

SCIENCE EDUCATION TEACHING AND LEARNING ACTIVITY IN ISLAMIC BOARDING SCHOOL

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Abstract

Nowadays, Islamic education like *pesantren* (Islamic boarding school) has the undeniably substantial contributions to the advancement of education in Indonesia. However, as a matter of fact, the learning system of Islamic boarding school could be a great burden for students since it urges them to focus on both learning the national curriculum (K13) and the school's curriculum. SMP Daarut Tauhid, an example of Islamic boarding school, that has two types of class, namely regular and takhasuz class, has been implementing this sort of system. In regular class, students are required to memorize at least 1 juz of Al-Qur'an when they are at 9th grade. Meanwhile, students in takhasuz class have an obligation to memorize 30 juz of Al-Qur'an when they are at 9th grade. As a consequence, this would interference the learning of the other subjects including science lesson. Therefore, this study was undertaken to investigate learning activities of science lesson in takhasuz class which cover the use of learning media, assessment and evaluation and also to figure out the differences between teaching learning activities in regular class and those in takhasuz class. This study was conducted as a qualitative research with descriptive approach. Questionnaire and interview were used to collect the data needed. Questionnaire was used to get the information regarding to the teaching learning process and the facilities that are used. To validate the data, interview was used as well. The findings show that although in takhasuz class, students have more hours to focus on learning the school's curriculum, teacher still gives the best results on their achievement just like in regular class. The teacher also gives an extra support such as using media that can make students understand easily, making group for students so that they can study independently, and providing laboratory activity to boost their activeness. Despite that, the findings also reveal some problems faced by the teacher, which are the lack of facilities in the laboratory and the limited hours for doing an experiment. Based on the research results, it is suggested that the teacher should do the experiment that are suitable with the allocation time of study, and use the materials that can be easily obtained for the experiment.

Keywords: Islamic boarding school, science education, teaching and learning activity

1. INTRODUCTION

Islamic boarding school in Indonesia, called *pesantren*, has been developing for a long time, it has the role in the advancement of education in Indonesia. According to Thahir (2014), Islamic boarding school is also believed to be an alternative for solving various problems of education that occurs at this time. It is known as the oldest institution of Islamic education in Indonesia. Furthermore, Harits et al (2016) asserts that many *pesantren* in Indonesia have changed their paradigm, they have combined the modern system of education and traditional Islamic system of education, it is called modern *pesantren*. In modern *pesantren*, the students are not only learning religious books, but also learning Mathematics, Sciences, and other knowledge.

Islamic boarding school has its own systems in teaching and learning activity, one of them is the students have to stay in the school's dormitory. The male and female students are separated, they are not in the

same building of the school and dormitory. According to Srimulyani (2007), students in Islamic boarding school start to live in the dormitory after graduating from primary school education. In this suitable age, parents consider their children can live separately from family.

Every Islamic boarding school in Indonesia has its own characteristic for building and implementing knowledge for the students. Nevertheless, the learning system of Islamic boarding school could be a great burden for the students since it urges them to focus on both learning the national curriculum (K13) and the school's curriculum. The school's curriculum is to learn about Islamic lessons, such as learning Al-Qur'an, Fiqih, Aqidah, Islamic history, etc. Yaqin (2012), says that Islamic boarding school curriculum involves a certain number of lessons given to the students by using books, and the student's experience out of formal learning in the classroom, that influencing student's personality, habit, and social skills.

SMP Daarut Tauhid, a private junior high school, is one of Islamic boarding schools in Bandung. SMP Daarut Tauhid has two types of class, namely regular and takhasuz class, has been implementing this sort of system. In regular class, the students are required to memorize at least 1 juz of Al-Qur'an when they are at 9th grade. Meanwhile, students in takhasuz class have an obligation to memorize 30 juz of Al-Qur'an when they are at 9th grade. As a consequence, this would interference the learning of the other subjects including science lesson. According to SMP Daarut Tauhid (2015), there are various Islamic lessons for the students in regular and takhasuz class, such as Arabic, Islamic Education, *Aqidah*, *Akhlak*, *Fiqih*, *Tauhiid*, Al-Qur'an (*Tajwid*, *Tahsin*), *Hadits*, *Tafsir*, *Tarikh*.

There are several differences between takhasuz class and regular class in learning activities. In takhasuz class, the students are not obligated to learn many lesson, they only focus on learning lessons that include in national examination, one of them is science. Furthermore, there are not many homework given to the students in takhasuz class, they are only involved in study groups created by the teacher, to have discussions about the problem given by the teacher. Moreover, the students in takhasuz class are not allowed to join extracurricular activities, except for PRAMUKA (scout), but that activity is only allowed in the classroom.

The interesting thing is, the teacher still gives the best results on the achievement of the students in takhasuz class just like in regular class. The present study was undertaken to investigate about learning activities of science lesson in takhasuz class which covered the use of learning media, assessment and evaluation, also to figure out the differences between teaching-learning activities in regular class and those in takhasuz class.

2. METHODOLOGY

2.1. Research Design

The research design used in this study was a qualitative research with descriptive approach. According to Fraenkel et all (2012), qualitative research is to investigate the quality of relationships, activities, situations, or materials. In this research, questionnaire and interview were used to collect the data needed. The questionnaire was used to get the information regarding the teaching-learning process and the facilities that are used. Questionnaire adapted from *Buku Panduan PPL SM3T 2016*. To validate the data in this research, an interview was used as well. Creswell (2012), points out that interview is a form which the researcher records answers by the participant in the study. The researcher asks a question from an interview guide, listens for answers, and records responses.

2.2. Research Subject

The subject of observation is a science teacher of class VII in SMP Daarut Tauhid, who teaches science both in takhasuz class and regular classes. Data retrieval begins from the third week of September to the third week of December 2016. This is done to perfect the desired data. Completion of data is done through teacher interview as the subject of this research. The data of class observation were done in the third week of October, while the data in the form of interview result were done from the fourth week of October to the first week of December 2016.

2.3. Finding and Discussion

2.3.1. The Results And Discussion of Learning Activities Questionnaire

Based on the information from table 1 below, the teacher has prepared all the documents supporting the learning activity. Furthermore, from table 2 it shows that there are four items that the teacher does not do during the teaching and learning activity. These four items are closely related to the science learning objectives, such as the teaching and learning process should be the student-centered, but the results of the

observations indicated that the teaching and learning process is still the teacher-centered. These items are the teacher only focus the students on the teacher's answer, explains more in front of the class, the teacher used teacher-centered approach, and the teacher was not giving rewards for the right questions/answers, but the teacher only responds by adding student's answers.

The teacher assumes that the student-centered teaching and learning process usually takes more time to achieve a particular goal. So that, the teacher is more interested in teacher-centered approach in the teaching and learning process. However, there are many benefits of the student-centered approach, compared to the teacher-centered approach. According to Asoodeh et al (2012), in the student-centered approach, the students having group discussion about the problems that were given by the teacher and find out the solution. Furthermore, Hugerat (2016) asserts that, the student-centered approach focuses more on the student needs, learning processes, provides guidance, and feedback. Based on the benefits of the student-centered approach, it suggested that the teacher to use this approach, but still have to adjust with the time allocation, student's capability and needs, also school's facilities.

In order to assist the students in understanding the concept of learning, the teacher usually brings the tools that can be used during the teaching and learning activity. For example, the teacher brings a thermometer to help the students to remember the lessons that taught in the previous lesson. During the teaching and learning process, the teacher also organizes the students into several groups to do the experiment inside of the classroom; they used student worksheet during an experiment and discuss the problem in student worksheet. The experiment activity that conducted inside of the classroom, due to the lack of facilities such as tools and materials to accommodate all the needs of the students, so the teacher should combine the students into groups and use the tools together in turn. In spite of that, takhasuz class has fewer hours for doing an experiment that is why the teacher has to use the allocation of time properly.

It suggested that the teacher had better ask the students to create the tools and materials for the experiment, as the solution for the lack of facilities to do the experiment. For an example, in subjects that have to use a thermometer, the teacher can do the steps in the experiment retrieved from the internet, named Science Snack, that used the inverted bottles to watch the rise and fall of hot and cold fluids. This aim is to investigate convection by using food coloring and water at different temperatures. The tools and materials in these experiments are easy to obtain and make by the students.

Table 1. Questionnaire Results of Observation about Preparation Before Teaching and Learning

	OBSERVATION ASPECTS	Observation Results		Explanation
		Applied	Not Applied	
1.	Annual program. Contains competency standards, basic competencies, and the allocation of time for one year that is suitable for the effective weeks of study.	✓		
2.	Semester program. Contains competency standards, basic competencies, the division of time allocation, and details of on certain weeks for one semester in accordance with the effective weeks of study.	✓		
3.	Syllabus. Include competency standards, basic competencies, learning materials, indicators, assessments, time allocation, and learning sources.	✓		
4.	Minimum Passing Criteria (KKM) for each basic competency. KKM for basic competency ≥ 75 and appropriate with those criteria of calculation, also the explanation has to write into the table.	✓		

5.	Lesson plan. Contains objectives and learning activities that are systematic and logical, and actively involve students to achieve learning objectives/indicators/basic competencies, learning materials, learning resources, and assessments of learning outcomes.	✓		
6.	Report of the students. Contains the students score for all assessments that have been implemented, for knowledge, practice, or attitude.	✓		

Table 2. Questionnaire Results of Observation about Teaching and Learning Science Lesson

	OBSERVATION ASPECTS	Observation Results		Explanation
		Applied	Not Applied	
	A. Introduction			
1.	The availability of learning tools and media (Learning Resources).			
	Prepare the learning resources that are needed completely	✓		PowerPoint, thermometer
2.	Motivation			
a.	Started the lesson with a cheerful	✓		The teacher wants the students to explain the experiment before.
b.	Shows the benefit of basic competencies in daily lives or the related to another lesson.	✓		
c.	Gives the challenging problems that stimulate the students to solve them	✓		
3.	Apperception			
	Ask questions about the previous meeting that related to the current subject.	✓		What kind of tools to measure the temperature?
4.	Clarity of basic competencies/Indicators.			
	Convey both oral and written basic competencies/Indicators that must comprehend by students after learning	✓		
5.	The availability of learning materials (learning resources)			
	Prepare the learning resources, such as books, module cassette/compact disk learning, etc.	✓		

	B. Main Activity			
1.	Comprehension of learning materials			
a.	Confident in delivering the learning materials.	✓		
b.	The questions from the students have answered appropriately.	✓		
c.	The truth of the concepts that conveyed.	✓		
2.	Class management			
a.	The students are convenient to interact with the teacher	✓		
b.	The students are convenient to interact with their friends		✓	The teacher only focus the students on the teacher's answer
3.	Management of Time			
a.	The use of time according to allocation provided.	✓		
b.	Time allocation is spent on the student activity compared to teacher activity		✓	The teacher explains more in front of the class
4.	Method/learning approach			
a.	Using the student-centered learning approach		✓	The teacher explains more in front of the class. The teacher-centered approach is used
b.	The learning steps are done in an orderly and systematic way	✓		
c.	The learning activity uses various methods.	✓		
5.	The use of learning tools/media			
	Effective and efficient in using learning tools/media (learning resources) that has prepared	✓		
6.	The role of the teacher as a facilitator			
a.	Allow/facilitate the students to undertake various activity in achieve indicators/basic competencies.	✓		
b.	Always ready to help the students when they need support	✓		

7.	Technique of asking			
a.	Ask questions to all the students	✓		
b.	Giving time for the students to think	✓		
c.	Avoid the student's answers simultaneously by pointing at one of the students to answer	✓		
d.	In response to the students' questions/answers, the teacher is patience to listen (not cutting off student questions/answers)	✓		
e.	Do not scoff the students even though the students' questions/answers are less precise, and do not directly blame the students' opinions	✓		
f.	Giving rewards for the right questions/answers		✓	The teacher responds by adding the students' answers
8.	Interactions and activities of the students			
	All the students have the interactions and active in various learning activities.	✓		
9.	Attitude and interest of the students in learning			
a.	The number of students who attend class $\geq 95\%$	✓		
b.	Most of the students bring relevant textbooks ($\geq 75\%$)	✓		
c.	Most of the students taking notes ($\geq 75\%$)	✓		
10.	The achievement of basic competencies/ Indicators			
	The teacher questions related to the learning objectives/indicators/basic competencies, that delivered during the lesson and at the end of the lesson, are mostly answered by the students very well ($> 75\%$)	✓		
	C. Closure			
1.	Summary			
	The students make summary that guides by the teacher	✓		
2.	The task for the next meeting			
	The teacher gives the tasks (homework, read books/find information, etc.) for the next meeting.	✓		

2.3.2. The Results And Discussion of Interview

Based on the information from the interview, it is noted that the selection for the students to enter takhasuz class is depending on the number of memorizing for each juz of Al-Qur'an. The more the students can memorize juz of Al-Qur'an, the more opportunities they could enter takhasuz class. There is no an academic test to enter takhasuz class, so that takhasuz class is consisting of the students who have different academic abilities. There are no urges for the students entering takhasuz class, it is all their interest. The parents also support the students during their study time in memorizing Al-Qur'an, it motivates the students to study diligently.

The teaching and learning activity of science lesson in takhasuz class is the same as the teaching and learning activities in regular class. The selection of learning methods and the time duration of learning is no different between takhasuz class and regular class. Although in takhasuz class they have more time in learning their school's curriculum, which focuses on learning Islamic lessons, such as *halaqah*. One of takhasuz class activities which differ from regular class is, before subuh prayer the students in takhasuz class have to meet their teacher to recite Al-Qur'an that they already memorize.

In takhasuz class, the teacher is not allowed to gives many of homework, but as the solution, the teacher makes groups for study, which the tutor is the students who already comprehend the learning materials, so they have to teach their friends. The teacher organizes the students into several small groups, with one of them as the group leader, so the discussion becomes more effective. These program named, *belmanter* (*belajar mandiri terpadu*), or integrated self- study.

Belmanter is the learning source because the teacher gives such a module that contains learning materials and questions to discuss and solve the problems together. *Belmanter* program is conducted three times a week, Monday, Tuesday, and Friday. According to Pollock et all (2014), much of the pedagogical literature has established that discussions can foster the student in learning, and the students become actively engaged in learning. So that, the implementation of *belmanter* could be one of the teacher's efforts to make the students in takhasuz class understand the subject.

The academic ability of the students from takhasuz class is not different from students the in regular class. This is evidenced by the results of the Middle Exam Semester and Final Exam School that does not differ between takhasuz class and regular class. The assessment conducted in the form of daily tests, student reports, and portfolio. The portfolio is a collection of the students' daily test results and student reports. The portfolio is gathered at the end of each semester and becomes one of the students' assessment resources for the teacher. The teacher also performs affective assessment, but only based on the student activeness in the classroom. The teacher performs the evaluation in the form of midterms and final exams semester. The final grade of the student is determined by the value of the final exam of the semester, the value of the midterm examination, affective value, and portfolio.

The teacher explained that the media that used in the teaching and learning science are from various media based on the subject, and have to make sure it's appropriate with students' capability and the allocation of time. The media used are usually PowerPoint and video, as well as doing experiments in the laboratory and school environment. The teacher listens to the student's request as well, if they want to watch an animation video or videos like Discovery Channel and Harun Yahya before the class ended.

The teacher used video-based media from the internet, she said it is not difficult to obtain. The case is only when the students are difficult to understand if the audio contained in the video is in English, so the teacher must to translate and explain it to the students. El-Sayed and El-Sayed (2013), says that the use of videobased media has enriched the educational curriculum in a range of teaching fields that are based on science. The video is considered as a successful medium because it links the audio and visual together to provide a multisensory experience for the learner, because the visual component is memorable.

Furthermore, according to Starting Point, popular media (films, music, YouTube) are a familiar medium to the students that can helps gain the students attention, and maintain the student interest in the theories and concepts under discussion. The students can see the theories and concepts in action. In more than a figurative sense, theories and concepts leap from the screen.

3. CONCLUSION AND SUGGESTION

There are not many differences between the teaching and learning science, both in takhasuz class and regular class. The assessment and evaluation, as well as the used of the media, are the same for both classes. The differences are only from the number of lessons in learning. The students in takhasuz class are not obligated to learn many lesson, they only focus on learning lessons that include in national examination.

Furthermore, to help the students in takhasuz class focus on learning lesson of national examination, as well as science, the teacher created study group called belmanter (belajar mandiri terpadu), or integrated self-study. Moreover, the students in takhasuz class are not allowed to join extracurricular activities, except PRAMUKA (scout), but that activity is only allowed in the classroom.

It is suggested that the teacher to asking the students creating the media and tools that easily to be obtained, due to the lack of facilities for doing the experiment inside of the laboratory. Then, it suggested that the teacher to use the teacher-centered approach, but still have to adjust with the time allocation, student's capability and needs, also the school's facilities.

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