Application of think talk write model (TTW) to improve communication ability of grade XII students on biology learning

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Abstract. This research entitled "Application of Think Talk Write Model (TTW) to Improve Communication Ability of Grade XII Students on Biology Learning". This research is a classroom action research that aims to know the level of student communication in oral and written by applying Think Talk Write (TTW) learning model on Growth and Developmental materials in Cycle I and Enzyme (Metabolism) materials in Cycle II. The data of students' oral communication ability is obtained from the observation sheet to observe the achievement of the students' communication ability indicator orally on the learning activity. While the data for students' communication skills in writing obtained by using the test in the form of a description of 10 numbers. Ability to communicate students orally in the first cycle of 53.80%, while in the second cycle increased to 73.02%. While the results of the ability to communicate in writing showed the results of 71.55% in cycle I and increased to 83.97% in cycle II. Based on the results obtained, it can be concluded that the application of Think Talk Learning (TTW) model can improve communication ability of grade XII students in Biology learning.

1. Introduction

The learning process should apply learning model that is able to make the learning atmosphere interesting for students so that students are actively involved during the learning process. Active learning is characterized by student communication. Based on the observation of the author at the time of observation in SMA 20 Bandung is known that the teacher has implemented a complex learning process using discussion methods, but the learning process does not work as expected. Students become noisy, playful, less active, and difficult to master the concept of biology; do not dare to issue ideas or opinions, and many of the students at the time of learning biology less attention to learning. This happens because several factors such as student activity during the learning process are just taking notes and listening to the teacher's explanation, so the students feel bored, bored and prefer to do what they consider to be fun as talking with friends, drawing even someone busy playing Hand Phone (HP). This condition causes the students 'communication ability to be low so that the effort needed to improve students' communication ability in biology learning can be done by choosing the learning model which is aimed to create pleasant learning situation and condition so that the students understand the material being studied.
Students should be involved to find concepts, so that they can easily understand the material and can solve the problems given during the lesson. One of them is by using Think Talk Write model. The TTW (Think Talk Write) cooperative learning introduced by [1] is essentially built through thinking, speaking, and writing. Think Talk Write is strategies that facilitate verbal language training and language writing it smoothly. The role and task of teachers in the business making effective use of Think Talk Write strategy is filed and providing tasks that enable students to actively engage in thinking, encourage and listen carefully to the ideas presented by students verbally and in writing, consider and inform what which students explore in discussions, as well as monitor, assess, and encourage students to participate actively [2] and can improve students’ communication ability. Learning TTW Model, can improve student communication and solve mathematics problems of students in learning Mathematics [3].

Based on the explanation of the researcher that has been described, the writer is interested to carry out a research related to Think Talk Write (TTW) model in biology learning by appointing it in the title of research of Application of Think Talk Write Model (TTW) to Improve Communication Ability of High School Class XII Students on Biology Learning. The purpose of this research is to describe the communication ability of high school class XII students orally and communicate in writing on biology learning through application of Think Talk Write (TTW) model.

Ability to communicate verbally in the form of verbal submission of ideas or verbs to others, re-express the results of the conversation, influence the other person in a positive way, giving the presentation in accordance with the plan to the audience [4]. For the ability to communicate orally, the ability to listen with empathy will make people able to understand the contents of other people's speech, while the other person feels paid attention and appreciated. The ability to express an opinion with empathy will make people able to express the idea clearly and with polite words so that the message reaches the other person feels appreciated. The ability to communicate verbally can be observed in discussion activities. There are several criteria of personal communication skills that can be assessed / observed during discussions. Broadly categorize these aspects in the criteria of a good contribution / productive and counter production [5].

The ability to communicate in writing is part of the science process skills (SPS), where communication is done through pictures, graphs, tables and charts. Indicators of written communication ability according to [6] of which are [7] Explain the main idea of reading; [1] Finding the main idea of reading; [8] Distinguish and analyze media messages; [9] Describe a problem with reasonable and adequate; [10] Convey ideas / ideas through writing; [11] Interpreting the meaning of symbols; [12] Create and read tables; [3] Create and read charts; [13] Create and read numbers. Media communicates in writing commonly used in natural sciences especially biology some of which are as follows [11].

2. Experimental Method
The type of research used is Classroom Action Research (CAR) which is done collaboratively and participative. Collaborative means researchers in doing research in cooperation with biology teacher grade XII SMA. Participatory means researchers are assisted by some friends who are directly involved in research activities.

This research has been conducted in Class XII SMA Negeri 20 Bandung odd semester of academic year 2017/2018 in September - October 2017 covering three stages for each cycle that is: preparation phase, stage of implementation and reflection. In the preparation stage, the learning tools are made: Lesson Plan (LP), Student Worksheet, assessment and evaluation tools, and selection of learning methods and media to be used during the lesson. The selected biological material is Growth and Development of plants in cycle I and Catalase Enzyme material in cycle II. The selection of material is adapted to the ongoing learning in the odd semester of the 2017/2018 academic year in class XII. Growth and development of plants, enzymes (factors affecting the work of enzymes) make it possible to explore students’ oral and written communication skills as they are conducted using practicum and discussion methods. This study is a classroom action research (CAR), which attempts to examine in depth some aspects of teaching and learning activities, namely student participation, teacher and student interaction, and interaction among students to answer research problems. The study is divided into two cycles that
correspond to the chosen time allocation, each cycle consisting of four steps: Planning, Action, Observation and Reflection. This classroom action research is designed based on Kemmis and Taggart research methods [14].

Activities undertaken at the planning stage are preparing the learning implementation plan, student worksheet, observation sheet instrument for the ability to communicate verbally and the assessment instrument of students' written communication skills. Activities at the start of the stage begin by providing an explanation of the Think Talk Write (TTW) type of learning model, students reading the text and making individual notes about what is known and unknown in the matter to be brought to the discussion forum. When students make small notes this will occurred to the process of thinking (Think) on students. After that students try to solve the problem individually. This activity aims to enable students to distinguish or integrate ideas contained in the reading to then be translated into their own language, interact and collaborate with friends of a group to discuss the contents of the record from the record (Talk). In this activity they use their own language and words to convey ideas in the discussion. Understanding is built through interaction in discussion. Discussion is expected to produce solutions to the questions given, based on the results of the discussion of students of the discussion, the students individually formulate knowledge in the form of answers to the problem (contains the basis and relevance of concepts, methods, and solutions) in the form of writing (Write) in his own language. In that paper the learner connects the ideas that he obtained through the discussion. The activity in the reflection phase is done after analyzing the observation result about the effectiveness of Think Talk Write (TTW) learning model on the communication ability of the students. The results obtained and problems that arise in the implementation of the action in cycle I are used as the basis for improvement in cycle II.

3. Result and discussion

In accordance with the purpose of this study is trained to communicate the ability of students, then the learning steps in the lesson plans directed using Think Talk Write (TTW) model that can explore the ability of students to communicate either orally or in writing. In the learning process students observed the ability to communicate based on the observation sheet for oral communication and the test description for written communication. In the student worksheet, students' communication skills are extracted through questions by utilizing information on observations, because one characteristic of the problem of communication ability is not burdened with the concept.

3.1. Ability to communicate students verbally

The ability to communicate verbally is cultivated through discussion activities that discuss the results of lab work titled "the influence of temperature on the growth of soybean seeds on learning cycle I and factors - factors that affect the enzyme catalase on learning cycle II". The completed observation sheet is then reflected so that there is consideration for improvement in cycle II.

Based on the observations, after learning by applying the Think Talk Write (TTW) model the percentage of students' verbal communication capabilities encompassed by observation sheets by observer teachers on learning activities during cycle I and cycle II are presented in Table 1.

| No | Indicator                                                        | Percentage (%) of cycle I | Percentage (%) of cycle II |
|----|-----------------------------------------------------------------|---------------------------|----------------------------|
| 1  | The opinions expressed are clear and systematic                | 32.50                     | 57.92                      |
| 2  | Opinions delivered in accordance with the topic of the problem | 63.33                     | 80.42                      |
| 3  | Appreciate the opinions of other students                      | 62.30                     | 76.67                      |
| 4  | Ask for an explanation of questions to attract students involved in the discussion | 71.25                     | 84.17                      |
| 5  | Make quick and clear notes                                    | 77.50                     | 85.83                      |
| 6  | Listen well when other students argue                          | 34.58                     | 63.75                      |
| 7  | Pay attention to the course of discussion                      | 59.79                     | 79.17                      |
| 8  | Draw a conclusion                                              | 29.17                     | 56.25                      |
Table 1 shows the highest average percentage of occurrences communicating orally to students in cycle I of 77.50% in the 5th indicator, is making short and clear notes that fall into either category. While the lowest percentage of 29.17% on the 8th indicator, namely drawing conclusions that included the category less once. In cycle II obtained the highest average percentage of 85.83% on the same indicator as the first cycle is making a brief and clear note and included in the category very well. While the lowest average percentage of 56.25% in the same indicator with cycle I, that is drawing conclusions and indicators are included in the category less.

**Table 1.** Percentage of average occurrences of ability to communicate orally to students on two cycles.

| Cycle   | Average percentage of occurrences (%) | Category | Average percentage of occurrences (%) | Category |
|---------|----------------------------------------|----------|----------------------------------------|----------|
| Cycle 1 | 53.80                                  | Very less| 73.02                                  | Enough   |

Table 2 shows that the percentage of the emergence of the ability to communicate orally in the second cycle is higher than the first cycle is 70.02% which belongs to the category of sufficient and the percentage of occurrence of ability to communicate orally the students in the first cycle is 53.80%. The same opinion was submitted based on the results of research by [15] that the implementation of Think-Talk-Write (TTW) in teaching writing makes the students' writing skill increased.

The teaching and learning process is at the core of the overall educational process with the teacher as the primary role holder [16]. During the process of teaching and learning in the classroom, interaction and communication not only take place between students and teachers but also in contact between students who did the same with other students. In this case, not only teachers who teach something but can also fellow students so that students are not just "watered" with new understandings, knowledge, attitudes and behavior but through communication with the students can develop and create their own new things it [4]

Based on the research finding showed that the implementation of cooperative learning strategy of TTW type was more effective in improving communication ability and teaching by using Think-Talk-Write strategy can effective to students’ skill especially in writing descriptive text. This strategy can encourage their learning process [17]

3.2. Ability to communicate students in writing

Based on the results of tests that have been implemented in the first cycle then obtained the percentage of the ability to communicate in writing students are presented in Table 3.

**Table 3.** Percentage of students’ communication skills in writing in cycle I and cycle II.

| No | Indicator                          | Percentage (%) of cycle I | Percentage (%) of cycle II |
|----|------------------------------------|---------------------------|-----------------------------|
| 1  | Ability to communicate through the chart | 50.00                     | 76.88                       |
| 2  | Ability to communicate through pictures | 72.00                     | 83.50                       |
| 3  | Ability to communicate through graphs | 81.83                     | 89.67                       |
| 4  | Ability to communicate through tables | 82.36                     | 85.83                       |

The ability of students in reading the chart has increased in cycle II. The percentage of reading ability chart in cycle I of 50.00% included in the category less once. The chart reading during cycle I is generally less clear. The chart reads as briefly as possible with a lot of non-essential complementary data, so the charts are not clear in accordance with the concept. After the second cycle, students' communication skills rose to 76.88%, falling into either category. In the second cycle results, students' communication skills in reading the chart more focused and neat, words that are used briefly and clearly. As explained by [8] that in the observed chart reading should contain a brief and clear information in accordance with the chart presented.

Ability to communicate the students through the picture included into the category enough (72.00%) in cycle I and after doing cycle II has increased to good category (83, 50%). In the first cycle that has been done, the communication skills of students in reading the picture is less directional and students
only make answers that are not clear and not sequentially. The ability of communication through image is increased in cycle II (table 3), it is because at worksheet there is picture shown, so that students only mention the picture contained in worksheet. The communication ability of the students in understanding the images depends a lot from the existing experience so that to understand the image requires a conceptual understanding. According to [12] the usefulness of images in learning is that images can explain unexplained insights with the words "one picture is worth a thousand words" meaning one image is worth a thousand words, enriching the reading content, arousing interest for something new to learn, correct wrong notions.

Ability to communicate students in making the graph in cycle I included into good category (81,83%) and after done cycle II become very good category (89,67%). Based on data processing there is no significant difference of communication ability in both cycles that is suspected due to lack of communication practice on worksheet, it should be problem to make the graph must be more than 2 problem. Communication is not merely express or receive mind, but in communication also required ability to choose what is necessary and unnecessary [7].

Ability to communicate students through the table on the first cycle included in both categories (82.36%) and after the cycle II increased to very good category (85.83%). In the communication ability of students through the table there are 2 items, 1 problem is required to conclude the average of observation results of growth and growth on the growth of green beans from day 1 to day 7 in reading table and 1 question is required to create table from the description or discourse on the matter. The ability of students in the aspects of reading the table is influenced by the structure of logic of thinking it has stated by [10] ability of students in making tables can know that a table must consist of a number of horizontal and straight lines intersecting each other forming columns.

| Table 4. The average percentage of the ability to communicate on two cycles. |
|---------------------------------|---------------------------------|
| Cycle I                         | Cycle II                        |
| Percentage average ability (%)  | Category                        |
| 71,55                           | Enough                          |
| 83,97                           | Good                            |

Based on table 4 the average percentage of students’ written communication ability in writing in overall cycle II is higher than that of cycle I is 83.97% belonging to good category, while the percentage of cycle I is 71.55% and included in enough category.

4. Conclusion
Learning by Think Talk Write model can improve the communication ability of high school XII students on Biology learning. Based on the result of the research, it is known that the students' communication ability has improved on all indicators of the ability to communicate orally, with the percentage obtained 53.80% in the first cycle turns into 73.02% in second cycle, along with the ability to communicate in writing, which increased from 71.55% in the first cycle to 83.97% in the second cycle. The implementation of the Think Talk Write (TTW) learning model runs well even though improvement must be made based on the results of reflection in cycle I, so in cycle II the teacher should further improve the control equally in every aspect of all groups.

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