Application of Teaching Model of Team Assisted Individualization [TAI] In Basic Chemistry Courses in Students of Forestry and Science of Environmental Universtias Halu Oleo

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Abstract. The purpose of this research is to know the description of Basic Chemistry ability of students who are taught by using Teams Assisted Individualization (TAI) learning model with Basic Chemistry ability of students taught by using conventional learning model. The population of this research is the first semester students of the Faculty of Forestry and Environmental Science of Universitas Halu Oleo who program the Basic Chemistry course, consisting of the Department of Forestry and the Department of Environmental Science. The sample of research was taken 2 parallel classes from each department, ie 1 class as experiment class and 1 class as control class. The data collection technique of this research is done by giving pre-test and post-test. The pre-test value in the experimental class is used to determine the group members as well as the determination of the group leader. Data analysis conducted by using descriptive statistics include average value, highest score, and lowest value, and distributive value by category. The results of this study are as follows: (1) Generally, the basic chemistry skills of the students of the Department of Forestry and Environmental Science are taught using a model of cooperative learning type Teams Assisted Individualization (TAI) in either category (B), with an average of 60.09. (2) Generally Basic Chemistry ability of students of Department of Forestry and Environmental Science which is taught using conventional learning model in enough category (C), with average 53,67, and (3) The ability of the students of the Department of Forestry and Environmental Sciences taught to use TAI type cooperative learning model is better than the ability of students who are taught using conventional learning.

Keywords: ***Team Assisted Individualization, Basic Chemical Ability, Forestry and Science of Environmental***

I. INTRODUCTION

Chemistry subject is one of the subjects that is considered difficult to be understood by new students, especially students of Forestry and Environmental Science. In fact, these subjects of basic materials have been studied at high school. This may be due to the level of students' understanding of receiving chemicals at high school is still lacking.

he above facts, seen from the results of first semester students study in the Department of Forestry and Environmental Science Universitas Halu Oleo is still low. Based on the data of the interview with the students at the beginning of the class in the class, it was found that the students who entered in the Department of Forestry and Environmental Science came from Senior High Schoo (Department of Science and Social Science) and Vocational high School (Department of Automotive and Sewing). This condition is certainly very influential on the basic understanding of students on Chemical material. From the data of the graduation rate of students in Basic Chemistry subject from the academic year 2013/2014 and academic year 2014/2015 as follows: Students who get an A score (score of 81 - 100) is 0.77%, B (61-80) is 20.15%, C (41-60) were 43%, and 35.65% did not pass.

Many factors that can affect student learning outcomes include: reandahnya understanding of basic concepts Chemistry when in Senior high school, the level of student IQ is still less than the standard, the model of lectures used by lecturers has not been in accordance with the characteristics of students. One way that can be done to overcome student's learning difficulties is the application of varied teaching methods. This method seeks to improve the success of students in learning as well as one of the indicators in improving the quality of education. A good teaching method should be tailored to the characteristics of the subject matter to be delivered. Memory-related material, of course, requires a different method of teaching to the subject matter.

According to Slavin (1995), difficulties in learning related to the science of science are not sufficiently solved by conventional methods, but can be assisted by cooperative learning methods. There are many research results that examine the cooperative learning and the results proven to improve student achievement. However, it should also be examined that whether all cooperative learning models are compatible with all materials to be taught. It should also be noted that the application of a good learning model should take into account the characteristics of the material to be taught as well as the classroom conditions that include the number of students, the room area, the level of basic mastery of the material, and so forth.

Therefore, in this study the authors use cooperative learning model Teams Assisted Individualization (TAI) method. The reason for using this method is because of students' habits in solving Chemical problems generally ask their colleagues instead of asking the lecturer. This is in accordance with the characteristics of the TAI method that students are grouped into small groups led by a group leader who has more knowledge than their members. The difficulty of understanding the material experienced by the students can be solved together with the group leader and with the guidance of the lecturer. With the existence of Team Assisted Individualization model, it is expected that students who have difficulty understanding the concept of a material or shy to ask the lecturer can be overcome by asking a friend who is smarter in his group.

Thus, the purpose of this research is to know the description of basic chemistry ability of students who are taught by using Teams Assisted Individualization (TAI) learning model with Basic Chemistry ability of students taught by using conventional learning model.

II. METHOD

The population of this research is the first semester students of the Faculty of Forestry and Environmental Science of Halu Oleo University who program the Basic Chemistry course, consisting of the Department of Forestry and the Department of Environmental Science. The sample was taken 2 parallel classes from each department, ie 1 class as experiment class and 1 class as control class. For the sample class of the Department of Forestry, class C as the experimental class and class B as the control class. While the sample class is Environmental Science Department, class B as experiment class and class A as control class. Selection of experimental class and control class through homogeneity variance test on student pre-test value data on all samples.

This research is an experimental research by using Control Group Pre Pre-Post test design, complete presented below:

E	:	O_1	X_1	O_2
K	:	O_1	X_2	O_2

Eksplanation*:*

E = Experiment class
K = Control class
O_1 = *Pre test*
O_2 = *Post test*
X_1 = Application of TAI learning model
X_2 = Application of conventional learning model

This research instrument uses observation sheet about student activity and test result learning instrument. This research is conducted through three stages, namely; (1) preparation stage, (2) implementation stage, and (3) phase of data analysis.

Techniques of collecting research data is done by providing pre-test and post-test both in the experimental class and control class. The pre-test value in the experimental class is used to determine the group members as well as the determination of the group leader. Data analysis performed using descriptive statistics include: average, highest, and lowest value, and distributive values by category.

III. RESULTS AND DISCUSSION

1. The Result of Descriptive Analysis of Basic Chemistry Ability of Experiment Class

The result of descriptive analysis of Basic Chemistry ability for experimental class both Department of Forestry and Environmental Science Department can be seen in table 1.

Table 1. The results of descriptive analysis of the ability of Basic Chemistry Experiment Class

	Forestry (Class C)	Environmental Science (Class B)	Combined two experimental classes
N Valid	34	36	70
Mean	60,1918	60,0042	60,0953
Median	72,9800	69,5950	72,1100
Minimum	8,00	20,80	8,00
Maximum	78,45	78,79	78,79

Based on the data in table 1, it can be seen that the Basic Chemistry ability for experimental class in the Department of Forestry with an average of 60.19, and the Environmental Science Department with an average of 60.0. While the basic chemistry ability for the combined both the Department of Forestry and Environmental Science with an average of 60.09.

2. The Result of Descriptive Analysis of Basic Chemistry Ability of Control Class

The result of descriptive analysis of Basic Chemistry ability for control class both Department of Forestry and Environmental Science Department can be seen in table 2.

Table 2. Results of descriptive analysis of Chemistry Basic Control Class capability

		Forestry (Class B)	Environmental Science (Class A)	Combined two control classes
N	Valid	33	29	62
Mean		48,9303	59,0741	53,6750
Median		48,0000	59,3300	54,6550
Minimum		5,00	48,00	5,00
Maximum		82,39	81,76	82,39

Based on the data in table 2, it can be seen that the basic chemistry ability for the control class of the Department of Forestry with an average of 48.93, and the Environmental Science Department with an average of 59.07. While the basic chemistry ability for the combination of both Department of Forestry and Environmental Science with an average of 53.67.

3. Distributive Basic Chemical Ability Based on the grade category in the Experiment Class

Distributive Chemical Ability based on value category in experimental class both Department of Forestry and Department of Environmental Science, can be seen in table 3.

Table 3. Distributive Basic Chemical Ability Based on the grade category in the Experiment Class

Value Range	Value Category	Forestry (Class C)		Environmental Science (Class B)		Average (%)
		Frequency	%	Frequency	%	
$81 \leq X \leq 100$	Very good (A)	0	0	0	0	0
$61 \leq X < 80$	Good (B)	22	64,71	23	63,89	64,30
$41 \leq X < 60$	Enough (C)	8	23,53	7	16,67	21,49
$X \leq 40$	Less (D)	4	11,76	6	16,67	14,22
Total		34	100	36	100	100

Based on the data in table 3, it can be seen that Basic Chemistry ability for experimental class of Department of Forestry is generally good category (64,71%), very good category does not exist, and only 11,76% less category. While the Department of Environmental Science is generally good category (63.89%), very good category does not exist, and only 16.67% less category. Thus, in general the ability of the Basic Chemistry experiment class is good (64.30%).

4. Distributive Basic Chemical Ability Based on the grade category in the Control Class

Distributive Chemical Ability based on value category in the control class of both Forestry Department and Environmental Science Department, can be seen in table 4.

Table 4. Distributive Basic Chemical Ability Based on the value categories in the Control class

Value Range	Value Category	Forestry (Class B)		Environmental Science (Class A)		Average (%)
		Frequency	%	Frequency	%	
81 ≤ X ≤100	Very good (A)	1	3,2	1	3,45	3,3
61≤ X < 80	Good (B)	8	24,24	11	37,93	31,08
41 ≤ X < 60	Enough (C)	18	54,54	15	51,73	53,14
X ≤ 40	Less (D)	6	18,18	2	6,89	12,53
Total		33	100	29	100	100

Based on the data in table 4, it can be seen that the basic chemistry ability for the control class of the Department of Forestry is generally sufficient category (54.54%), very good category 3,2%, and only 18,18% less category. While the Department of Environmental Science is generally sufficient category (51.73%), very good category 3.45%, and only 6.89% less category. Thus, in general the basic chemistry ability of the control class is sufficient (53.14%).

The results of this study showed that both the experimental class and the control class consisting of two departments, namely Forestry and Environmental Science, each have relatively similar capabilities. This means that the implementation of Cooperative Cooperative Team Assisted Individualization (TAI) model positively influences the basic chemistry capabilities of both the Forestry Department and the Environmental Science Department. This is in line with Vitria (2014) research results, that learning using Team Assisted Individualization (TAI) model can improve the quality of learning process and student achievement in Stoichiometric Solution material. This learning model is more effective because students have the opportunity to work together in teams, so they have insight and exchange opinions to solve problems.

In addition, other factors that affect the ability of Basic Chemistry is the background of students both the Department of Forestry and the Department of Environmental Science originating from the Department of Science or Social Science when in high school. The experimental class is dominated by the Science Department, while the control class is dominated by the Social Science Department or from the vocational school.

IV. **CONCLUSION**

Based on the results of research and discussion, it can be concluded as follows:

Generally, the basic chemistry skills of the students of the Department of Forestry and Environmental Science are taught using the cooperative learning model of Teams Assisted Individualization (TAI) type in either category (B), with an average of 60.09.

Generally the basic chemistry ability of the students of the Department of Forestry and Environmental Science is taught using the conventional Learning model in the sufficient category (C), with an average of 53.67.

The ability of the students of the Department of Forestry and Environmental Sciences taught to use TAI type cooperative learning model is better than the ability of students who are taught using conventional learning.

REFERENCES

Ibrahim, Muslimin, dan Slavin, 2000. *Pembelajaran Kooperatif*. Surabaya. Uneversitas Negeri Surabaya. 2000. *Model-Model Pembelajaran*. Direktoral SLTP Dirjen Dikdasman Depdiknas.

Vitria, Lativah Nurul, 2014. Metode Pembelajaran Kooperatif Team Assisted Individualization (Tai) Dilengkapi Handout untuk Meningkatkan Kualitas Proses dan Prestasi Belajar Belajar Siswa Pada Materi Larutan Penyangga Kelas XI IPA 4 SMAN 2 Karanganyar. *Jurnal Pendidikan Kimia Vol 3, nomor 4 tahun 2014.* Prodi Pendidikan Kimia Universitas sebelas mater, Surakarta.

Slameto. 1981. *Belajar dan Faktor-Faktor yang Mempengaruhinya*. Bina Aksara. Jakarta.

Slavin R. E, Cooperative Learning Teori, Riset dan Praktik, Bandung : Nusa Media, 2009

Slavin, R. E. (2008). Cooperative Learning Teori. Riset dan Praktik. Terjemahan Nurulita Yusron. Bandung: Nusa Media

Soenarto, S,. 2002. *Interaksi Pembelajaran Dan Pengelolaan Kelas*. Jakarta: Depdiknas.