THE PROFILE OF STUDENT ACTIVITIES

IN LEARNING BASIC NATURAL SCIENCE CONCEPTS THROUGH

THE CONTEXTUAL TEACHING AND LEARNING (CTL) APPROACH

WITH GROUP INVESTIGATION (GI) MODEL

Muhammad Minan Chusni[1*], Astuti Mahardika[2], Ika Candra Sayekti[3], Winda Setya[4]

[1,4]Program of Physic Education, Faculty of Mathematics and Science Education,
UIN Sunan Gunung Djati, Bandung, Indonesia
Email: [*]minan.chusni@uinsgd.ac.id

[2]Program of Primary Teacher Education, Faculty of Teacher Training and Education,
Universitas Muhammadiyah Magelang, Magelang, Indonesia
[3]Program of Primary Teacher Education, Faculty of Teacher Training and Education,
Universitas Muhammadiyah Surakarta, Surakarta, Indonesia

Abstract

Science learning essentially requires students to cultivate curiosity so that it triggers to conduct investigations by doing science activities. The purpose of this research is to know the profile of student activity in learning basic concept of IPA through contextual teaching and learning approach (CTL) with group investigation (GI) model.The subject of this research is Program of primary teacher education UMMGL students consisting of two classes with 83 people. The research method is descriptive. Data collection techniques were conducted by setting the focus of research, selecting informants as data sources, collecting data, assessing data quality, analyzing data, interpreting data, and drawing conclusions on the findings.From the research results can be concluded that the profile of student activity in learning basic concept of science through CTL approach with the average GI model is in very good category.

Keywords: Activity, CTL, GI, Science Learning Essentially

INTRODUCTION

Student learning activity is the involvement of students in the form of attitudes, thoughts, attention, and activities in learning activities to support the success of teaching and learning process in obtaining benefits from these activities (Kunandar, 2008). Student learning activities can include physical activity as well as mental activity. According to (Usman, 2016) this learning activity is divided into five activities, namely: (1) visual, (2) oral; (3) listening, (4) motion, and (5) writing. Such activities in learning can stimulate and develop the students' talents and interests. Students can also practice critical thinking and solve problems in everyday life. Without the student activity, the learning process may not take place properly. The learning process that occurs in the classroom must involve active students (Sardiman, 2010).

Therefore lecturers need to design the learning process in a systematic way so as to stimulate student activity in learning and make students as subject of learner (Sudjana, 1990). Natural Science (IPA) is concerned with how to find out about nature systematically, So that Natural Science (IPA) is not just a collection of knowledge in the form of facts, concepts, or principles only but also a process of discovery (BSNP, 2006). Natural science learning should be emphasized in the hands-on experience of the students to make their own discoveries (experiments) and understand the environment. Therefore, an approach is needed, one of them is by using Contextual Teaching and Learning (CTL) approach. CTL is a concept that links the subject content with real-world situations and fosters students' interest in making connections between knowledge and its application in everyday life (Irawan, 2017). Learning is not memorizing in CTL, but the process of constructing knowledge in accordance with their experience (Sanjaya, 2006). Therefore, with learning (CTL) students are expected to be able to change the way of learning which has been more awaiting information from teachers to meaningful learning to solve their own concepts of materials learned so that the expected quality of the process and student learning outcomes will be better (Nurhidayah, 2017). Group Investigation (GI) is one of several learning models covered in cooperative learning. This model involves students in planning the topics to be studied and how to carry out their investigations (Majid, 2013) (Nurhadi, 2004). Sharan and colleagues describe the six steps in GI learning: selection of topics, cooperative learning, implementation, analysis and synthesis, final product

presentation, and evaluation (Arends, 2008). In this learning the students are actively involved from the beginning to the end of the learning and can improve student learning outcomes and activities (Dewi, Iswari, Susanti, & Supriyanto, 2012). The combination of CTL approach with GI model is expected to realize an effective learning and can increase student learning activities (Suarmika & Faliyandra, 2016). All material reviewed through GI learning strategies will be linked to real life. The topic of learning in group discussions is real-life issues related to the material being taught. The material discussed in this research is the basic concept of science about: static electricity symptoms in everyday life; Find laws relating to static electric fields; Making simple electroscope to know the type of electric charge and find the interaction relation between electric charge. Students discuss the issues that will be discussed, analyze the problem, find the solution, and present the results of the discussion in front of the class. After that, a joint reflection and assessment is done. Lecturers act as facilitators who guide students during group activities. Students are expected to be more creative in searching for learning resources and also in the process of problem solving, Because in one group the students have different experiences.

Discussion activities will encourage students to dare to ask questions and express their thoughts. Thus active learning will be formed (Doymus & Sismek, 2009).

From the results of observations made on the basic natural science concept of primary teacher education students at the University of Muhammadiyah Magelang found that the material in teaching has not been associated with problems that are often encountered in everyday life. This resulted in the students have not been able to link the material learned with the reality in the natural environment. In addition, students' ability in group discussion is still weak, as in determining the problem to be discussed, analyzing the problem, finding the solution, and presenting the result of the discussion. It turns out the liveliness of students in less learning.

Therefore, this study aims to determine the profile of student activity in learning basic natural science concept through contextual teaching and learning approach (CTL) with group investigation (GI) model.

METHOD

The research method used is descriptive, Namely a research method intended to describe the phenomena that exist, which occurred at the moment or the past. Descriptive method is to

determine the focus of research, selecting informants as data sources, collecting data, assessing data quality, analyzing data, interpreting data, and making conclusions on the findings (Sugiyono, 2010).

Data in this research is student activity profile in learning basic natural science concept. The location in this study was conducted at program of primary teacher education UM Magelang. The sample in this research is the class A students amounted to 48 people and class D amounted to 35 people.

The instrument used in this research is observation sheet of learning activity with Likert scale involving aspects of tool making, exposure tool and group investigation. This observation aims to describe the settings learned, the activities that take place, the people involved in the activities, And the meaning of the incident in view of their perspective seen in the observed event. The type of data collected in the form of quantitative data is the observation score. Student activity profile data can be categorized as delivered (Arikunto, 2010)

Table 1. Determination of Category Activity Score

Score	Capability Category
0% - 20%	Very less
21% - 40%	Less
41% - 60%	Enough
61% - 80%	Well
81% - 100%	Very Well

RESULT AND DISCUSSION

Student activity data is obtained from the result of the observation sheet evaluation conducted during the learning process. For the experimental class that is class A and D that get CTL approach with GI model. On the observation sheet there are two stages: 1) making and exposure of tools and 2) group investigation stage (GI).

In the first stage there are five indicators of observation, the accuracy of material selection, the accuracy of the selection of tools, creativity in assembling tools, the ability to explain how the tools are designed and the ability to communicate results. In the second stage, there are seven observation indicators, namely the success of the tool (tool performance), performing experiments according to the procedure, the ability to overcome the problems in showing the performance of the equipment, teamwork, paying attention to safety, originality of observation data and maintaining cleanliness during the experiment.

The results of the student activity assessment are summarized in the following table which is written in the percentage (%) level of student activity for each aspect of the assessment.

1. Tool Creation and Exposure Activity

Table 2. Data Description of Tool Creation and Exposure Activity of Class A.

Aspect of Assessment	Observer 1	Observer 2	Ave-rage	Cate-gory
Accuracy of material selection	95.83	83.33	89,58	Very good
Accuracy of tool selection	100	100	100	Very good
Creativity in assembling tools	100	100	100	Very good
Ability to explain how the tool works	90.63	90.63	90,63	Very good
Ability to communi-cate results	79,17	100	89,58	Very good
Average	93,75	91,96	92,86	Very good

Table 3. Data Description of tool creation and exposure activity of class D

Aspect of Assessment	Observer 1	Observer 2	Ave-rage	Cate-gory
Accuracy of materials selection	100	85,71	92,86	Very good
Accuracy of tool selection	78,57	100	89,29	Very good
Creativity in assembling tools	78,57	100	89,29	Very good
Ability to explain how the tool works	75	78,57	76,79	good
Ability to commu-nicate the results	71,43	100	85,71	Very good
Average	80,71	92,86	86,78	Very good

To further show the activity profile in each aspect the assessment can be seen from the following histogram.

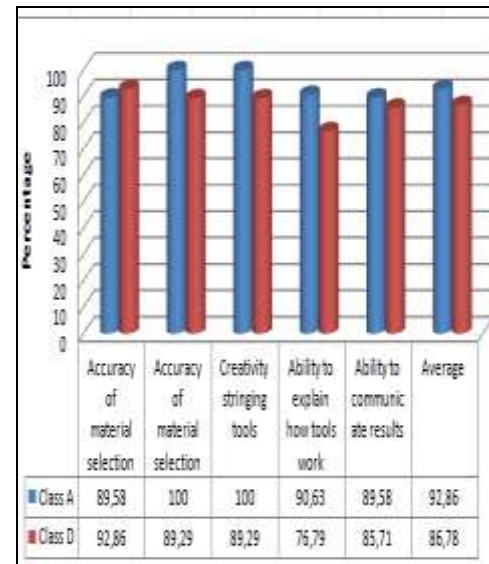|	Accuracy of material selection	Accuracy of material selection	Creativity stringing tools	Ability to explain how tools work	Ability to communicate results	Average
Class A	89,58	100	100	90,63	89,58	92,86
Class D	92,86	89,29	89,29	76,79	85,71	86,78

Figure 1. Histogram Activity Data Creation and Tool Exposure Class A and D

Based on the results of data analysis as shown in table 2 and table 3 about student activities in the creation and exposure of tools when learning basic natural science concepts using CTL approach with GI model showed excellent results on all indicators of observation. Only aspects of the ability to explain the workings of the tools of class D data that indicate the good category, it is because the ability of students who have not mastered the concept of learning resources that have been read.

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For class A the highest activity is seen in the accuracy aspect of the tool selection (100%) and Creativity in assembling tools (100%), it is caused by the initial knowledge of each of the existing students from previous learning experience in elementary, junior and senior high school. This is consistent with CTL characteristics Namely to build a new knowledge based on previous knowledge (Sanjaya, 2006). While the lowest on the ability to communicate the results (89.58%) and the Accuracy of tool selection (89.58%). The ability to communicate is still low because unfamiliar with expressing opinions through cooperative learning is also less precise in choosing the tool due to cohesiveness in teamwork that has not been established well so that still cause differences of opinion.

For class D the highest activity is seen in the aspect of choosing materials accuracy (92.86%), this is because teamwork has been well established so that every decision making is done carefully. While the lowest in terms of ability to explain the workings of the tool (76.79%), because it has not mastered the concept as a whole and has not been able to associate with the function of each of the parts of the tool. But in general the average of both classes, both show the results of 92.86% for class A and 86.78% for class B, so

categorized in excellent activity (Arikunto, 2010).

From the learning process, the students showed positive activity and actively involved in every phase of GI model (Dewi, et. al, 2012). Lecturers in this case act as facilitators by providing convenience and guidance in providing a learning experience appropriate to their daily life (BSNP, 2006).

1. Group investigation (GI) activity

The second student activity observed was when the students conducted a group investigation on basic natural science concept about electric charge in daily life. The results of the analysis are shown in table 4 below.

Table 4. Description of Activity Category of Students Group Investigation

Aspect of Assessment	Class A	Category	Class D	Category
The success of a tool (tool performance)	78,13	good	82,14	Very good
Performing experiments according to the procedure.	96,88	Very good	100	Very good
Ability to solve problems in demonstrating tool performance	84,38	Very good	75	Good
Teamwork	93,75	Very good	95,54	Very good
Pay attention to safety	98,44	Very good	100	Very good
Originality of observed data	89,58	Very good	89,29	Very good
Keep clean during the experiment	82,81	Very good	80,36	Very good
Average	89,14	Very good	88,90	Very good

To further show the activity profile in each aspect the assessment can be seen from the following histogram

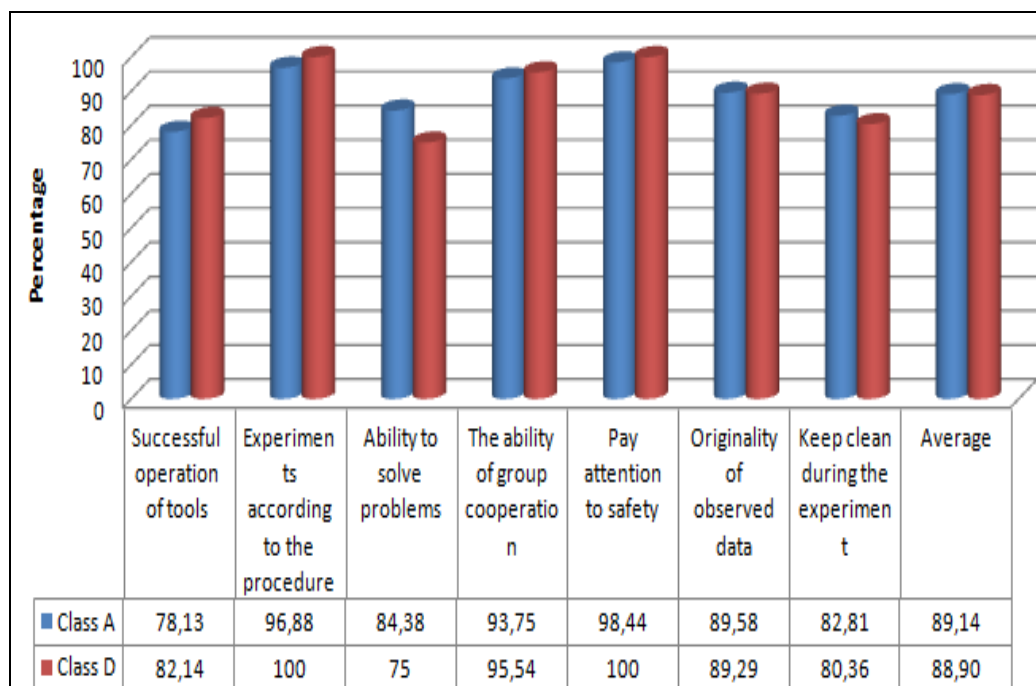|	Successful operation of tools	Experiments according to the procedure	Ability to solve problems	The ability of group cooperation	Pay attention to safety	Originality of observed data	Keep clean during the experiment	Average
Class A	78,13	96,88	84,38	93,75	98,44	89,58	82,81	89,14
Class D	82,14	100	75	95,54	100	89,29	80,36	88,90

Figure 2. Histogram of Group Investigation Activities Data of Class A and D

The process of student learning on the basic natural science concept using group investigation model based on observation of observer 1 and 2 took place smoothly, in accordance with the syntax model (Arends, 2008). It can be seen from phase 1: the selection of topics that students determine the

appropriate tools and materials, Phase 2: cooperative learning ie students in groups heterogeneous with each group of 3-4 people to solve problems, Phase 3: implementation of learning activities by taking data and measurement, Phase 4: analysis and synthesis of looking for causal relationships and patterns emerging from data analysis to draw

A, most of the judgments go to the category very well except the first aspect is the performance of the tools that have good category. This is probably due to the students in class A slightly less mastering the use of tools in the process of learning about electrical charges so that the success of the tool performance is less than the maximum. While the highest score for class A on the aspect of occupational safety (98.44%) this is influenced by a good understanding of the order during the experiment.

In class B there are two aspects that have achieved a maximum value of 100% that is on aspects of trial procedures and work safety. In the sense that in class D has a mastery of experimental procedures electrical charge is very good so it can perform work procedures as expected. Almost all aspects of assessment class D student in very good category. But there is one aspect in good category is in the aspect of ability to overcome the problem in

conclusions, Phase 5: final product presentation that communicates the findings, and phase 6: evaluation of process and product assessment.

From table 4 it can be seen that the CTL approach with GI model conducted in both classes gives positive results on every aspect of assessment (Suarmika & Faliyandra, 2016). In class showing the tool performance (75%). This means that the average student in class B has not been able to cope perfectly with the problems that arise when the experiment is done. Overall assessment aspects undertaken in CTL process with GI model can be concluded that run effectively and able to show profile of student activity clearly. Components in the contextual learning model are closely related to the activity of the learning process. The concept of active learning which is a concept in the learning process that emphasizes the importance of students more actively learning compared with the activities of lecturers as teachers (Sudjana, 1990). Some prominent indicators of student activeness in the classroom during the CTL with GI model on the basic natural science concept include: Pay attention to the lecturer's explanation, ask the lecturer, ask questions, answer questions, communicate answers to friends, answer responses/questions from friends, payattention to

explanations/answers from friends, and ask friends who explain.

CONCLUSION

Based on the results of this study, it can be concluded that the profile of activity making, exposure of tools and group investigation of students in learning basic natural science concept through CTL approach with GI model in very good category.

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