IMPLEMENTATION OF COOPERATIVE LEARNING MODEL TEAMS GAMES TOURNAMENT (TGT) TYPE WITH STRUCTURE EXERCISE METHOD TO GAINIMPROVE MOTIVATION AND STUDENT'S LEARNING OUTCOME ON HYDROLYSIS MATTER AT SMAN 1 KEBOMAS-GRESIK

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Abstract

The aims of this study to describe the student's motivation, student's learning outcome, student activities, and student responses in implementation of cooperative learning model TGT type with structure exercise method on hydrolysis matter. The research method used pre experimental design, One Group Pre-Test Post-Test Design. The results showed: (1) Student motivation that measured using the ARCS questionnaire was increased from 61.61% to 79.22%. (2) Mastery of cognitive student learning outcomes was increased about 86.67% in classically and also increasing learning outcomes by Gain Score about 47% on high category of count problem solving, 50% on medium category, and 3% on low category; (3) The most dominant students activity was heard/attend teacher or friend explanation about 41.11%. (4) Student responses obtained was 82.44% this suggests the students respond positively to the cooperative learning TGT type with Structure Exercise Method that had been implemented.

Keywords: Teams Games Tournament (TGT) type, Structure Exercise Method (SEM), student's motivation.

Abstrak

Penelitian ini bertujuan untuk mendeskripsikan motivasi, hasil belajar, aktivitas dan respon siswa setelah penerapan model pembelajaran kooperatif tipe TGT dengan Latihan Berjenjang pada materi pokok Hidrolisis. Metode yang digunakan adalah Pra Eksperimen, One Group Pre-Test Post-Test Design. Hasil penelitian memperlihatkan: (1) Motivasi belajar siswa yang diukur menggunakan angket ARCS mengalami peningkatan dari 61.61% menjadi 79.22%; (2) Ketuntasan hasil belajar kognitif mengalami peningkatan yakni sebesar 86,67% tuntas secara klasikal, selain itu kenaikan hasil belajar melalui Gain Score diperoleh persentase siswa yang mendapatkan kenaikan hasil belajar dengan kategori tinggi dalam menyelesaikan soal-soal hitungan sebesar 47%, siswa dengan kategori sedang sebesar 50%, dan siswa dengan kategori redah sebesar 3%; (3) Aktivitas siswa yang paling dominan adalah mendengar/memperhatikan penjelasan guru/teman dengan aktif sebesar 41,11%; (4) Respon siswa yang didapat adalah 82,44% hal ini menunjukkan bahwa siswa merespon positif terhadap model pembelajaran kooperatif TGT dengan Latihan Berjenjang yang diterapkan.

Kata kunci: *model pembelajaran kooperatif tipe TGT, latihan berjenjang, motivasi belajar siswa.*

INTRODUCTION

Education is an important thing to determine the reciprocation of a nation. One of the principles in the implementation of education is that students are actively taking part in the educational activities conducting. In order to implement and to success the activity, firstly, it must be has the motivation to conduct these activities, because motivation will cause the change of energy in human it selves. This is encouraged because of the existence of a purpose, need or desire [1].

The group-learning activities can stimulate active learning. By groupping of students can discuss and teach her friends

so that students get an understanding and mastery the subject matter [1]. This happened because students feel more relaxed and happy when studying and discussing with their friends. If they already have a strong motivation and feel good, so that students can actively show the interest, response and participation in the learning or educational activities are implementing.

SMAN 1 Kebomas-Gresik as one of the excellent school that implement the KTSP curriculum system in the learning process. One of the science subjects at SMAN 1 Kebomas-Gresik is chemistry and the Thoroughness Minimum Standard (TMS) for applied chemistry lesson is 75. Chemistry as one of the science subject, which need to explain various phenomena of chemical processes that occur in daily life. Chemistry as a part of natural science is always relate to the way of knowing the nature systematically, so the chemistry is not only mastery the knowledge aslike facts, concepts, or principles, but also a process of discovery. One of the chemistry subject is hydrolysis matter. Hydrolysis matter involves concepts and calculations. These characteristics suggested that students should be given training that is able to correlate between the concepts of the calculations, especially in determining the pH and properties of the kinds of salt formation.

Based on the results of questionnaire to 30 students of SMAN 1 Kebomas-Gresik, 70% of students stated that the Hydrolysis matter was a difficult and confusing material. It was proven when given a exercise about the predicted salt pH, the data obtained 76.67% of students still could not distinguish among weak/strong acids and weak/strong bases. Students were antering the formula still confused between Ka or Kb, so it affected the pH of the salt. It could be concluded that the students' understanding in exercise and Hydrolysis matter that given was still less, it was also supported by the teacher questionnaire which stated that the hydrolysis was a difficult matter, and students tend to be passive in learning.

The current implementation of learning process should be changed, this is a challenge for the teacher to create a fun learning process and able to increase student activity during learning process and student responses after the learning process. The use of various learning models that stimulate interesting and response of students to be active in learning activities. One of the learning model that appropriate to these conditions is use cooperative learning model by various methods, one of cooperative learning type is *Teams Games Tournament* (TGT).

TGT is one of the cooperative learning model that classified the students in group consisting of 5 until 6 students who have different abilities or heterogeneous, and also in cooperative learning contained the cooperation between students in the group, responsibilities learning of individual and between groups competed in an educative games. So that, each member must be understood the material firstly before following games [2].

Teacher in learning process can also combine the TGT by using Structure Exercises Method to improve student understanding about the matter being studied. In this method the teacher explain the material that will be studied firstly then give exercises to students starting from lowest to highest difficulty levels [3]. Based on the cognitive level (C) of Bloom's Taxonomy which consist of Remember (C1), Understand (C2), Apply (C3), Analyze (C4), Evaluate (C5), and Creating (C6). This level will help solve the problems in the calculation of hydrolysis matter.

In even semester of chemistry subject contain Hydrolysis matter [4]. Hydrolysis matter could be applied by using cooperative learning model, especially TGT and combined with Structure Exercise Method because the characteristics of hydrolysis matter is a material that need a lot of concepts and calculations, so it need a reasoning and exercising, it is also very suitable when applied using Structure Exercise Method

where students woul be given exercises from lowest level or easiest problem (C1) to highest difficult problem (C4), while also to keep students motivation also be combined with TGT, which characteristic of this game similar with Structure Exercise Method, there is a heterogeneous groups that will be competing with homogeneous student (low to competed with the low about C1, medium with medium about C2-C3, and high with haigh about C4), so that the implementation of cooperative learning model TGT with Structure Exercise Method in hydrolysis matter is expected to motivate students and achieve mastery of students cognitive learning outcomes both individually and classically.

METHOD

The method of this research was a pre-experimental method. The subject of this research was the students of class XI-IPA 2 SMAN 1 Kebimas-Gresik in even semester of academic year 2013/2014.

The design of this study was the "One Group Pre-test Post-test Design", thus design was [5]:

Description:

O_1 = Pre-Test before implementation

X= Implementation of cooperative learning model TGT Type with Structure Exercise Method in Hydrolysis matter

O_2 = Post-test after implementation

The instrumens of this research used included carring out of learning process sheets, student motivation questionnaire sheet, test of student learning outcomes sheet, student activity observation sheet and student response questionnaire sheet.

In step of (1) analyzed the item test validity include content validity and sensitivity tests. (a) The content validity aimed to test the feasibility of a test item. The content validity of the content of the material would be conducted by experts to determine the suitability of test item quality with indicators, and the use of language or words in test. So the test that had been made feasible to be tested to the students. (b) Sensitivity matter is the

ability of a test to measure the learning effect. Sensitivity could be calculated using the following formula [6]:

$$S = \frac{Ra - Rb}{T}$$

Description:

Ra= The Total of student right answer in Post-Test

Rb = The Total of student right answer in Pre-Test

T = The Total of student that join test

The value start from 0-1.00. If the value 0 was not sensitive, but if 1 was very sensitive.

(2) Motivation questionnaire data analyzed by ARCS questionnaire with 25 questions assessment 1 = strongly disagree, 2 = disagree, 3 = doubtful, 4 = agree, 5 = strongly agree. To calculate the percentage of student motivation criteria as follow:

$$\% \text{ Criteria} = \frac{F}{n \times i \times r} \text{ x } 100\%$$

Description:

F = Total score

n = Higest score

i = Amount of question

r = Respondent

Percentage results interpreted as follow:

Table 1 Interpretation Criteria Value

Percentage	Criteria
0%-20%	Very Less
21%-40%	Less
41%-60%	Enough
61%-80%	Good
81%-100%	Very Good

(3) Analysis of the test data students cognitive learning outcomes obtained through the Post-Test at the end of the meeting the learning seen from the completeness of individual students who applied by SMAN 1 Kebomas that the TMS was 75. The classical completeness could be calculated from:

$$\text{Classically} = \frac{\sum student\ comlite}{\sum student} \text{x} 100\%$$

Classical completeness achieved $\geq$ 85% of students complete learned.

Student learning outcomes data then analyzed by using Gain Score with the formula:

$$g = \frac{Score\ in\ post - Score\ in\ pre}{100 - Score\ in\ pre}$$

Percentage results were then interpreted as follow [7]:

Table 2 Interpretation of Value

Value	Category
g>0.7	Hingh
0.7>g>0.3	Medium
G<0.3	Low

(4) Analysis of observational data used student activity following formula:

$$\%Activity = \frac{Activity\ that\ appears}{\sum Aktivitas} \times 100\%$$

(5) Analysis of student responses used the following formula:

$$\%Respondent = \frac{\sum Student\ Answer}{\sum Student} \times 100\%$$

In the student questionnaire responses, choice answer to the question as follow:

$$Yes = 1 \qquad No = 0$$

If the students answere positively more than 60% it was considered all students agree or had a positive response to these questions and cooperative learning model TGT with Exercise Method in Hydrolysis matter could motivate student.

RESULT AND DISCUSSION

1. Validity of Items (Test)

Learning tools and research instruments were reviewed by Chemistry Teacher and Chemistry Lecturer. The data from this validation was content validity, content validity where the aimed to test the feasibility of a test question. The content validity was done by an expert (the examiner) to determine the quality suitability of test questions with indicators, as well as the use of language or words in question. So the questions that had been made feasible to be tested to the students. The

questions were stated less valid then revised and tested to the students to determine the validity of each questions. The results of the validation items (tests) could be seen in Table 3.

Table 3 Validity Results

Validated Components	Score	Criteria
Learning Tool	3.9	Good
Research Instruments	4.1	Good

Based on Table 3 we could concluded that learning tools and research instruments get better and had feasible categories used in the study.

Sensitivity to cognitive achievement test items performed with 20 multiple-choice items were obtained that there were 5 items that were less able to measure the learning effect because it had a sensitivity of less than 0.30 ie items 2, 4, 7, 19, and 20, because in this study the item did not reach the indicator of TMS ($\geq$75%).

2. Students' Motivation

Students' motivation before and after implementation of cooperative learning model TGT with Structure Exercise Method on Hydrolysis matter were presented in Table 4 as follow:

Table 4 Student Motivation Resulits

Indicator	Before	After
Attention	58.75%	78.33%
Relevance	64.06%	78.89%
Confidence	62.86%	79.81%
Satisfication	60.78%	79.00%
Average	61.61%	79.01%

Based on Table 4, could be obtained by average value of the overall motivation before treatment was 61.61% (Good) increased to 79.01% with the Good category, it showed learning that implement cooperative learning model TGT with Structure Exercise Method was positive influence on activity, response and student learning outcomes. It was also supported by the statement in the Winaya journal stated that the ARCS motivational strategies could be

improve the atudent's motivation, student's learning outcomes and student activities, student responses in the learning process [8], so the existence of this implementation could be motivated to solve the problems count especially in hydrolysis matter well.

In Attention indicator refers to the interest and curiosity of students towards learning process. One way the teacher did to attract student interest at the first meeting was use the technique involves asking the students such as reminding students back on the definition of acid/base, how is the changing color if test by litmus paper, give small games about which substances are Acids/Bases Strong/Weak and predicted properties of the salts. At the second meeting by using discussion groups in problem solving that exist in student worksheet as wrote Hydrolysis reaction of Salts from strong acid and weak base in water.

Indicator of Relevance or connected learning process with students' needs. One way the teacher did to improve the relevance of the teacher in first meeting by giving an overview of how we study the benefits of hydrolysis salt for example by present of salts in everyday life, where by the real-life images, students could be examined and predict the properties of salt from the acid-base constituent indicated on the label of a particular product. At the second meeting by explaining the process of dissolving soap, so students would know why the water is salty or hard water produced very little foam and also linkages with the whether or not clean when washing clothes.

The Confidence indicator involves the feelings of students and the confidence to be successful both in game and test. This is evidenced in the learning process of TGT type with structure exercise method, student was enthusiastic solve the problems in the tournament, because the students have learned the heterogeneous group and

teacher guide at given the student worksheet of Structure Exercise Method from easy questions level (C1) to difficulty level (C4) either on meetings I or II.

The way teacher in eliciting aspects of student Satisfaction by providing a reward in "Super Team" category for groups with average superior first category "Very Good Team" with average superior to the second.

3. Student's Cognitive Learning Outcomes

Results of classical completeness student in Pre-Test and Post-Test could be described in Figure 1.
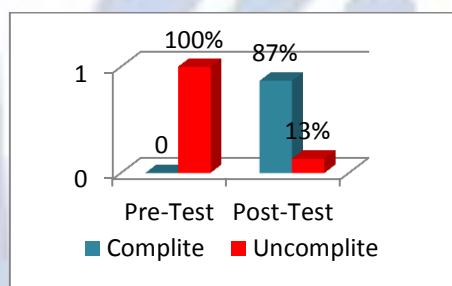

Figure 1 Complete results of the Pre-Classical Test and Post-Test

Learning outcomes data Pre-Test and Post-Test then analyzed by using the Gain Score. The 14 students gain value g>0.7 so that it could be said that the improvement of higher learning results in solving problems count, 15 students received grades calculation of 0.7>g>0.3 with medium category solve the problems count and 1 count of students gain value g <0.30 by category solve the problems of low counts.

Increasing learning outcomes could be caused due to learning using TGT and Structure Exercise Method. Structure Exercise Method was one method of learning method that could be used by the teacher to help students overcome the difficulties in solving chemical problems, especially problems of count. Giving exercise conducted after students gain concept material to be drilled. At first the students practice guided by the teacher by providing easy

questions and after that students could be worked on these problems, the exercise continued with the questions more difficult [3]. Giving Structure Exercise Method done through stages of cognitive domain from Bloom's Taxonomy were Remember (C1), Understand (C2), Apply (C3), and Analyze (C4).

The increasing of learning outcomes was also caused of learning that applied by researches due to the preliminary phase of cooperative learning model TGT (Tournament Game Times) was very interesting so that students were motivated to learn. If the students' motivation was strong, so the student would learn optimally and would got the optimum value of student's learning outcomes [9].

4. Student Activities

Student activities during the TGT cooperative learning model with Structure Exercise Method in hydrolysis matter to code A was more dominant for about 41.11% thus were listening/observing explanations teacher/friend activelly, this code is dominant because was due to the activity of a code spread in every minute of the learning process, followed by B code for about 17.23% thus were worked together doing students' worksheet, E code for about 14.44% thus were carrying out the responsibilities in the implementation of the tournament (read about. Counting time, counting score), D code for about 12.78% thus were discuss/ask between others, C code for about 10.00% and the smallest was F code for about 4.44 % thus were behaviors that did not relevant with learning process (such as: a walk in others group, reading others book/others subject homework, playing games with friends, daydreams, etc.).

In learning process of TGT type with structure exercise method is still obtained irrelevant behaviour, this is due to a lack of motivation in students themselves in following a lesson. But

nevertheless the overall activity for the students in this case indicates that the student actively participates in ongoing learning process.

5. Student Responses

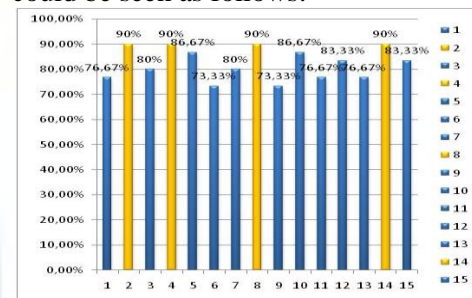Percentage of student responses could be seen as follows:

Figure 2 Complete results of the Pre-Classical Test and Post-Test

Based on Figure 2, there were 4 student responses most positively with the percentage of 90% on question number 2, 4, 8, and 14 that through the implementation of cooperative learning model TGT with Structure Exercise Method could facilitate, understand, and had no difficulty in understanding the material, especially count matter, as well as students want learning activities that had been conducted be applied to other learning materials.

The challenges faced in learning materials would made students excited to resolve it. The new teaching materials and contain problems that need to be solved to make the students were challenged to learn [10].

The overall results of student questionnaire responses in the application of cooperative learning model TGT with Structure Exercise Method on Hydrolysis was 82.44% positive response. Students 'response to learning model TGT with Structure Exercise Method with 15 aspects of students' responses showed that given the average percentage was high ($\geq 60\%$). This means, the students excited and interested in learning through the implementation of cooperative learning model TGT with Structure Exercise Method applied by the teacher. Thus the expected learning

outcomes would be increase. Highest students' motivation and student's learning outcomes also increased thus affecting highest student activity and student response too.

CLOSING

Conclusion

Based on the results of research and discussion could be summarized as follows:

1. Students' motivation after implementation of TGT cooperative learning with Structure Exercise Method in Hydrolysis in SMAN 1 Kebomas-Gresik was increased from 61.61% to 79.22%.

2. Mastery of cognitive student learning outcomes was increased for about 86.67% classically and also increasing learning outcomes was analyzed by Gain Score obtained the percentage of students who gain in the high category of learning outcomes in problem solving of count for about 47%, increase in the category of students with medium learning outcomes for about 50%, and the category of students with low learning outcomes increase for about 3%

3. Activities of students during learning activities with TGT cooperative learning with Structure Exercise Method in Hydrolysis showed that the most dominant hearing/observing teacher/friend explanation activelly for about 41.11%.

4. Student responses after the implementation of TGT cooperative learning with Structure Exercise Method in Hydrolysis in SMAN 1 Kebomas-Gresik is positive about 82.44%.

Suggestion

Based on the results of the above discussion and conclusions could be some suggest as follow:

1. It should be held to a similar follow-up study showed that improvements in TGT cooperative learning with Structure Exercise Method.

2. When tournament, there was a problem that some students do not work according to their duties. Therefore, the reader should be regulations about the task, players, and challengers confirmed and clarified so that no neglect of each duty and also need equipment or a chest board identification during the match at the tournament table. And also needs a better time management to reach the great lerning process.

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