



## THE EFFECT OF COOPERATIVE MODEL TYPE OF STUDENT TEAM ACHIEVEMENT DIVISION (STAD) ASSISTED WITH VIDEO MEDIA LEARNING ON THE INTERACTION OF LIVING THINGS WITH THEIR ENVIRONMENT ON STUDENT LEARNING OUTCOMES

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### Abstract

The goal of this study is to determine how the Student Team Achievement Division (STAD) cooperative learning model, along with video learning media, affects student learning results. With a quantitative approach, the researchers used the Pre-test Post-test Nonequivalent Control Group Design. Test and non-test data gathering methods were used. The experimental class was 32 students from SMPN 1 Sidoarjo from class VII-B, and the control class was 32 students from class VII-C. One science teacher and one science student served as observers in this investigation. Pre-test and post-test sheets, student response surveys, and learning implementation sheets were among the instruments used. Quantitative data used in the data analysis technique. The learning outcomes in this study were based on the post-test paired t-test at  $\alpha = 0,05$  getting the value of  $t_{count} = 8,02$  and  $t_{table} = 2,040$  where  $t_{count} >$  from  $t_{table}$ , indicating that using the cooperative model type Student Team Achievement Division (STAD) assisted by learning video media has an effect on student learning outcomes on the interaction of living things with their environment. Student answers to STAD learning aided by video media are extremely favorable, with an average percentage value of 95.70, placing them in the very good category. According to the high success rate in the implementation of learning in the experimental class at the first meeting, the average percentage was 87,17%, at the second meeting, the average percentage was 97,9% and in the control class, the average percentage was 89,13%, at the second meeting the average percentage was 89,97%. Both classrooms received high marks for learning implementation. Students' enthusiasm and learning outcomes are affected by the usage of the STAD cooperative model and video media. The study concludes that using a STAD type cooperative model in conjunction with video learning media to explore the interactions of living things with their environment can improve student learning outcomes.

**Keywords:** STAD, Video learning media, Learning outcomes

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## INTRODUCTION

Students in junior high school (SMP) study science as one of their subjects. According to (Lisyawati, 2012 in (Damayanti et al., 2017)), science in the learning process is a mixture of the concepts of physics, chemistry, and biology, where the three concepts are likely to increase students' proficiency and experience in understanding the natural world. Science lessons are designed to help pupils learn and comprehend scientific principles or facts. One of the subtopics taught in the seventh grade science lesson at the junior high school level is the interaction of living things with the environment. According to (Çimer & Ursavas, 2012) biological content is challenging for pupils to comprehend because each of its qualities has concepts and challenging difficulties that they must learn. This material is part of the biology concept. In addition, many biological objects are abstract, difficult to view up close, and use a lot of terminology from other languages like "Latin" (Özcan et al., 2019). One of the resources that can help pupils grasp the natural world scientifically is this one. The subject matter explores the relationships between biotic and abiotic elements of living organisms, including chains, webs, and food pyramids. Students can fully understand the content by making direct observations of their surroundings, allowing them to examine the natural environment. As stated by (Khotimah, 2019), the setting utilized to conduct observations can benefit from the dominant environment in the region around kids, whether that environment is in the student's home or school environment. Under ideal circumstances, it is anticipated that the content will support the learning objectives, specifically that students will be able to understand how biotic components interact with their environments and how this interacts with population dynamics.

In relation to the actual field circumstances, it is inversely proportional. Numerous issues with grade VII pupils were identified based on the findings of teacher interviews with science subjects as well as on in-person observations at schools during the School Field Introduction II activity. Given that the Covid-19 Virus pandemic prompted Face-to-Face Meeting (PTM) learning activities in schools to be restricted from 2019 until the start of 2022, it is important to take this into consideration (Ahmadi & Syahrani, 2022). This undoubtedly has an impact on the time allotted for each meeting, which is now 4 JP x 40 minutes, divided into two face-to-face meetings advance (TM), totaling 2 JP every week, as opposed to the previous 5 JP x 40 minutes, divided into two face-to-face meetings (TM) at 3 JP and 2 JP per week. Because the content being studied necessitates observation activities outside of the classroom, it is getting

harder for students to understand what is being taught in regards to the things outlined. When providing interaction material during this pandemic, individual learning and textbooks were found to be the primary learning resources used.

The limitations of activities that required students to only sit on their benches as a form of alertness to suppress the spread of the Covid-19 virus by monitoring student activity and reducing activities outside of the classroom that can cause crowds were also discovered in interviews with seventh-grade science teachers. Students start to get used to learning textually when school conditions are required to be online (in a network), and when school is back offline (outside the network), teachers teach using the lecture method, the focus and attention of students on the teacher is very low resulting in low student learning (Adini et al., 2022). Because student characteristics vary when the learning process is running, motivation, interest, learning style, and speed of absorbing lessons are different (Adini et al., 2022). In conventional methods, students are viewed as ignorant people who simply receive the information provided by the instructor, while the teacher is the one who has the knowledge and power to impart information or materials to pupils (Lubis, 2012).

The information above is consistent with research (Sumiyati et al., 2016) that claims that continuing to use a teacher-centered learning paradigm causes a lack of student involvement in learning, which results in subpar learning outcomes. In addition to this research, another study (Susanto, 2012) claims that the usage of teacher-centered learning results in low activity levels and poor student learning outcomes. Ambarini (2010) claims that for the purpose of achieving the desired learning objectives, the learning process mostly takes the form of interaction between teachers (educators) and pupils (students). Teachers are expected to have teaching and learning strategies throughout that time, selecting models that subtly motivate students to participate actively in class in order to meet learning objectives. The model must take into account students' diverse levels of ability to elaborate and work with peers to solve an issue in the form of group talks, often known as the Student Team Achievement Division (STAD).

According to the STAD model, students are divided into study groups of four to five children of differing ability levels, such that each group includes students with low, medium, and high skills as well as students from different racial or ethnic backgrounds and other social groupings (Milawati, 2016). The behavioristic psychology-based STAD learning paradigm was developed by Slavin at

Johns Hopkins University (Stevens & Slavin, 1995). Slavin added that there are five crucial components to putting the STAD model into practice: class presentations, group creation, tests, calculating individual scores, and awarding prizes to groups. Table 1 is a list of the phases.

**Table 1.** Implementation Phase of STAD

| Phase                                          | Teacher Activity                                                                              |
|------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Phase: 1<br>Presents encouragement and purpose | Presents and inspires learning by presenting goals to be achieved.                            |
| Phase 2<br>Conveying information               | Using reading material or demonstrations to convey information.                               |
| Phase 3<br>Organize in study groups            | Explain the procedure for group formation and encourage each group to collaborate efficiently |
| Phase 4<br>Guiding group work                  | Guiding group study and work                                                                  |
| Phases 5<br>Evaluation                         | Assessing the learning outcomes of the topic or each group presenting their work              |
| Phase 6<br>Giving rewards                      | Finding strategies to recognize the efforts or learning outcomes of groups or individuals     |

(Nugroho & Edi, 2009)

Because the application of Face-to-Face Learning (PTM) was restricted to containing the spread of the Covid-19 virus, learning activities were not conducted in this study outside of the classroom by directly observing the surrounding environment. Instead, the teacher presents the subject using creative and engaging media to help students better grasp learning videos, which are instructional materials that combine audio and visual components with written messages. Learning media can be used as a technique to simulate a teacher presenting material to students. The usage of media encourages educators to incorporate it into the teaching and learning process. Learning media can enhance learning outcomes and learning quality, according to research on its use (Audie, 2019). In the opinion of learning through video learning media can encourage stimulation of learning activities, interests, and motivation for improved achievement of learning objectives. This viewpoint is supported by research by Andarwatiningrum N, Yeni L.F, and Marlina R. (2019) titled "The Effect of Video-Assisted STAD Model on Student Learning Outcomes on Fungic Materials." According to research findings, students learned more about

functions when utilizing the video-assisted STAD type cooperative model than when using the traditional model (Andarwatiningrum et al., 2019).

The aforementioned description inspired the researcher to investigate the Effect of the STAD Model Assisted by Video Learning on the Interaction of Living Things with Their Environment on Student Learning Outcomes.

## METHOD

With a quasi-experimental methodology, this study used a quantitative approach (quasi-experimental design). In a quasi-experimental, researchers utilized control and experimental groups, but they did not pick their individuals at random, according to Accept the subject as it is because the entire class has already been constituted, and forming a new class can throw off the previous school's lesson plan.

### Design

The form of quasi-experimental design used is the Nonequivalent control group design:

**Table 2.** Pre-test Post-test Design Nonequivalent Control Group Design

| Class      | Pre-test | Model | Post-test |
|------------|----------|-------|-----------|
| Experiment | OA1      | X     | OA2       |
| Control    | OB1      | Y     | OB2       |

Information:

OA1 & OB1 = Student test results before treatment

OA2 & OB2 = Student test results after treatment

X = Student Team Achievement Division (STAD) learning model assisted by learning video media

Y = Conventional learning model

### Populations

All of the residents are seventh-grade students at SMP Negeri 1 Sidoarjo in the city of Sidoarjo. implementation in two learning meetings during the even semester of 2021–2022. There are 11 classes with more than 300 pupils in total. Two example classrooms, class B (experimental) and class C, each with 32 pupils, were used by researchers (control). Both test and non-test instruments, including as questionnaires and learning implementation sheets, were employed. Test instruments took the form of test sheets.

### Data Collection Technique

1. Collecting test data, using Pre-test and Post-test questions, each of which has 15 items, are given to participants in the experimental and control classes in order to compare their performance.
2. Collecting non-test data, using instrument like learning implementation sheets and student questionnaires. A questionnaire was distributed to

the experimental class group in the form of 10 statement items to ascertain their attitudes regarding learning the STAD model while viewing educational video content on the topic of living things interacting with their surroundings. Additionally, by using the learning implementation sheet as a benchmark for learning achievement, the observer aids in keeping track of the ongoing learning process.

**RESULTS AND DISCUSSIONS**

Based on calculations made from research data, the experimental group's pre-test learning outcomes are taken into account when calculating

1 *Normality Test*

This test serves to determine whether the data is taken from a normal population or normally. In this study, the chi squared is used to examine data arranged in groups or in a frequency distribution table and this test is suitable for data with  $n > 30$  (Sugiyono, 2012).

$$\Sigma \chi^2 = \Sigma \frac{(f_o - f_e)^2}{f_e}$$

(Sugiono, 2013)

**Table 3.** Summary of the results of the normality test for the two classes

| Data      | Class      | $\chi^2$ table | $\chi^2$ count | Information         |
|-----------|------------|----------------|----------------|---------------------|
| Pre-test  | Experiment | 11,07          | 7,4            | Normal distribution |
| Pre-test  | Control    | 11,07          | 11,02          | Normal distribution |
| Post-test | Experiment | 11,07          | 7,69           | Normal distribution |
| Post-test | Control    | 11,07          | 8,90           | Normal distribution |

2 *Homogeneity test*

This test is carried out to find out whether the two sample groups have the same variance or not (Sugiono, 2013).

$$F_{hitung} = \frac{\text{varians besar}}{\text{varians kecil}}$$

**Table 4.** Summary of the results of the homogeneity test for the two classes

| Data      | F <sub>table</sub> | F <sub>count</sub> | Information                 |
|-----------|--------------------|--------------------|-----------------------------|
| Pre-test  | 1,82               | 1,13               | homogeneous variance        |
| Post-test | 1,82               | 1,39               | variance is not homogeneous |

3 *Hypotesys test*

This experiment is designed to test the hypothesis that, in terms of student learning outcomes, classrooms using the STAD cooperative model supplemented by video learning media and conventional models (lectures) differ significantly.

**Table 5.** Summary of the results of the hypothesis test for the two classes

| Data      | T <sub>table</sub> | T <sub>count</sub> | Information             |
|-----------|--------------------|--------------------|-------------------------|
| Pre-test  | 2,040              | -0,13              | H <sub>0</sub> rejected |
| Post-test | 2,040              | 8,02               | H <sub>0</sub> accepted |

Student response data were obtained from the experimental class in order to identify the scale of student responses to the STAD model assisted by video learning media on the interaction of living things with their environment, the questionnaire was filled out directly by students by placing a check mark on each statement according to students' opinions. The questionnaire contains 10

the knowledge component; the smallest number is 40, the maximum is 60, and the average is 48. 2. The findings of post-test learning in the experimental group showed the least score was 65 and the greatest was 93, with the average being 82, whereas the control group has the smallest value of 40 and the largest value of 63, with the average being 48. The average score for the control group was 69, ranging from 60 to 83 for the lowest and highest scores, respectively. Following the collection of the data, the concepts of normality, homogeneity, and hypothesis testing were applied. as follows:

statement points that must be answered with 'Yes'; "Not".

**Table 6.** Questionnaire Data Analysis Results

| Response | Percentage (%) | Category   |
|----------|----------------|------------|
| Positive | 95,70          | Almost All |
| Negative | 4,30           | Small Part |

Based on the table, it can be seen that almost all of the students gave a positive response to the STAD

model assisted by video media with a total percentage of 95.70. The data also shows that only a small number of respondents gave negative statements with a total percentage of 4.30 of the total respondents.

Based on the results of the learning implementation data, it was found that the experimental class in the first meeting the average percentage of implementation was 87.17% and at the second meeting it was 97.9%. Meanwhile, for the results of the data on the implementation of learning in the first meeting of the control class, the average percentage was 89.13, the second meeting was 89.97. From the second class, both the experimental and control classes received very good criteria, so it was stated that the implementation of learning in this study was successful.

At this point, the discussion will be described after the results of the research on the application of the STAD model assisted by video media on the interaction of living things with their environment are obtained, including data on learning outcomes, student responses to the application of the model, and the implementation of learning. First, research data on learning outcomes were obtained from the results of the pre-test and post-test where each class was given a test consisting of 15 questions. The results of the investigation showed that there was a statistically significant relationship between student learning outcomes in the chapter on the interaction of living things with their environment using the STAD type cooperative learning model supported by video media.

Before the research was conducted, the validity of the instrument to be used was tested using 2 validators, namely the Advisory Lecturer for the S1 Science Education Study Program at the State University of Surabaya and the Science Teacher at SMP Negeri 1 Sidoarjo. After everything is considered valid, then the questions can be tested for both classes. In the pre-test of both classes, the experimental class found an average value of 48, with the largest score of 60 and the smallest being 40. While the control class had an average value of 48.2, with the largest value of 63 and the smallest value of 40. Furthermore, the pre-test data obtained were tested for prerequisites. normality, homogeneity and hypotheses. According to the results of the paired t test,  $t_{count} = -0.13 < t_{table} = 2.040$  and it means that the ability of the two classes is the same.

Then to see the effect, then each class was given a different treatment. After the two classes studied with different models, both were given a post-test, the experimental class got an average score of 82, with the smallest score of 65 and the largest being

93. Meanwhile, the control group obtained an average learning outcome of 69 with the lowest score of 60 and the highest score of 83. Furthermore, post-test data both classes were tested for prerequisites as well as a t' test to see if there were differences in learning outcomes between the two. The result is that  $t_{count} = 8,02 > t_{table} = 2,040$ , so the conclusion is that there is a significant effect between the STAD model assisted by video media on student learning outcomes on the subject of the interaction of living things with their environment. In line with research conducted by Andarwatiningrum N, Yeni L.F, and Marlina R. (2019), it was emphasized that the learning outcomes of students on the principal functions taught by applying the video-assisted STAD model were greater than the learning outcomes that were applied using the teacher centered model (Andarwatiningrum et al., 2019).

Second, research data on student responses was obtained from a questionnaire given to the experimental class to see the overall response to the STAD learning model. After obtaining the questionnaire data that has been filled in by all respondents, an analysis of the questionnaire data is immediately carried out and the results are that almost all of the respondents with an average percentage of 95.70 have given positive responses to the STAD model assisted by video media. This is in line with research (Maesaroh, 2013) which confirms that learning with an interesting atmosphere can make students happy and make it easier to understand the material so that it has a positive impact on student enthusiasm and learning outcomes.

Third, the learning implementation data showed that the experimental class at the first meeting had an average implementation percentage of 87.17% and at the second meeting 97.9%. As for the results of the control class implementation data at the first meeting the average percentage was 89.13 and the second meeting was 89.97. From both classes, they both get very good criteria, but what makes the difference is the increase in the average between the two classes. The average implementation of experimental class learning experienced a significant increase because researchers made improvements to the activities that were still considered lacking. Although the implementation control class has reached the very good criteria, the percentage is still low and there is only a slight increase in the percentage from each meeting. This is because the most influential activity here is the classroom atmosphere which is assessed to include components of student enthusiasm, teacher enthusiasm and student-centered learning. The experimental class got the STAD cooperative model assisted by learning video media according

to the results of implementation in this study in line with research results (Pardiyana, 2020) that the application of the STAD model has increased activity in student activities, teachers, and student learning outcomes. From the data above, the STAD learning model is better than the conventional model. This model can support the creation of a comprehensive and interesting learning atmosphere (Rahayu et al., 2017).

## CONCLUSIONS AND SUGGESTIONS

### Conclusions

Based on the description of the results of research and discussion, it can be concluded that learning using the STAD type cooperative model assisted by video learning media affects student learning outcomes on the material interaction of living things with their environment. The response questionnaire given after getting the learning model got a positive response from almost all students, indicated by the average percentage which was categorized as very good. The implementation of learning in this research can be said to be successful because the value of the implementation from the class both of them got very good criteria.

### Suggestions

Suggestions that are expected from the results of research that have been carried out are so that teachers apply the STAD model so that students are more actively involved in the learning process so that it is easy to accept the material and increase student learning outcomes. In addition, it would be nice if the conventional classical model or teacher-centered learning was reduced and could use other varied media that could help, such as in this study using instructional video media. Other media can also be used by the teacher according to the topics discussed and the level of difficulty of the material which can later help students learn well and assist teachers in conveying as much information as possible.

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