DEVELOPMENT OF ECOSYSTEM SUBJECT MODULE WITH SETS-VISION AND ISLAMIC VALUE

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ABSTRACT

The aims of study are to : (1) product module of ecosystem material with SETS-vision and Islamic value categorized valid or very valid (2) recognize the use of module toward the cognitive learning outcome of students of MAN Kalimukti Kabupaten Cirebon. This study usedResearch and Development with model developed by Sugiyono. The population of the study is the class X of MAN Kalimukti which consists of four classes. The class X2 is for small-scale testing. The classes of X1 and X3 are as for big-scale testing. This study showed that: (1) the developed modul has characteristic with SETS-vision and Islamic value categorized entirely valid (2) the developed module can increase students's learning outcome in the subject of ecosystem. Such case has been shown there aremean differences from the result of cognitive posttest between the control with experiment class and classical completeness. Therefore, the module SETS-vision and Islamic value can be applied well at school.

Key Word: Module learning, Islamic value, SETS

INTRODUCTION

Nowadays education has increased and developed rapidly, teachers are demanded to make their teaching-learning process to be active, creative, effective and excitingin order to make the students have excited experiences in learning. One of the factors that can make the students success in the learning process is choosing the appropriate teaching material. The use of module is very effective to make the students to be more active, creative, and reflective (Alias & Siraj, 2012: 84). The students who are active and creative will create new learning activities by themselves " not dominated by teachers".

Biology is a natural science that is not only concerned with a collection of knowledge but also concerned with practical and dynamical knowledge. After the students have learned biology, they are supposed to apply their knowledge in daily life. According to Binadja (1999: 2) instruction based on SETS-vision (Science, Environment, Technology, and Society) can establish students' understanding about the role of science, environment, technology and society, therefore students are supposed to be able to use what they have learned. At the same time, instructions based on SETS-Vision are also giving the students knowledge about how the technology influences the rapid of developing science and impacts on environment and society.

In Islam, there is a unity of knowledge, faith, and action. Suroso states (2009: 48)that learning science biology contained values can be given explicit and implicit. Learning science biology which contains explicit values is learning science with value and moral system that integrated with the postulates of Islam, such as the revelant verses of Al-Qur'an and Hadith. For instance, there are many explanations in al-Qur'an about ecosystem (Suhendra 2013: 62). Al-Qur'an mentions clearly at surah al-baqarah (2) verse 30 that Allah creates humans as caliph on earth. One of the value in this verse that Allah entrusts to the humans as leaders on earth to take care of and maintain the balance of earth well not as destroyer of earth. This verse also explains that Al-Qur'an can integrate between religion and science. Learning science that contains implicit values is gaining value and moral system in each teaching material, related to the prevailing norms in society that can be used in human life.

Based on the first observation at State Islamic Senior High School (MAN) Kalimukti Cirebon regency, writer gets the data that : State Islamic Senior High School (MAN) Kalimukti is new school in Cirebon regency; The 2006 curriculum or school-based curriculum is used; the lack of media and infrastructure; the lack of handbooks and textbooks for teachers and students; there is no module based on SETS-vision; teacher-centered classrooms; learning biology onlyconcerning on domain of cognitive without extending far to affective and psychomotor; and there is dichotomy between science of religion and science " biology" that affects the students' learning motivation.

The development of module based on SETS-Vision and Islamic valueleads the students to learn science with environment, science with technology, science with society, technology with environment, and science with Islamic value, until the students increase the comprehensive understanding of natural phenomena that they have learned and based on religion.

METHODS

This study is Research and Development (R & D). According to Sugiyono (2010: 407) Research and Development method is a method of research used to produce a specific product and examine the effectiveness of the product. The need analysis is to produce a specific product and the research is to examine the effectiveness of the product. In this study the product that is developed and tested is ecosystem material module based on SETS-vision and Islamic value.

This research is held at State Islamic Senior High School (MAN) Kalimukti Cirebon regency year 2014/ 2015. The population of the study is the class X of MAN Kalimukti which consists of four classes X1, X2, X3, and X4 and a biology teacher. The instrument of this study is interview sheet, module validation sheet, readability questionnaire sheet, question sheet of cognitive evaluation. Descriptive analysis technique includes validity, module readability. Quantitave analysis covers pretest and posttest data as the result of cognitive learning.

RESULT AND EXPLANATION

Based on the first observation at State Islamic Senior High School (MAN) Kalimukti Cirebon regency, the writer gets the data that : MAN Kalimukti is new school in Cirebon regency; The 2006 curriculum or school-based curriculum is used; the lack of media and infrastructure; the lack of handbooks and textbooks for teachers and students; there is no module based on SETS-vision; teacher-centered classrooms; learning biology only concerning on domain of cognitive without extending far to affective and psychomotor; and there is dichotomy between science of religion and science " biology" that affects the students' learning motivation.

According to expert of biology subject, expert of SETS and religión, and also expert of media, the level of developed module validation result is on value 4,31 categorized " very valid" in the aspect of contents, presentation, language, SETS, and islamic value. It can be seen at the following Table 1.

Tabel 1 Validator validation results

Validator	Total score on aspects				
	Contents	Language	Presentation	*SETS* and Islamic value	Mean
1	3,73	4,00	4,00	4,00	93
2	4,09	4,00	4,00	4,22	4,08
3	4,91	4,79	4,92	5,00	4,91
Mean	4,24	4,26	4,31	4,41	4,31
Categorized	Very Valid	Very Valid	Very Valid	Very Valid	
Total Mean	4.31				
Mean	Very Valid				

After the module has been verified by validators that is very valid, next step is testing the module on small-scale testing and big-scale testing.

Determining small-scale class, control class and experiment class used Bartlett's test (Sudjana, 2005). The result of homogeneity test at daily tests before ecosystem used Bartlett's test class X1, X2, X,3 and X4 is $x^2 = 1.607$. If $\alpha = 0,05$, from distribution list chi-squarewith degrees of freedom(df) = 3is gotten $x^2_{0,95\ (3)} = 3,182$. There is $x^2 = 1.607 \leq 3,182$, therefore hypotesis $H_0 : \sigma_1^2 = \sigma_2^2 = \sigma_3^2 = \sigma_4^2$ is accepted with significant level of 0,05. This shows that the four classes is homogeneity.

Determining small-scale class, and big-scale class (control class and experiment class) are chosen randomly.

Small-scale testing is used to get information about module readability. The value of students and teacher of module readability is 4,36 and 4,43 categorized very good. The module readability consists of : feasibility contents, language, most up-to-date, SETS concept and Islamic value, presentation, and graphics. The use of module is effective and enhancement result.

Big-scale testing measures the effectiveness of module (teaching material) which is gotten from cognitive learning (posttest) on experiment class used developed module, comparing to cognitive learning result (posttest) on control class used textbooks.

Before analyzing the result of posttest on control class and experiment class, the result of pretest on control class and experiment class analyzes first with prerequisite test that is normality test and homogeneity test. The result of normality test and homogeneity test on pretest and posttest can be seen on the Table 2, and 3.

Tabel 2 The result of normality test on *Pretest* and *Postest* of control class and experiment class with *One-Sample Kolmogorov-Smirnov Test.*

Cognitive learning result	Class	N	Mean	SD	Asymp. Sig(2-tailed)	α	Conclusion
Pretest	Control	36	50,19	12,41	0,48		Normal Data
	Experiment	36	45,00				
Posttest	Control	36	63,61	12,96	0,07	0,05	Normal Data
	Experiment	36	78,61				

Tabel 3 The result of Homogeneity on *Pretest* dan *Postest* of Control class and Experiment class with *Levene's Test*

Cognitive learning result	Class	Value		Mean	SD	Homogeniety *(Levene's Test)*	Conclusion
		Max	Min				
Pretest	Control	73,33	30,00	50,19	1,06	0,18	Homogen
	Experiment	73,33	20,00	45,00	1,37		
Postest	Control	80,00	43,33	63,61	1,09	0,13	Homogen
	Experiment	100,00	53,33	78,61	1,03		

It can be seen on the table 2 and 3 that cognitive learning result on pretest and posttest data of control class and experiment class distributes normality and homogeneity with significant level of > 0,05. It shows that the first condition before giving the treatment has the same ability.

After knowing the normality and homogeneity, next step is knowing the difference between control class and experiment class by using t-test (test of different Mean). The result of t-test can be seen on Table 4.

Tabel 4 The result of t-test on big-scale of *Prettest* and *Posttest*

Cognitive learning result	Treatment class	Mean	T_{hitung}	T_{tabel}	*p value*	Decision
Prettest	Control	50,19	1,80	1,99	0,08	H0 accepted
	Experiment	45,00				
Postest	Control	63,61	5,99	1,99	0,00	H0 refused
	Experiment	78,61				

The result of t-test pretest on control class and experiment class shows that there is no difference, because of p value>0,05, or t test< t table, therefore, when there is a different on posttest, it is because of different treatment between control class and experiment class.

The result of t-test posttest p value<0,05 or t test> t table shows that there is significant variance

between the mean values on control class and experiment class. The mean values of experiment class is higher than control class.

Classical learning mastery between control class and experiment class can be seen on Table 5 and 6.

Tabel 5 The percentage of cognitive learning result on *Pretest* of control class and experiment class

Cognitive learning result	Total of students	Total of values	Mean	Total of completeness	%	Total of incompleteness	%	Class completeness	
								Yes	No
Control	36	1806.67	50.19	4	11	32	89		√
Experiment	36	1620.00	45.00	3	8	33	92		√

Table 6 The percentage of cognitive learning result on *Posttest* of control class and experiment class

Cognitive learning result	Total of students	Total of values	Mean	Total of completeness	%	Total of incompleteness	%	Class completeness	
								Yes	No
Control	36	2290.00	63,61	17	47	19	53		√
Experiment	36	2830.00	78,61	31	86	5	14	√	

Based on table 5, it can be stated that before giving treatment (pretest) on control class and experiment class, both of them do not achieve yet classical learning mastery 80 % , if the students have achieved minimal mastery standard (KKM) ≥ 70, they have gotten classical learning mastery.

On the table 6, it can be stated that after giving treatment (posttest) on experiment class, the students get the classical learning mastery (86 %) or similar to 31 students, but in control class, the classical learning mastery is 47 % or similar to 17 students, it means that they do not get the classical learning mastery.

According to Prastowo (2012) module is systematical teaching material with understandable language by learners, appropriate with their knowledge and ages, in order to learn independently with the minimalized teacher's help. Biology learning module with SETS-vision and islamic value that has been developed and designed is to change the teacher-centered learning to be student-centered learning. The approach of student-centered learning is to give students a chance to do the relevant activities, and to place the teacher as a fasilitator. The students are not only learning the theory, but also practicing the concepts that they have learned, therefore students perceive that knowledge is not only to

be learned, but also apply the knowledge in their daily life (Hunde & Tegene, 2010: 46).

Based on the result of validation from the expert of biology subject, the expert SETS and religion, expert of media, the validaty level of developed module is on value 4,31 categorized "valid" in the aspect of feasibility contents, presentation, language, SETS, and islamic value. This shows that learning module that has been developed can : (a) help the students to be independent learner; (b) have work plan that is responded well ; (c) contain the complete content of learning material and be able to give students a chance for learning; and (d) monitor students' learning activities (Indriyanti & Susilowati, 2010: 4).

Small-scale testing is held on class X2 with 35 students and a biology teacher. Next step, 35 students are given a learning module that has been developed to be learned at home and at school when the teaching learning process is running. In the end of meeting, the students are given readibility questionnaire sheet and comment about the module. 35 students respond the module very good. It can be seen instudents' mean score for responses that shows 4,36 categorized "very good" and teacher's readibility score with mean score 4,43 categorized "very good". The result of readability shows that biology learning module that has been developed is appropriate

with the module aspects and characteristics that include self instruction, self contained, stand alone, adaptive, dan user friendly (Sutrisno, 2008: 4).

Learning concept based on constructivism learning theory is that students create the construction of an individual's new knowledge actively based on the prior knowledge (Trianto, 2009:28). Constructivisme in the learning process is based on the reality that every student has ability to contruct the their former experience and knowledge. This module is a medium to prepare the students in order to contruct their own knowledge. Teacher is as facilitator or as creator the learning environment that get the students active in class to gain the information by themselves, assimilate and adapt their own information, and contruct the information to be new knowledge based on their prior knowledge. The use of module in learning process can help to increase the students' understanding and achieve the minimal mastery criteria, lead the students to be active in the learning activity, and get used to the students to find a concept on independent learning activity (Maks & Arthur 1997).

Classical learning mastery on control class does not achieve the indicator of learning mastery, it is because of using Biology textbook in the teaching learning process. The use of the that learning material is less in helping the students to understand the ecosystem material, therefore students can not answer the questions correctly. Sujana & Rivai (1991) explains that a learning material for teaching is chosen based on the criteria of learning material that can support the subject that is taught, the learning objectives, and the students' thinking level. Classical learning mastery on experiment class achieves 81% and fulfill the indicator that is positive result. The use of this module is successful to help the students to apply the consepts to solve the problem of ecosystem in posttest questions.

This learning based on SETS-vision has a positive influences toward the students' learning result (Binadja et al., 2008: 261),Yurok, et al. (2010) and (Esmiyati, 2013: 180) emphasize that learning SETS will develop learning outcome. Learning science biology is not always standing alone but it also integrates with Islamic values. For instance, Rochman in his research (2010: 53) states that learning science and learning religion can be applied in integrated learning.

CONCLUSION

Validity of ecosystem material module based on SETS- Vision and Islamic value is on very valid category. The use of the module is in effective criteria, because there is significant difference in mean score of cognitive learning, and the different classical mastery between control class 47% and experiment class 81%, therefore this module can be applied at State Islamic High School (MAN) Kalimukti Cirebon regency.

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