**Scientific Approach with Cooperative Setting STAD: Effective Teacher Strategy in terms of Student Achievement and Learning Motivation**

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**Abstract**. This study aims to examine how the scientific approach with the STAD cooperative setting becomes an effective strategy that possibly for teachers in terms of student achievement and motivation. The type of the research was a literature review with a cumulative review type with steps such as: selecting an urgent topic, selecting articles (journals / theses) and books that are following with the topic that have been selected as a theoretical basis based on the expert opinion. The integration process in this research was based on the comparison between the scientific approach and the scientific approach of the cooperative STAD setting. The results of this study indicated that the integration of this approach was easier for the teacher to adapt because in the learning process, the teacher was easier to provide material to students. There were steps of scientific approach with cooperative STAD setting were materials i.e. real problem that can be observed, grouping students to guide and trigger student questions, monitoring group discussions to collect information, evaluating with individual quizzes, and the students communicating evaluation results to obtain group awards. Then, based on the various presentations of relevant research results, it can be concluded that the approach was effective. The scientific approach with the cooperative STAD setting can be employed as a strategy by teachers to increase student achievement and learning motivation. In addition, teachers can practice it to build student knowledge effectively and efficiently..

1. Introduction

Cooperative learning is a method or model in which students learn together, contribute thoughts to each other and responsible for achieving individual and group learning outcomes [1]. Cooperative learning refers to various teaching methods in which students work in small, heterogeneous groups to help each other to learn material. Each member of the group has the same responsibility for the success of the group. In cooperative classes, students are expected to help, discuss and argue with each other, to hone the knowledge that they have mastered at that time and close gaps in each other's understanding [1] [2]. This is in line with Slavin who states the importance of cooperative learning, namely: facilitating students to develop and express student ideas, testing ideas that students understand, such as solving a problem without having to feel afraid because decisions are taken with responsibility to the group, helping to improve their abilities, increasing social students such as a sense of self-esteem, positive interpersonal relationships with others, time management skills, respect for others and a positive attitude towards school. Then, improve learning outcomes and student motivation [3].

Cooperative learning provides opportunities for students to achieve potential abilities related to ZPD. ZPD (DPT) is the distance between the level of actual development, as seen in independent problem solving and the level of potential development, as shown in problem solving under adult guidance or by cooperating with more capable peers [4]. In this case, cooperative learning is a part of constructivism. In constructivism learning, students construct their knowledge through group discussions, then, they will be able to improve students' mathematics achievement and reasoning abilities [5]. Likewise with cooperative learning which also emphasizes group discussions in order to build one's own knowledge. So, in this case the cooperative learning model is a learning model that is suggested to be applied because it is student-centered.

Cooperative learning can increase student achievement and motivation to learn consistently for students who have high, medium and low abilities towards the subject matter to be more meaningful. Learning achievement is one of the keys to be successful for a person. This shows that learning achievement is an important component in the learning process, including in the mathematics learning process. Then, learning achievement is the level of student success in the learning process which is usually expressed in terms of values. Learning achievement is the result of efforts that can be achieved by students after carrying out the learning process that takes place in the interaction of the subject with their environment which will be stored or implemented towards the direction of progress [6]. Learning achievement has a close relationship with a person's cognitive abilities because learning is always based on cognition. The definition of learning achievement is the result of the learning process that has been recorded in the form of a report card which is a report on student learning outcomes for all subjects that are followed, including cognitive, affective and psychomotor aspects [7]. It can be understood that learning achievement is the result achieved by students during the learning process within a certain period of time, generally learning achievement in schools is in the form of giving grades (numbers) from teachers to students as an indication of the extent to which students have mastered the subject matter they convey. But in fact, based on the results of the PISA (Program for International Student Assessment) study in 2018 which showed that Indonesian students were ranked 7th from the bottom (73) with an average score of 379 [8]. Indonesia is above Saudi Arabia which has an average score of 373. Then for first place, China is still in the rankings with an average score of 591 and while the results of the TIMSS (Trends in International Mathematics and Science Study) study in 2015 show that Indonesian students are was ranked 45th out of 50 countries with a score of 397 [9]. Based on this, the success of the achievement obtained by Indonesian students cannot be said to be optimal, thus giving an indication of the causes of the sub-optimal achievement of Indonesian students. One indication is that learning is still centered on the teacher, so that students only memorize the learning concept [10].

Student learning success can be determined by the affective domain. Affective domain includes character, behavior such as feelings, interests, attitudes, emotions, or values. These elements can be used as an assessment in motivation [11]. Motivation comes from English motivation, which means encouragement to reason and motivation. The verb is to motivate which means to encourage, cause, and stimulate [12]. While motivate itself means reason, cause and driving force [13]. Motivation is the basic drive that drives a person to behave. This impulse is in someone who moves him to do something in accordance with the impulses in him. Motivation is a necessary element for learning [14]. Furthermore, motivation can be divided into two, namely: (1) intrinsic motivation, motivation that is included in the learning situation and fulfills the needs and goals of students, this motivation arises in the students themselves. (2) Extrinsic motivation, motivation caused by factors from outside the learning situation. For example: praise, gifts, code of conduct, role models from parents and teachers [15]. Meanwhile, motivation is the overall driving force within students that causes learning activities, so that the goals desired by students can be achieved [16]. It is said to be "whole" because in general there are several motives that together move students to learn. In addition, motivation is a condition that causes or causes certain behavior, and which gives direction and resistance or (persistence) to the behavior [17]. So that in this article what is meant by motivation is an effort that is based on influencing a person's behavior so that he is moved his heart to act to do something so as to achieve certain results or goals. In addition, based on this assimilation, it can be concluded that motivation is an important thing in learning activities, because of the motivation, it will ultimately encourage students 'enthusiasm for learning and vice versa if motivation is not too visible to students, it can result in weakening students' enthusiasm for learning which can affect student achievement and learning.

In addition to cooperative learning, methods are needed that can support student-oriented learning. One of the methods that can be used is cooperative learning type STAD. Cooperative learning type Student Team Achievement Division (STAD) was developed by Robert Slavin and his friends at John Hopkin University which is the simplest cooperative learning [18]. Students are placed in learning teams consisting of four people who are a mixture according to their level of performance, gender and ethnicity [19]. The teacher presents the lesson then students work in teams to ensure that all team members have mastered the lesson. Finally, all students were given a quiz about the material with notes and during the quiz they were not allowed to help each other. In addition, STAD consists of five main components, which are the learning stages, namely class presentations, building team, giving quizzes, individual progress scores, and recognizing team [20]. STAD has both an impact on students, namely an instructional impact and an impact on inclusion. Instructional impact is mastery of concepts and skills, positive dependence, group processing, and togetherness. The impact of inclusion is social sensitivity, tolerance for differences, and awareness of differences [21]. STAD also has several advantages, among others, it is based on the principle that students work together in learning and are responsible for the learning of their friends in the team and also themselves, as well as group awards that are able to encourage students to be united, each student gets the same opportunity to support his team to get maximum scores so that they are motivated to learn [22]. Mathematics learning which is presented by applying learning using the STAD cooperative setting that is expected to increase student achievement and motivation.

Then, there is one learning approach that can complement STAD type cooperative learning, namely the scientific approach. Learning with a scientific approach is a learning process designed in such a way that students actively construct concepts, laws or principles through the stages of observing (to identify or find problems), formulate problems, propose or formulate hypotheses, collect data with various techniques, analyze data , draw conclusions and communicate concepts, laws or principles that are "found" [23] [24]. The scientific approach is intended to provide understanding to students in knowing, understanding various materials using a scientific approach, that information can come from anywhere, anytime, not depending on direct information from the teacher [25]. In carrying out these processes, teacher assistance is needed. However, the teacher's assistance must decrease as the students mature or the class of students increases. In addition, the scientific approach has several benefits, such as: being able to encourage students to be active, skilled, and critical in constructing their own understanding. In addition, the scientific approach has characteristics that differentiate it from other approaches. The characteristics in the scientific approach are student-centered, involve scientific process skills in constructing concepts, laws or principles, involve cognitive processes that have the potential to stimulate intellectual development, particularly students' higher order thinking skills, and can develop student character [26]. The characteristics of the scientific approach are suitable for preparing students to face global challenges.

In subsequent discussions, we will examine how the scientific approach with the STAD cooperative setting becomes an effective strategy that makes it possible for teachers in terms of student achievement and learning motivation. In addition, several research results will also be presented which is related to the effectiveness of the scientific approach with the cooperative STAD setting in terms of student achievement and motivation.

1. Research Methods

This research was a literature review with a cumulative review type. In this study, empirical evidence would be compiled to describe as a whole topic under study. Fulfillment of research objectives and generalization of results in this type of research was carried out by researchers used a structured search method to identify as many relevant studies as possible [27].

As for the research review steps in this article, such as: choosing an urgent topic, selecting articles (journals, theses, dissertations) and books that are in accordance with the topics that have been selected as a theoretical basis based on the opinions of experts, besides paying attention at a glance whether the source This corresponds to a literature study or review of the results that will be made by looking at things that need to be considered, namely the table of contents, abstracts, headings and sub-headings, reading and understanding in detail, writing down each related research, reviewing the overall results, and discussing the article. This article was obtained by collecting 5 literature studies with themes selected from scientific reference sites such as: e-resources.perpusnas.go.ig, google schoolar, libgen.org, z-library, doaj.org, sciencedirect.com, Springer and Proquest based on 2015-2019.

1. Discussions

*3.1. Integration of the Scientific Approach with STAD Cooperative Settings*

The scientific approach with the cooperative STAD setting has stages in learning activities obtained through the integration of several existing articles. The stages of this learning are listed in Table 1 [28] [29] [30] [33] [34] [35] [36] [37] [38] [39]. The process of integrating the scientific approach to the cooperative setting of STAD is carried out because in the cooperative setting, STAD is related to the management of student activities only, there is no material management in it. Meanwhile, the scientific approach supports material management to complete it.

**Table 1**. Integration of the Scientific Approach with Cooperative STAD Settings from various relevant studies

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Research | Subject | Research Method | Results | Approach with Cooperative Settings STAD |
| 1 | Arus Ginanjar, Sehatta Saragih, Kartini (2019) [33] | Student of junior high school | quasi-experimental | Scientific approach in the cooperative model type STAD based on learning, learning is more effective than learning with a scientific approach in terms of student learning outcomes. | Teacher monitors students, provides guidance and provides motivation to students. Then, students obtain information through group discussions carried out during the learning process (group discussion) |
| 2 | Wahyu Lestari, Loviga Denny Pratama, Jailani (2018) [28] | Student of junior high school | Classroom action research (PTK). | There is an implicating relationship between the applications of the cooperative STAD setting and scientific approach with students' motivation to learn mathematics. By the learning, it activates students (student centered) which then has a positive impact on student achievement and motivation to learn mathematics. | Teacher monitors students, provides guidance and provide motivation to students. Then, students obtain information through group discussions carried out during the learning process (group discussion) |
| 3 | Iqlima Ramadhani Fabella, Rosnawati (2017) [34] | Student of junior high school | Quasi-experiment | The scientific approach through the cooperative STAD learning setting is proven to be effective for learning activities in terms of student achievement and motivation. This is evidenced by the increasing an achievement and learning motivation of students before and after the use of the scientific approach learning method through the cooperative STAD setting. | Teacher monitors students, provides guidance and provides motivation to students. Then, students obtain information through group discussions carried out during the learning process (group discussion) |
| 4 | Rinda Naviano, Dhoriva Urwatul Wutsqa (2017) [35] | Student of vocational high school | experimentpseudo | The scientific approach through the cooperative model type STAD is more effective than the scientific approach through the cooperative model type TPS in terms of student achievement. | Teacher evaluates the learning outcomes that have been carried out by students through giving individual quizzes, where students can carry out the process of associating or reasoning individually (Individual Quiz) |
| 5 | Andi Kaharuddin (2017) [29] | Student of junior high school | experimental research | Learning with the Scientific approach to the Cooperative setting type STAD is effective seen from the sub-indicators of effectiveness, the syntax of the scientific approach to the cooperative setting type STAD achieves predetermined criteria both descriptively and inferentially from learning outcomes, activities , interest in learning and response after the application of the scientific approach cooperative setting type STAD in class VII of the Accredited A Public Middle School in Makassar City. | Teacher discusses the results of the quiz with the students. Then students can communicate what students have understood through the presentation of the results of individual quizzes that have been done by students. The calculation of the total score of the quiz was carried out to determine the group score obtained by each group (Calculation of scores and group awards) |
| 6 | Della D., Triyanto, Dyah Ratri Arum (2019) [36] | Student of junior high school | Quasi-experiment | Students who take part in learning with the STAD model with a scientific approach has better learning achievement than the direct model. |  |
| 7 | La Hasrin, La Ode Ahmad Jazuli (2016) [37] | Student of junior high school | classroom action research (PTK). | The scientific approach with the STAD cooperative setting can improve learning achievement on the flat side room building material by achieving research success indicators. |  |
| 8 | Muh. Ali P., Hamzah Upu, Djadir (2015) [38] | Student of junior high school | development  | The development of teaching materials using a scientific approach with STAD cooperative setting can significantly improve student achievement. |  |
| 9 | Amiruddin, Ilham Minggi (2019) [39] | Student of senior high school | classroom action research (PTK). | There was an increase in student achievement by using a scientific approach with the cooperative STAD setting. |  |

Based on the integration process of the scientific approach with the cooperative STAD setting, the results obtained in Table 1 contain stages such as; class presentations, formation and group guidance of students, group discussions, individual quizzes and calculation of scores and group awards. Judging from these steps, the scientific approach and the scientific approach with cooperative STAD setting have almost the same but still different settings in the classroom learning, which in this case the scientific approach without setting means not using the setting in groups and the scientific approach with the cooperative STAD setting uses group setting in the learning process [31] [32].

As in step 1, the scientific approach and the scientific approach with cooperative STAD setting have almost the same initial steps. Where the teacher presents material to each student in the class [32]. In step 2, the scientific approach is carried out by an individual questioning process. However, it is different from the scientific approach with the cooperative STAD setting which carries out the questioning process in groups which allows students to be more motivated in these activities. This is in line with the research presented by the nine studies referred to. In step 3, the scientific approach also goes through the process of collecting evaluations carried out individually and in groups on the scientific approach to the cooperative STAD setting. This is also in line with the research presented by the nine studies referred to which explains that students do this in groups. In step 4, the scientific approach and the scientific approach with the cooperative STAD setting almost have the same association steps, but the difference with the scientific approach with the cooperative STAD setting is that the process is carried out in groups, but in individual quizzes here it is intended to determine the extent of ability and understanding of each student in groups [31] [32]. In step 5, the scientific approach is also almost the same in the process of communicating, but it is still different in the process from the scientific approach with the cooperative STAD setting, namely communicating given or obtaining scores from each individual which will be collected into one which will ultimately produce a total score of each group is there to obtain the award [31] [32].

Then, based on Table 1, it can be seen that the nine articles meet the criteria at the scientific learning stage, which is then extracted according to the required procedure. The descriptions of the nine studies are as follows:

(1) Arus conveyed through stated backgrounds such as; mathematics is important in life, the need for students to have abilities in learning, especially mathematics, teacher-centered learning methods (conventional), students feel bored because there is no learning innovation that attracts them, the average learning outcomes are high, but actually not evenly distributed. This type of research is a quasi-experiment. The advantage of this article is that it can compare between 3 learning approaches such as; scientific approach, ELPSA and open-ended so that the best approach is obtained, causing good interaction between students. While the shortcomings that are owned are not enough to explain the integration of the stages of the scientific approach with the cooperative STAD setting in detail, limited to the comparative material for students in learning. The research results such as; the application of the scientific approach with the STAD cooperative setting has met the effectiveness criteria of both student learning outcomes, interests and student responses [33].

(2) Wahyu conveyed through the stated background such as: motivation score which is still in low criteria, unsatisfactory achievement test results, mathematics is the most important part of life. This type of research is a 2-cycle PTK. The advantage of this article is that it can explain the relationship between the implications of the scientific approach and the cooperative STAD setting with learning motivation which can increase the motivation score. While the drawback is that it is not explained in detail the integration process of the stages of the scientific approach with the STAD cooperative setting, members of the group of 4 are less effective, time is not efficient enough. The research results such as; There is a relationship between the application of the scientific approach with the cooperative STAD setting and students' motivation to learn mathematics, in which case it can be said that the scientific approach with the cooperative setting of STAD is effective [28].

(3) Iqlima conveyed through the stated background such as; the results of the 2015 PISA and TIMSS studies of Indonesian students are still not optimal, the results of the UN 2106 score do not make the results frightening for students or in other words students underestimate the UN, the importance of student achievement and learning motivation, especially mathematics. This type of research is a quasi-experiment. The advantages possessed in this article are that the scientific approach with the cooperative STAD setting can increase achievement and motivation by increasing the average results of students above the KKM. Meanwhile, the drawback is that there is a lack of explanation regarding the integration process of the scientific approach with the cooperative STAD setting, limited to variables that have been researched quite a lot. The research results such as; scientific approach through the cooperative STAD learning settings effectively. It is proven by the increase in student achievement and motivation scores, the scientific approach with the cooperative STAD setting is more effective than the scientific approach [34].

(4) Rinda conveyed through the stated background such as; the results of the 2013, 2014, 2015 SMK students' national mathematics exam results indicate that the average mathematics score is still low. This type of research is a quasi-experiment. The advantages possessed in this article are increasing learning achievement through a scientific approach with cooperative STAD setting and TPS. With an average value better than the scientific approach using the TPS setting. While the drawbacks are based on a motivation score, not more effective, less explanation in the article on the integration process of the scientific approach with the cooperative STAD setting, limited to certain materials. The research results such as; Learning mathematics by applying a scientific approach with cooperative learning models type STAD and TPS shows effective results [35].

(5) Andi conveyed through the stated background such as; mathematics plays a role in developing the potential of students, there is still not enough learning through a scientific approach to support learning. This type of research is a quasi-experimental. The advantages possessed in this article are that it has a positive impact on learning outcomes with high motivation outcomes at the three levels of high, middle and elementary school. Where for high school teachers provide little assistance to students and more and more at the other two levels. While the drawback is that it is not explained in the article on the integration process of the scientific approach with the STAD cooperative setting or it is not explained at all. The research results such as; Learning with a scientific approach in the STAD-based learning model is more effective than learning with a scientific approach from students [29].

(6) Della conveyed through the stated background such as; the importance of mathematics in various aspects of life, the results of the National Examination of Junior High School students in Surakarta in 2015/2016 are low, algebra material about equations and inequalities is difficult to teach, the 2013 curriculum is not optimal because the teacher still plays an active role in the classroom. This type of research is a quasi-experiment. The advantage of this article is that it can significantly increase student achievement by using a scientific approach with a cooperative STAD setting. While the drawback is that it is not explained in detail the research method used. The research results such as; students who take learning with a scientific approach with the cooperative STAD setting have better learning achievement than using the direct model [36].

(7) La Hasrin conveyed through stated backgrounds such as; mastery of mathematics and the average achievement of students in class VIII SMP Negeri 4 Kendari are still low. The type of research used is classroom action research (PTK) with 2 cycles. The advantages possessed in this article are that it can make students active and there is a dependence on positive interactions in the classroom that make student achievement increase significantly, explained in detail the scientific stages with the cooperative STAD setting. Meanwhile, the drawback is that the recommendations given by researchers are less detail. The research results such as; The scientific approach with the cooperative STAD setting can improve student achievement in the material of flat-side building and the achievement of indicators of research success [37].

(8) Muhammad conveyed through the stated background such as; Mathematics is important, the difficulty of students understanding the concept of the material (PSLDV), the lack of students understanding the characteristics of linear equality, student achievement is still low. This type of research is the development of student books (BS), lesson plans and worksheets. The advantages possessed in this article are that it describes in detail the development stages used, student learning achievement reaches predetermined standards. While the drawback is that the stages of the scientific approach with the STAD cooperative setting are not explained in detail. The research results such as; the development of learning tools can significantly improve student achievement [38].

(9) Amiruddin conveyed through the stated background such as; learning mathematics at the high school level is different, the dominance of teachers in learning is still valid, Mathematics is a difficult subject to understand. The motivation, achievement and interest in learning are still low. The type of research used is classroom action research (PTK). The advantage of this article is that it can significantly improve student achievement. While the drawback is that it does not explain in detail the stages of the scientific approach with the cooperative STAD setting and does not explain in detail the problems that arise when carrying out the research process [39].

Based on the results of the presentation of the nine studies, it can be concluded that the general description. The general description of the nine studies is that they have almost the same research background because of the deficiencies in the field. As for these backgrounds such as: mathematics is important in life, the need for students to have the ability in learning, especially mathematics, teacher-centered learning methods (conventional), students feel bored because there is no learning innovation that attracts them, the average learning outcomes are high, but actually not evenly distributed, motivation scores are still in low criteria, achievement test results are still unsatisfactory, the results of the 2015 PISA and TIMSS studies of Indonesian students are still not optimal, the results of UN scores that do not make the results frightening for students and the scores are still quite low. Mathematics subjects in students, the importance of student achievement and motivation in learning, especially mathematics, mathematics plays a role in developing student potential, there is not enough learning through a scientific approach to support learning, mastery of mathematical concepts in certain materials is not good enough, student achievement is still low, Mathematics is a difficult subject to understand, learning mathematics at the high school level is different [28] [29] [33] [34] [35] [36] [37] [38] [39]. Then the types of research also vary, such as; quasi-experiment, classroom action research (CAR) and the development of teaching materials. After that it has almost the same advantages such as; can compare between 3 learning approaches such as; scientific approach, ELPSA and open-ended so that the best approach is obtained, causing good interaction between students, can explain the relationship between the implications of the scientific approach with the STAD cooperative setting with learning motivation which can increase the motivation score, the scientific approach with the cooperative STAD setting can increase achievement and motivation by increasing the average results of students above the KKM, increasing learning achievement through a scientific approach with a cooperative STAD setting and TPS, better average scores, having a positive impact on learning achievement with high motivation results at all three levels of high school, secondary and elementary schools where for high school teachers provide little assistance to students and more at the other two levels, learning achievement reaches predetermined standards [28] [29] [33] [34] [35] [36] [37] [38] [39]. While the drawbacks are that it does not explain the integration of the stages of the scientific approach with the cooperative STAD setting in detail, is limited to certain material, is limited to variables that have been researched quite a lot, the time is less efficient and the members of the group of 4 people are less effective, the recommendation given by the researcher lack of detail, did not raise the problems that occurred at the time of the study [28] [29] [33] [34] [35] [36] [37] [38] [39]. In general conclusions are obtained from the relevant research results, in the form of the effectiveness of the scientific approach with the STAD cooperative setting. Or in other words, the scientific approach with the STAD setting has a positive impact on learning, especially mathematics.

Then, the extracted data are processed and analyzed for further synthesis of the effectiveness of the scientific approach with the STAD cooperative setting, which are then grouped into cognitive and affective aspects. Table 2 shows that the results of the synthesis of the effectiveness of the scientific approach with the STAD cooperative setting in mathematics learning.

**Table 2**. Synthesis of the effectiveness of the scientific approach with the cooperative STAD setting

|  |  |  |
| --- | --- | --- |
| Aspects | Variabel | Number of Research |
| Cognitive | Learning achievement | [28][29][33][34][35][36][37][38][39] |
| Affective | Learning motivation | [28][[34][35] |

Data in Table 2 shows that the scientific approach with the cooperative STAD setting provides results in the form of cognitive and affective aspects or can be viewed in terms of cognitive and affective aspects. Which in this case is more focused on student achievement and motivation.

*3.2. Comparison of the Effectiveness of the Scientific Approach and the Cooperative STAD Setting on Student Achievement*

The results of the synthesis in Table 2 based on relevant studies show that the scientific approach with the cooperative STAD setting has in common, namely the effectiveness and positive implications of the cognitive aspects of students which include student achievement. The scientific approach with the cooperative STAD setting is said to be effective in terms of student achievement as evidenced by the increase in learning achievement after using learning methods [30] [35]. This can be seen from students participating actively through group discussions, so that students are more familiar with the material being studied and students are more ready to accept the learning given by the teacher and because they have reached certain criteria, which can be seen from the descriptive and inferential results [28] [29] [33] [34] [35] [36] [37] [38] [39]. The scientific approach with the cooperative STAD setting is one of the innovations in learning that collaborates between approaches, learning models that make students more interested in carrying out the learning process in the classroom as well as involving potential cognitive processes and developing student character [33].

*3.3. Comparison of the Effectiveness of the Scientific Approach and the Cooperative STAD Settings on Student Motivation*

It can be seen from the results of the synthesis in Table 2 based on relevant studies showing that the scientific approach with the cooperative STAD setting has in common, namely the effectiveness of the affective aspects of students which include student learning motivation. In this case shows that it has a positive impact on students. As well as student motivation that increased significantly after being given treatment or using a scientific approach with the cooperative STAD setting. The motivation to learn is one component that can affect learning achievement [34]. The motivation is said to be effective when students' motivation to learn mathematics in the class increases where initially they are in the low category so that most students are in the high category which in turn affects student achievement (cognitive aspects) of students [28].

1. Conclusion

Based on the various explanations of relevant research results, it can be concluded that research on the scientific approach with the cooperative STAD setting can be concluded that it is effective. Thus, the scientific approach with the cooperative STAD setting can be used as a strategy by the teacher in order to increase student achievement and motivation, besides that it can be used by teachers to build student knowledge effectively and efficiently. However, to develop more varied learning strategy again, further tests can be carried out for different variables. It hopes that the teacher can continue to facilitate students well, according to the ability of students and to follow the development of education which is constantly changing according to the direction of the times. In addition, based on the explanation that has been explained, it can be concluded that the scientific approach with the cooperative STAD setting scientific approach has almost the same learning stages but it is different in the learning setting in the classroom, namely individuals and groups. Based on the nine relevant studies, researchers want to provide solutions such as; describe in detail the stages that exist in the scientific approach with the cooperative STAD setting, then try out the scientific approach with the cooperative STAD setting at each level so that more can be seen the difference from each level, after that can determine the appropriate learning material, allocate time accordingly. As well as possible it was carried out well and tested on other aspects that are still not widely described in order to provide an update on subsequent studies, pay attention to the limitations of researchers and the resulting learning tools so that it needs to be tested extensively to see the advantages of learning tools using a scientific approach with the cooperative STAD setting, experimental learning devices on a large scale, applying the same material, researchers can condition students well in order to follow learning well, students to be more seem anatomical and motivated in learning mathematics so as to improve their ability in mathematics, can choose and use other types of cooperative learning models that are in accordance with the subject matter being taught and teachers are expected to really know, understand and apply the scientific approach with the cooperative STAD setting.

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