dan pemahaman konsep siswa kelas 6 di SDN 9 Taliwang.

Kata Kunci: Tangkel Ion, Motivasi, dan Pemahaman Konsep.

INTRODUCTION

Education is a deliberate and planned effort to create a learning environment and learning process that allows students to actively develop their potential, including spiritual strength and the ability to control themselves. To achieve educational goals, deliberate and planned efforts are needed in selecting suitable material, activity strategies and assessment techniques so that students can understand the material

presented. The teacher's task in achieving maximum learning outcomes is to choose an effective learning model to create a pleasant learning atmosphere, both for teachers and students (Virgana, Samin, & Ningsih, 2019). Monotonous learning models, materials and atmosphere cause students to be less motivated to learn (Astika & Nyoman, 2012).

Increasing motivation and understanding of concepts can be done by choosing student-centered learning strategies. Students can be directly involved in learning activities. Effective models can improve students' thinking abilities. Increasing students' understanding of concepts and critical thinking skills can be done by using a learning model based on constructivism because the learning process is student centered (Mulyasih, 2015). One innovative learning model that can be used that is student-centered is the cooperative learning model. The cooperative learning model emphasizes students being more active and makes it easier to understand the lesson material (Muhlis, 2018).

The cooperative learning model makes learning more enjoyable because there is cooperation in one group (Ince et al., 2014). This opinion is in line with (Ernawati, 2016) stating that the cooperative learning model focuses on cooperation between students in groups. The cooperative learning model can make students more enthusiastic and create effective collaboration due to communication and interaction in one group. This model is effective in helping students in one group who have different levels of knowledge. Students' motivation can increase during the learning process. Students' motivation is influenced by stimulation and can generate encouragement in learning (Anggraeni, Veryliana, & Fatkhu R, 2019).

Apart from increasing motivation, the cooperative learning model can also improve learning outcomes. The cooperative learning model covers three

aspects including the knowledge aspect, attitude aspect and skills aspect. These three aspects of the learning model can influence learning more effectively. According to (Sudjana, 2014) learning outcomes consist of three domains including: 1) knowledge aspect; 2) attitude aspect; and 3) skills aspect. Changes in behavior from learning activities make students have an understanding of the material for which the objectives were previously set. Understanding concepts is the level of mastery that can be achieved by students while following the learning process in accordance with predetermined objectives (IBPA Putra, Pujani, & Juniartina, 2018).

Learning media through direct practice is specifically related to the cooperative learning model. Interactive learning media is effective in improving students' learning outcomes (FY Kurniawan, Siahaan, & Hartono, 2020). Students can work together in small groups to achieve learning goals. In relation to the cooperative model, students can work together to make direct observations to solve problems. The application of cooperative learning can improve learning outcomes, respect other people's opinions, and develop an attitude of tolerance (Resnani, 2019). Cooperative learning models can help students strengthen their own understanding. The connection with learning media allows students to gain a deeper understanding of the subject matter.

Learning media made from tangkels or coconut shells is media that is packaged in games consisting of two rows of tangkels or coconut shells. Tangkel media is designed to train students to work together according to the characteristics of innovative learning. Students are directly involved in one group to solve the problem   problem.

Media Tangkel or coconut shell learning helps students to work together with each other. Meanwhile, the cooperative learning model can increase

students' motivation and self-confidence because they are actively involved in the learning process. The cooperative learning model can help students develop cooperation skills. Apart from that, it can help develop critical thinking skills (Resnani, 2019).

Learning media becomes more interesting because it uses natural materials that are easily available and environmentally friendly. This game, which involves two rows of tangkels or coconut shells, can be used to teach various concepts, including mathematics and natural science. Students can work together in groups to design games, understand the rules of the game, and collaborate in running the game. This change starts from not knowing to knowing, so that it can improve the quality of students (Pratiwi, Erviana, & Fath, 2020). This is because learning media can help change the learning process (Anugraheni & Kristin, 2018). This media also supports direct learning because students can involve themselves in games and experience learning concepts practically.

Learning media plays an important role in increasing students' understanding of concepts. This media allows complex and abstract concepts to be presented in a more concrete and easy to understand form. When students can see, hear, or interact directly with the subject matter, they have a better chance of understanding the concept. Learning media also facilitates the process of problem solving and creativity. Students can conduct case studies that involve solving real problems. This helps students to think critically, develop analytical skills,

and stimulate their creativity in finding solutions to the challenges they face. Learning media not only helps students understand concepts, but also prepares them to face real-world problems with better confidence and skills.

Mathematics learning at SDN 9 Taliwang, using interactive learning media based on the cooperative learning model, is expected to have a positive impact on the motivation and understanding of concepts in class 6 students. This media provides advantages in presenting material in a more visual, interactive way, and in accordance with the learning characteristics of the students. educate. Collaboration with a cooperative learning model is able to create an environment that supports understanding of concepts. As a result, students not only understand mathematical concepts better, but also feel more motivated in the learning process.

The importance of the cooperative learning model which can be combined with Ion Tangkel media has made researchers plan to conduct research entitled The Effectiveness of Ion Tangkel Media Based on Cooperative Learning Models in Increasing Students' Motivation and Understanding of Concepts. The purpose of this research is to find out the effectiveness of the cooperative learning model-based tangkel media in increasing students' motivation and understanding of concepts, to find out what factors influence the effectiveness of the cooperative learning model-based tangkel media in increasing students' motivation and conceptual understanding.

Information
P = Total Percentage
n = Score Obtained
N = Maximum Score

METHOD

The type of researcher used in this research uses experimental methods.

According to (Sugiyono, 2017) the experimental research method is a method

used to determine the effect of certain treatments given on controlled conditions. The use of experimental methods to determine students' motivation and understanding of concepts after implementing ion tank media based on cooperative learning models. The experimental class was given treatment using ion tank media based on a learning modelcooperative. The experimental method design used is One Group Pretest-Posttest Design (Sugiyono, 2017) described in the following pattern:

Initial	Treatmen	Final
0	X	0
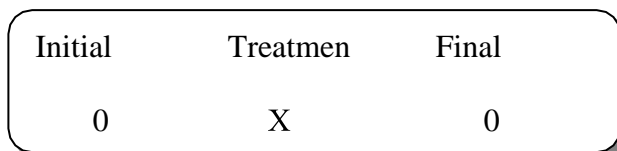
Information:
Concept understanding test analysis was carried out to determine the completeness of students' conceptual understanding based on pretest and posttest data, then analyzed quantitatively descriptively.

Completeness Indicator
Indicator completeness is calculated using the formula:

$$KI = \frac{\sum Siswa\ yang\ mencapai\ indikator\ tertentu}{\sum siswa} \ x100\%$$

Information:
KI = Completeness Indicator

An indicator is said to be complete if $\geq 74\%$, students achieve indicator completeness.
Percentage response student calculated with using the formula:

$$\frac{Total\ of\ students\ who\ response\ of\ spesific\ aspect}{Total\ of\ students}\ 100\%$$

Information:
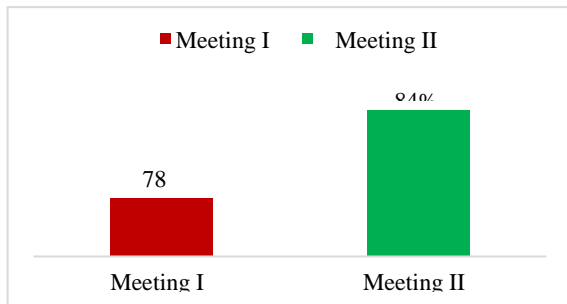RS = Students' Responses

0_1	=	Giving test in the beginning, to know the achievement before treatment.
X	=	Providing treatment to students, namely learning using model-based learning media cooperative learning.
0_2	=	Giving test after treatment to know the achievement of student after treatment.

The data collection procedures used include students' responses and documentation. The data analysis used includes analysis of students' motivation. Motivation analysis according to

$$P = \frac{n}{N} \times 100\%$$

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Figure 1. Comparison of Learning Motivation for Meetings I and II

(Juniantara, Prasetyo, & Sugiyem, 2022) is used to determine the average percentage in learning activities with the following formula:

CONCLUSION

Conclusions describe the answer to the hypothesis and/or research objectives or scientific findings obtained. The conclusion does not contain a repetition of the results and discussion, however

RESULTS AND DISCUSSION

rather a summary of the findings as expected in the objective or hypothesis.

Overall students learning motivation in the experimental class using ion tank media is 81%, meaning that students' motivation for learning using ion tank media is in the highly motivated category. Comparison of learning motivation for meetings I and II can be seen in Figure 1.

Figure 1. Comparison of Learning Motivation for Meetings I and II
The results of the analysis of indicator achievement can be explained in Figure 2.
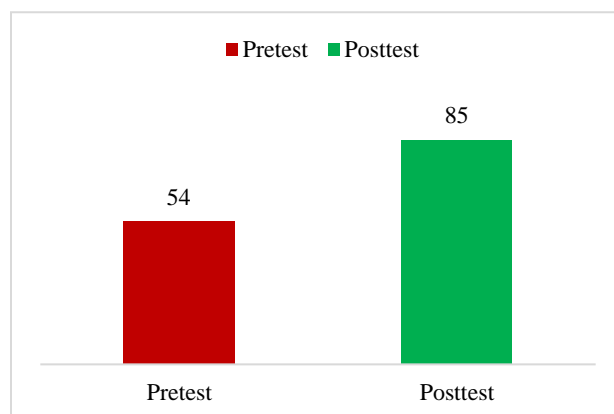

Figure 2. Completeness of Concept Mastery Test Indicators

Data from analysis of students' responses using interactive learning media based on cooperative learning models can increase learning motivation and mastery of

concepts and are in the very good category according to the criteria of a response value range of 66-80 (Ratumanan & Laurens, 2011).

The highest overall students' learning motivation data was found in all aspects, namely interest, attention, activeness, participation, persistence and attendance. Even though students' attention has decreased in aspects, they can be helped in other aspects. There are differences in aspects of attention compared to aspects that are caused by students still lacking focus. The students' lack of focus is caused by the age factor which is still in the playing category.

Students were not being able to focus on learning results in harm to students so that they do not get results in learning (Setyani & Ismah, 2018). Apart from that, study time can affect students' concentration so teachers need to pay attention to students' conditions. To help students stay focused on learning, teachers need to take breaks for a few minutes (Hamiyah &jauhar, 2014). However, in terms of understanding and cooperation in the group, it is in the highly motivated category.

The very high level of students' learning motivation in the interest aspect reaches 80%, influenced by the teacher's role in using approaches to learning. Students with a high level of learning motivation will tend to be diligent in completing assignments, persistent in facing challenges, show interest in various problems, prefer to work alone, and not feel bored when doing work (A. Kurniawan, Siswati, & Savira, 2021).

The use of interesting teaching methods, such as project-based learning, educational games, or technology in learning, can increase students' interest in lessons. Students are more likely to be interested in learning if they see a connection between what they are learning and their daily lives or long-term goals. Teachers who are able to relate lesson material to real world situations can increase students' interest. Apart from that, motivation is very necessary in improving students' learning outcomes (MFR Putra, Harun, & Sartika, 2018).

Mastery of concepts plays an important role in increasing students' interest in learning (Höft & Bernholt, 2019). The role of teachers as educators is very much needed in helping students be motivated and understand concepts in learning. The role of teachers for students in elementary schools is to provide an appropriate understanding of concepts in subjects (Radiusman, 2020).

According to (Bartell, Webel, Bowen, & Dyson, 2013) mastery of concepts plays an important role in learning mathematics. Mathematics is a subject that has a hierarchical structure, where understanding of certain topics depends on understanding of previous topics so that students need to have a base of previous knowledge to be able to understand new concepts in mathematics by combining information from previous learning.

All students while taking part in learning using the ion tangkel media based on the cooperative learning model generally stated that they were very happy and indicated that 80% of students stated that learning using the ion tangkel media based on the cooperative learning model was a new characteristic for students, because the teacher had never applied it before. However, there were 5% of students who disagreed who stated that learning using cooperative learning model-based learning media could attract interest, it is possible that the learning being taught falls into the calculation category which tends to be serious in learning.

The lessons taught helped me interact with my group friends. 81% said they strongly agreed. This is in accordance with the characteristics of the cooperative learning model. Apart from that, it helped me work together in groups, saying 70% agreed. This means that the cooperative learning model using ion tank media is included in the model that is able to make students collaborate. The statement about I can answer the question given by 80% of students stated that they strongly agreed. The answers from the students explained

that they were very enthusiastic when the teacher delivered the material and steps in using cooperative learning model-based ion tank media.

SUGGESTION

The ion tank media that has been developed needs to be tested with other learning models to determine its effectiveness. For teachers, when creating media combined with learning models, they should still pay attention to the characteristics and needs of students.

THANK-YOU NOTE

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