Biological Learning Using The Inquiry-Based Scientific Approach to Move Quality and Learning Motivation Concept of Plant Classification System in Class X Student of State 7 Ambon High School

Pamella Mercy Papilaya¹, and Lousiana Magdalena Matruty ²

Abstract. Biology learning is a subject that is considered important in shaping students to be qualified. There are allegations of the low quality and low motivation of students, because: 1) There is no experience of students in learning to find and find their own concepts or material to be taught; 2) Students are not directly involved in assessment; 3) Teachers are less creative; 4) Saturation occurs with students. This study aims to improve the quality of learning and student motivation in mastering the concept of Plant Classification System in class X of SMA Negeri 7 Ambon. This study used a Classroom Action Research Design completed in three cycles. The results achieved illustrate that the better the learning managed by the teacher in the classroom, the better the quality of learning. Structured assignments, interesting material delivery, harmonious attitudes between teachers and students, between students themselves, and support by teachers increases student learning motivation. The teacher's attitude in dividing attention, concentrating group attention, reprimanding students, and providing reinforcement increases student learning motivation. The processing of classes, including: setting up learning facilities, arrangement of seating, lighting, and aeration space, is a supporting factor for the learning process and a conducive learning climate.

1. Introduction

Entering the 21st century, technological advances have entered various joints of life, including in the field of education. Teachers and students, lecturers and students, educators and students are required to have the ability to teach in the 21st century. A number of challenges and opportunities must be faced by students and teachers in order to survive in the age of knowledge in this information age. Learning in the 21st century has a difference with learning in the past. In the past, learning was carried out without regard to standards, while now requires standards as a reference for achieving learning goals. Through established standards, the teacher has definite guidelines about what is taught and what is to be achieved. The progress of information and communication...
technology has changed the human lifestyle, both in work, socializing, playing and learning [1].

Adriani, explains learning, students, instructors of school facilities / infrastructure, and learning processes are components related to school in order to improve the quality of learning. It is also explained that the teacher as a learner tries to create conditions that are expected to be effective if known factors that can support the creation of favorable conditions in the learning process, recognize predicted problems and usually arise and can damage the learning climate, and master various approaches to managing the class and can use it at the right time and problem. In the world of education, learning skills to be able to read class situations are very important. Favorable conditions in the classroom are the main prerequisites for an effective learning process to occur [2].

Biology is one lesson that is considered difficult to understand by students. Therefore in the learning process Biology Learning requires a varied method, meaning that in the use of methods, the teaching model does not have to be the same for all subjects, because it can occur that a particular learning method is suitable for one subject but is not suitable for other subjects. This will have an impact on the acquisition of student test results that are classified as less or low. Seeing this, it is necessary to implement a learning system that involves the role of students actively in each teaching and learning activity so that the formation of knowledge obtained by students can be arranged well where the teacher only acts as a facilitator (Toharudin, 2012).

The Scientific Approach is an approach that adopts scientific steps in building knowledge through the scientific method. The Scientific approach enables the cultivation of scientific thinking skills, the development of "sense of inquiry" and critical thinking skills according to Alfred De Vito [3]. This is in line with the opinion of the Minister of Education and Culture (2013) who said that the Scientific Approach is a learning process that is designed so students actively construct concepts, laws, or principles found through phases such as identifying or finding problems, formulating hypotheses, collect data with various techniques, analyze data, draw conclusions and communicate concepts, laws or principles found. Social interactions can occur between teachers and students or students with peers. The Scientific approach in the learning process gives students the opportunity to communicate the concepts that have been found. This activity can be done by writing or telling what is found in the activity of seeking information, associating and concluding the results of the experiment. The results are presented in class to be further assessed by the teacher as a group learning outcome.

Guided inquiry can help students to improve and improve cognitive skills and processes [4]. The effort of discovery is key in this process, a person depends on how he learns. Knowledge gained through this method is very personal and effective because it strengthens understanding, memory and transfer. Causing a sense of pleasure in students, because the growing sense of investigating and succeeding. This learning model allows students to develop quickly and according to their own pace.
Causing students to direct their own learning activities by involving their own reasoning and motivation [5].

There are allegations of several factors causing low student learning outcomes, including the lack of student involvement during the learning process and the low understanding of students on biology subjects. This happens when explaining material that students pay less attention to and difficult to understand the material being taught. To overcome students’ lack of enthusiasm and social skills, a teaching model and the right approach are needed to optimize the learning process. 1) There is no experience of students in learning, in this case the teacher does not give an opportunity for students to find and find their own concepts or material to be taught so that there is no learning experience: 2) Students are not directly involved in the assessment. the teacher only directly gives a score based on the results of the test and students can only accept it, this is very detrimental to students because the teacher does not emphasize the teaching-learning process so that students are capable but learning outcomes / grades are poor: 3) Teachers are less creative. This concerns the skills of teaching teachers both through methods and so on. sometimes the learning process does not match the material characteristics. Finally students become bored and don't master the material well.

The concept of Living Class Classification, is one of the concepts in Biology learning which is quite difficult for students to understand. Learning this concept in the class tends to use the traditional approach in the form of lectures and experiments, quite successful indeed, but there is one thing that is forgotten where students in the learning process are more likely to be good listeners and the teacher is the only informant. In other words, all information obtained by students comes from the teacher, so the reasoning for thinking students is less developed, students are less directed to find and find information themselves. Besides that the factor of saturation in students is also the cause of the low motivation of students to understand discovering principles about biodiversity.

The expected learning model is a learning model that involves students more or prioritizes student activities so that social skills occur in learning activities. With the increase in student activity, it is expected that social skills and achievement of competency and completeness of student learning also increase. moreover, it is added with the application of a new curriculum, namely the 2013 Curriculum that demands Akif Students in Learning. Development of science learning with the use of a new curriculum, namely the 2013 curriculum where this curriculum is used by several schools. In the 2013 curriculum where the activity is changing the Student's mainset. The existence of harmonious behavior in learning situations between educators and students accompanied by awareness and directed freedom can motivate students to be actively involved both physically and mentally through developing their learning experiences to the fullest. Based on the problems and statements above, the researcher will conduct research under the title Biology Learning Using a Guided Inquiry-based
Scientific Approach to Improve Learning Quality and Mastery of the Concept of Plant Classification Systems in Class X Students of SMAN 7 Ambon.

This study aims to 1) Knowing the increase in mastery of biology learning using a guided inquiry-based scientific approach to the concept of plant classification systems in class X SMAN 7 Ambon: 2) Knowing the quality improvement of student learning in biology learning using a guided inquiry-based scientific approach to the concept of plant classification systems in Class X of SMAN 7 Ambon.

2. Methods
2.1. Research design

This research was conducted in 7 Ambon State High School in class X1. This research was conducted from the beginning of September - the end of October 2018 in the 7th Senior High School of Ambon. This research was conducted in odd semester 2018/2019. The activities carried out at the planning stage are as follows: (a) Together with two partner teachers analyze the basic competencies and indicators, as well as the material to be taught in the period from July to September 2018. (b) Together with the teacher the teacher prepares existing laboratory materials and tools and designing equipment needed for demonstration or practicum activities. (c) Together with the partner teacher to design a scenario for teaching guided inquiry-based scientific approaches. (d) Arrange rubric assessment of discussion activities and question and answer to measure the quality of class interactions. (e) Develop academic and realistic questions to be used in problem solving exercises and in formative tests to measure learning outcomes in cognitive aspects. (f) Develop assessment rubrics for the performance of laboratory activities to measure learning outcomes in psychomotor aspects. (g) Developing rubrics to measure students' attitudes towards biology. (h) Train teachers to implement a guided inquiry-based scientific approach.

The action is carried out by the lecturer and teacher in a team work. At each learning session the stages carried out include introduction, core activities, and closing activities. After three meetings a tutorial was held to train students to implement strategies for problem solving systematically. Tutorial / Responsiveness is carried out after three meetings. In the tutorial / responsiveness activities students are guided to systematically solve academic and realistic problems. The provision of these two types of problems is intended to provide an understanding that concepts are learned not only for academic purposes but also for overcoming everyday problems. At this stage students are guided to be able to visualize problems, state in biodiversity descriptions, plan solutions, resolve solutions, and evaluate answers.

Observations were made on the suitability of the learning scenario and its implementation, teaching problem solving, attention and sincerity of students in learning. Observations were carried out together with the implementation of actions, and carried out by two members of the research team. The aspects evaluated in this study are student interaction in learning which includes discussion and asking questions; student learning outcomes in the form of cognitive, psychomotor (skills), and affective aspects. Cognitive aspects include mastery of concepts and principles
and problem solving solutions. Psychomotor aspects in the form of physical skills in conducting experiments / observations. While the affective aspect is the attitude of students towards biology and biology division.

This action research is carried out in class X1 from September I to the end of October 2018. In this interval the subject matter will be taught to achieve two competency standards with eight basic competencies. The basic competencies are (1) studying the scope of biology, its benefits and dangers, (2) formulating the concept of biodiversity through observing the surrounding environment, (3) communicating insights about Indonesia's biodiversity, (4) classifying biodiversity, and (5 ) describes the characteristics of Kingdom Monera and communicates its role in life. In SMA Negeri 7 Ambon biology subjects are provided one time face to face with 3 hours of study time in one week. Based on this calculation, it is estimated that from September to October 2018 there are 9 meetings. It is believed that the indicators of success formulated in this study are difficult to achieve in two cycles, and to strengthen the results of the action, the study is planned to take place in 3 cycles. This study uses an Action Research Design using a procedure developed by Kemmis & Taggart with a cyclical design that will be stopped if the five aspects of learning quality (teacher performance, learning facilities, climate, student learning attitudes and motivation) and learning outcomes completeness students as supporting data have reached a fixed target of 75% [6,7].

Research procedures include 4 stages, namely: planning (planning), and action (action), observation (observation), and reflection (reflection). This study involved 2 biology teachers as friends in the kelopok subject teacher (MGMP) who would assist researchers in peer assessment and other assessments.

2.2. Research Variables

The variables in this study consisted of:
1. The Scientific-based Inkuiry guided approach
2. Improving the quality of learning which includes several aspects according to Mulyasa, (2006) which consists of:
   1) Climate Improvement Observation Data Learning with indicators includes:
      (a) Student compactness
      (b) Student involvement
      (c) Student satisfaction
      (d) Teacher support
   2) Data on Students’ Scientific Attitudes in Learning with indicators include:
      (a) honest
      (b) thorough
      (c) responsibility
      (d) discipline
      (e) curiosity
   3). Data Utilization Facilities Learning with indicators include:
(a) IT-based media (Laptop, LCD)
(b) Media / teaching aids
(c) Science Laboratory

3. Motivating Students in Learning with indicators include:
(a) Sensitive to improving performance
(b) Activities to achieve achievement
(c) Carefully determine achievement targets
(d) Efforts to overcome obstacles
(e) Find ways to solve problems
(f) Like a challenge
(g) Perfection completion of tasks
(h) Have a good discussion
(i) Confident in completing assignments

2.3. Data Analysis Techniques
The data analysis used in this study refers to Santiningtyas et al., mentioned quantitative data in the form of pretest and posttest of learning outcomes were analyzed through two stages, namely [8]:
Analysis of data about improving Learning Quality in the form of presentations covering 5 aspects according to Mulyasa, namely [7]:
a. Data on Learning Climate Improvement Observations. Four of them are:
b. Student Attitude Data in Learning
c. Student Motivation Data in Learning
d. Data on the Use of Learning Facilities

3. Results and Discussion
Description of Research Results

Data on the application of a guided inquiry-based Saintifick approach to the improvement of 5 aspects of learning quality in the Pre-Cycle, Cycle I, II, III are presented in Table 4.2. Judging from the quality of learning aspects of teacher performance, it appears that teacher performance includes 8 teaching skills in accordance with the 2013 curriculum (opening / closing lessons, teacher attitudes, mastery of material, teaching and learning activities, media use, evaluation, and follow-up, gradually experiencing rejuvenation). This happens because it relates to the characteristics of the research Class action as a collaborative research that is between the lecturer and the teacher especially at the stage of the planning plan (collaboration). There is collaboration between the teacher and peers.

Activities and observation activities carried out on student students in learning can motivate students' curiosity, thereby increasing learning achievement. Students with high curiosity try to find something that has not been understood, otherwise students with low curiosity rarely get the urge to think. High and low curiosity has a
significant effect on learning achievement. Based on the results of observations on the Pre-cycle found several conditions that occur in the class for students and teachers, namely the existence of individual differences in students that are quite clearly visible. These differences include.

Initial ability

- Intellectual level
- Talent, interest and potential
- Motivation to learn
- Socio-economic ability
- Learning styles
- Individual needs
- Learning speed
- Cultural background
- Norms / values
- And the environment of students

Paying attention to differences in the kind of students, teachers need to carry out various activities that can be done through self-evaluation (portfolio) in each learning activity, conducting research, and conducting lesson study. Besides that the teacher needs to plan and choose the right learning model with the availability of the time and condition of the students. Then rather than that to improve student learning outcomes it can be done by increasing the motivation to teach the teacher. In the meantime, according to Lubienski, and Theule almost all children's activities in learning can be stated positively, however, because students are very creative sometimes the teacher is overwhelmed to give responses [9].

In addition, in learning teachers need to develop a balance between developing spiritual and social attitudes, curiosity, creativity, collaboration with intellectual and psychomotor abilities in building a conducive learning climate, so that the learning situation becomes more flexible and enjoyable. Teachers need to pay attention to the activities and observation activities carried out by students in learning, can motivate students' curiosity, thereby increasing learning achievement. Students with high curiosity try to find something that has not been understood, otherwise students with low curiosity rarely get the urge to think. High and low curiosity has a significant effect on learning achievement.

A student who has high independence will be more mature and more responsible in making decisions that appear in his group, thus contributing to improving student achievement. Conversely Students who have low independence will be apathetic in their groups. Therefore, teachers need to pay attention to the independence of student learning because it will have a significant effect on student achievement.

**Reflection of Learning Activities**

Reflections on learning activities are carried out by observing each student activity indicator. In the learning process there are still indicators of activities that are
not achieved and are less effective. Some reflections on student activities and design improvements are as follows.

1). There are still many students who do not pay attention to the material given. Improvements that are made by motivating students to really pay attention to the subject matter and provide its own value on student notes.

2). There are still many students who are reluctant to ask because of the lack of confidence that students have. Improvements are made by giving motivation to students to learn and removing all sentences or ideas of answers contained in their heads. In addition, the improvements made are fostering students' interest in learning, motivating students not to be ashamed and afraid of being wrong in issuing their opinions.

**Reflection of Learning Outcomes**

Learning outcomes obtained in the first cycle show the percentage of students who are in the complete category by 62%. This number is still less than the indicator of the success of learning outcomes that have been determined, which is equal to 70.00%. This is influenced by several things, including students experiencing difficulties in discussing the material of discussion assignments given because of the lack of literature they have, this has an impact on student learning outcomes. Reflections carried out in the first cycle to obtain an overview of the actions to be carried out in the second cycle. This action is an improvement of the actions taken in cycle I.

The implementation of the second cycle of action as an improvement from the implementation of the first cycle has an influence on student activities. In general, the results of the implementation of the action are as expected, namely the increase in student activity in the second cycle. This increase can be seen in the increase in all activity items.

The percentage of students who completed the second cycle increased from 62% to 70%. The acquisition has met the indicators of success to be achieved, namely completeness of the value of at least 70, so that this study is said to need to proceed to the next cycle. The percentage of students who completed the third cycle increased from 70% to 90%. The acquisition has met the indicators of success to be achieved, namely completeness of the value of at least 70%, so that this study is said to be successful and does not need to be continued to the next cycle.

All components of student activity have increased from cycle I, cycle II and cycle III. Even though in the first cycle, especially at the beginning of the meeting, the activity took place as usual, there were no significant changes from before. This can be seen from the attitude of students who in general are still not giving a response or positive response to the learning strategy used and based on the results of observations, namely lack of serious attention from students so that in responding to the material or working on practice questions or assignments is also minimal. As a result of this, the learning process and the assignment of tasks have not yet reached an increase as expected.
3.2 Quality of learning

1). Aspects of Student Learning Climate in class

The creation of a conducive learning climate in this study is a safe, comfortable and pleasant atmosphere. Judging from the role of the teacher as an educator, mentor, trainer, and leader who can create an attractive, safe, comfortable and conducive classroom climate, its presence in the midst of students can dilute the atmosphere of freezing, rigidity and saturation of learning that is felt to be accepted by students. The class climate that is not conducive will have a negative impact on the learning process and the difficulty of achieving learning objectives, students will feel anxious, anxious, bored and bored. On the contrary, with a conducive and attractive classroom climate, it can easily reach the learning objectives, and the learning process that is carried out is fun for students. Class climate is the atmosphere and condition of the class in relation to learning activities. Class climate is an atmosphere characterized by a pattern of interaction or communication between teacher-student, student-teacher and students. The main task of the teacher is to condition the teaching and learning environment to support behavior change for students.

The creation of a conducive learning climate has several conditions based on direct observations that researchers make, the requirements for creating a conducive learning climate in the Ambon 7 High School State School Year 2018/2019 are as follows: 1) Development of learning services, including: giving assignments that motivate students especially in the preparation of determination keys, the delivery of interesting material, harmonious attitudes between the teacher and students, between
the students themselves, and the giving of motivation by the teacher. 2) Management of students, including: teacher responsiveness in dividing attention, concentrating group attention, rebuking students, and providing reinforcement. 3) Physical management, including, namely: arrangement of learning facilities, seating arrangements, lighting, and aeration rooms.

The above is also supported by student observation data and interview data with teaching teachers, stating that conducive conditions for a learning climate are: good condition or condition of the building, learning resources such as complete books, complete library, arrangement of learning environment, such as the blackboard, seating, and furniture in the classroom must be properly arranged, the appearance and attitude of the teacher, cleanliness and school discipline and the activity and enthusiasm of students in learning.

Based on the results of the interview, it has also been seen that there has been an effort from the teacher, especially the teaching teacher to create a safe, comfortable, orderly and enjoyable learning environment such as: giving motivation to students so that students are more active in learning, giving reprimands to students who interfere with other students in learning, shows an attitude that is akrap by giving a reprimand with a pleasant greeting, creating a harmonious relationship, giving students the opportunity to ask when the learning process takes place. For more details, the interview results data are presented in the appendix. Learning outcomes are behavioral gains to help skills, habits, attitudes, mastery and appreciation in individual learning.

2). Students’ Scientific Attitudes in Learning

Figure 2. shows the increase in students' scientific attitudes in gradual learning both learning using scientific approaches which are combined with free roaming methods and guided inquiry approaches combined with process skills, indicating an gradual increase in students' scientific attitudes. This is because the components in the scientific approach include: the skill of observing, asking, gathering information /
trying, reasoning, and communicating, is very thick with the activities of science process skills. The principle of constructivism, allows students to build their own concepts through discovery activities. Through the activities of science process skills such as: formulating wrong ideas, making hypotheses, designing experiments, conducting experiments, able to encourage students to foster scientific attitudes as scientists work like: honest, thorough, responsible, etc.

Based on the experience of the student learning process guided inquiry is very helpful for students in understanding plant systemic concepts, especially in understanding the morphological characteristics of plants in the preparation of key determinations. Because guided inquiry learning places more emphasis on student learning activeness to foster students' ability to use science process skills by formulating questions that lead to investigative activities, composing hypotheses, conducting research, collecting and processing data, and communicating their findings in the learning process. Inquiry activities are very important because they can optimize the involvement of students’ direct experience in the learning process.

3). Utilization of Learning Facilities

The results of this study are in line with Nurmalia's research which states that learning facilities partially have no effect on student learning achievement. This is because students have a high fighting spirit in learning, so they can achieve good learning achievement. Besides that, students also have good cognitive abilities and are supported by the teacher's way of delivering subject matter that is easily accepted by their students [10]. However, the results of this study are not in line with the opinion of Bimcek and Kabapinar, that learning facilities participate in determining one's success in learning, and the opinion of Smith, that teaching and learning activities in schools will be more successful if supported by facilities adequate learning [11,12].
Besides that, this study is also not in line with the research conducted by Nurdin, Widodo and Ellyana, Zahroul and Dwi, who stated that the use of learning facilities had a partial effect on learning achievement [13,14,15].

The results of this study indicate more dominance of other factors besides the use of learning facilities in influencing learning achievement in the school. Other factors such as learning environment, learning style, parental attention, study habits, reading interest, and so forth. Learning facilities are still an important factor that influences learning achievement in Ambon 7 High School, because without facilities, the teaching and learning process will also be disrupted, administrative activities will also be hampered, and schools will be increasingly left behind with the development of increasingly advanced science and technology. Besides that, the use of good learning facilities will also support other factors to improve student achievement in Ambon 7 High School.

4). Student's motivation to study

Student learning motivation in aspects of student performance finds ways to solve problems, students are able to solve problems by 62%. Motivation of student learning on aspects of student performance likes challenges, as many as 63% of students who like challenges. Students' learning motivation in confident aspects of performance in completing tasks found that 70% of students were full of confidence in completing assignments. Student learning motivation in the performance aspects of students conduct discussions well 61% of students are able to have good discussions. Motivation of student learning on aspects of student performance Confidence in completing tasks as much as 80% of students are able to confidently complete tasks properly.

Picture: 4. Graph of Observation Results for Increasing Student Motivation in 7 High School

Information:
1. Sensitive to improving achievement
2. Activities to achieve achievements
3. Carefully determine the achievement target
4. Efforts to overcome obstacles
5. Find ways to solve problems
6. Likes a challenge
7. Perfection completion tasks
8. Have a good discussion
9. Self-confidence in completing assignments

Quality of learning for learning motivation of class X1 students of SMA 7 Ambon in learning the concept of plant classification systems using a scientific approach combined guided inquiry, the average gradually increased. This correlates with the increasing performance of teachers in learning. The better the teacher's performance in learning will be more conducive to the learning situation created, so that it has a positive impact on classroom management. The controlled condition of the class will encourage a two-way interaction between the teacher and students as well as between students and students, consequently the group collaboration will be more solid.

Teachers are expected to always grow student motivation, so students are more diligent and diligent in learning. How to grow learning motivation for example by giving rewards in the form of praise when the learning process, giving gifts to students who are active in the lesson, giving a sudden test so that students are always on standby before learning begins, and others.

Students are expected to further increase their learning motivation, and utilize good learning facilities to support the teaching and learning process in order to improve their learning achievement. Schools need to pay attention to their students' motivation, giving motivation will increase students' enthusiasm in learning. The role of the school in growing motivation for example by giving awards to outstanding students at school. Learning achievement obtained by students is not only influenced by these two factors, but student learning achievement is also influenced by other factors such as attitudes, talents, interests, intelligence, learning styles, learning environment, learning discipline, study habits, curriculum and so on. Therefore, further researchers can examine other factors that can affect learning achievement in addition to motivation and utilization of learning facilities.

3.3 Comparison of the Achievement of Quality and Motivation Aspects of Biology Learning Students in Pre-cycle, Cycle I, Cycle II and Cycle III

The data in Table 3. shows an increase in student learning completeness significantly. In general, it can improve the quality aspects of learning (including: learning facilities, class climate, attitudes and student learning motivation) in learning using a guided inquiry-based scientific approach for students in class X1 of SMA 7 Ambon with a mean per cent of achievement in pre-cycle (74.1%), cycle I (75.2%), cycle II (79.82%), cycle III (86.9%).
In general, the achievement of the quality aspects of learning using the guided-based scientific approach has increased significantly. That means that this approach has a quality that plays a role in the conceptual learning of Biological Biodiversity in Ambon 7 High School. This shows that mastery of the concept of diversity, especially the classification system of plants is very important for each student to have after learning because it can be used to solve a problem related to the concept that is owned by students. Mastery of concepts by students is not only about knowing a concept but students can connect between one concept and another concept in various situations. Mastery of the diversity concept of students who are taught by guided inquiry-based scientific learning has a fairly high representation of students who are taught by learning in concept and practicum.

Table 4.2. Comparison of Achievement of Quality Aspects and Motivation of Students in Biological Learning In Pre-cycle, Cycle I, Cycle II and Cycle III

<table>
<thead>
<tr>
<th>No</th>
<th>Performance Aspects</th>
<th>Pre Cycle</th>
<th>Cycle I</th>
<th>Cycle II</th>
<th>Cycle III</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mastery learning</td>
<td>74.1</td>
<td>75.2</td>
<td>79.82</td>
<td>86.9</td>
</tr>
<tr>
<td>2</td>
<td>Quality of learning</td>
<td>71.25</td>
<td>74.33</td>
<td>78.75</td>
<td>84.5</td>
</tr>
<tr>
<td>3</td>
<td>Motivation to learn</td>
<td>68.23</td>
<td>70.56</td>
<td>81</td>
<td>85.67</td>
</tr>
</tbody>
</table>

Ainsworth states that the use of multiple representations to complement information when each representation in the system presents different information [16]. According to Bahri, the use of multiple representations can help students identify and describe a problem more fully and solve it with more solid understanding, reasoning and argumentation [17]. Waldrip et al. concluded that to develop science learning in schools requires understanding and connecting verbal, visual, and mathematical representations in developing knowledge of scientific concepts and processes. Biology teachers ideally have the capability of scientific argumentation and can convey biological material in various forms of representation (multiple representations) [18].

4. Conclusion

Some conclusions related to this research can be presented as follows:
1. Biology Learning Using a Scientific Inquiry-Based Approach improves the quality of learning and motivation of students in the concept of Plant Classification System in Class XI Students of SMA 7 Ambon.
2. There is an increase in motivation of students who take biology learning using the inquiry-based Scientific Approach guided the concept of Plant Classification System in Class XI Students of SMA 7 Ambon.
5. Reference


