# "EDUCATION TRANSFORMATION TOWARD EXCELLENT QUALIT BASED ON ASEAN COMMUNITY CHARACTERISTICS"

Islamic State University Sunan Kalijaga
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# PREFACE

The main theme of the international seminar conducted by *Faculty of Tarbiyah and Teaching State Islamic University Sunan Kalijaga* Yogyakarta, Indonesia, is '*Education Transformation Toward Excellent Quality Based on ASEAN Community Characteristics*'. The background of the seminar is the lags of education quality in almost ASEAN countries in comparation with the universities in developed countries. The discussion will be focused on the way how to transform the education model in ASEAN toward excellent quality based on local wisdom. To elaborate the main theme, the organiser of seminar created three sub-themes: 1) globalizing education values based on ASEAN community Characteristics, 2) transforming education toward new paradigm, and 3) building religious next generation. The first theme is to offer the participants to write how to promote the quality of education to global level based on local culture. The second theme is to ask education experts to elaborate the new paradigm in the context of transforming education practise. The third is to give the opportunity to everyone of educator to present his research or experiences in promoting the education model.

Proudly, the organizer of the seminar presents the outstanding speakers from various universities of ASEAN, namely: Faculty of Education University of Malaya (UM), University of Dato Hussen Onn Malaya (UTHM), Faculty of Education University of Brunei Darussalam, Faculty of Eduction Thaksin Universisty Thailand, and last but not least from UIN Sunan Kalijaga Yogyakarta, Indonesia.

Rosmawijah Jawawi, from the Sultan Hassanal Bolkiah Institut of Education (SHBIE) at University of Brunei Darussalam wrote the transformation of teacher education in University of Brunei Darussalam. The title is '*Teacher Education in Brunei Darussalam: Transforming tomorrow's Generation through Teacher Education today*'. She mentioned in her paper that since 2009, the Sultan Hassanal Bolkiah Institute of Education (SHBIE) at Universiti Brunei Darussalam has transformed into a graduate school of education. The Institute of Education which previously offered undergraduate programmes, has undergone a complete overhaul over the past couple of years to focus more on graduate programmes in research and evidence-based practices. SHBIE as a graduate school offers innovative graduate programmes which include Master of Teaching (MTeach), Master of Education (Med) and Doctorate of Philosophy (PhD). Part of the rationale behind this transformation, as in other countries, was a desire to enhance the professional status of teachers in the nation by (i) having a policy that all teachers should in the long-term be qualified to masters level and (ii) ensuring that the education teachers receive provides them not only with basic teaching strategies, but also with the skills to engage in on-going, evidence-based improvements in their teaching throughout their career. This paper will discuss the transformation of SHBIE in the pursuit of better teacher quality that aims to upgrade the teaching profession in Brunei Darussalam.

The challenge for Brunei is that with a small population, Brunei is heavily dependent on a non-renewable resource for growth and stability. Education, therefore plays a critical role in equipping the country with the human resource needs to support its economic diversification agenda and enhanced well-being of people. The needs for economic diversification has made it imperative for the Ministry of Education to take on reformation and restructuring efforts with respect to education policy, structure, curriculum, assessment and qualifications, and professional development in support of the nation's drives to achieve Brunei Vision 2035 (Wawasan Brunei 2035).In realising

this, SHBIEtransformed itself into a graduate school of education in 2009 with to produce educators as high quality professionals with integrity and core values.

In relation to Rosmawijah Jawawi's paper, Sittichai Wichaidit from Thaksin University wrote the specific transformation in the classroom under the title '*Science Teaching for the 21st Century: Transforming Classrooms for The Next Generation Learners*'. His conclution is that educational policy concerns regarding to how science teachers can support students to develop skills needed to be effective citizens in the 21st century. Several skills are considered as the learning objectives of science teaching including critical thinking and problem solving, creativity, collaboration, and communication. People living in this century are expected to master those skills for success in today's world. Yet, it is not clear how to change classrooms from passive learning to be more active and how to provide the context for students to develop those essential skills. The instructional strategy for developing the 21st century skills is proposed in this article. It is developed from the current understandings of how students learn and how scientific inquiry can be organized in science lessons. The strategy was implemented in the learning activities which were parts of the science camp for Thai high school students to develop 21st century skills. After participating in the activities, most students agreed that the activities provided opportunity for them to practice critical thinking and problem solving, creativity, collaboration, and communication. The example of learning activities is presented and there is also the implications of this strategy for science teachers.

The paper elaborated the transformation of education in more specific than before is what was written by Hafsyah Siti Zahara, et all, Departement of Chemistry Education, Faculty of Science and Technology, Islamic State University (UIN) Sunan Kalijaga Yogyakarta *'The effectiveness of Jikustik Learning Model in Student's activity and learning achievement'* According to the witers, that based on the data analysis, it can be concluded:

1. There is a difference in students' activity between the experimental class and control class, then it can be said that *Jikustik* learning model affects the students' activity.
2. There is no difference in student achievement between the experimental class and control class, so that *Jikustik* learning model has no effect on student achievement.

Based on the results, it can be expected to put forward some suggestions that can be applied in the development of science and education policy. Researchers advise as follows:

1. In order to enhance the activity and student achievement, especially chemistry, teachers as educators need to implement active learning model that can stimulate students to be able to increase its activity during learning, so understanding and knowledge gained can retain for longer time.
2. The mixed-model sometimes needs to be done in order to complement each other. By using the mixed-model, students competencies can be emerge.

Hopefully, this seminar would play the role in attaining the goal of transforming education toward excellent quality in ASEAN through the university. The university can support or add on to the state education development program, enhancing the quality of education, building linkages in education system, ensuring access to education, building bridge with development program as well.

Yogyakarta, November 2014

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# CONTENTS

# THE EFFECTIVENESS OF JIKUSTIK LEARNING MODEL IN STUDENTS' ACTIVITY AND LEARNING ACHIEVEMENT

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## ABSTRACT

*Jikustik* is a name for a mixed-model of Jigsaw and Talking Stick. Jigsaw and talking stick are cooperative learning models that have been studied in various ways by a number of researchers and teachers in classes of different levels and subjects. Unlike previous studies, the present research aimed to find out the significant different of students' activity and learning achievement using *Jikustik* learning model. As a quasi experiment, two classes of grade X of MAN Yogyakarta II were involved as an experimental class (X-C) and a control class (X-F). A multiple-choice test, a student activity scale and a student activity observation sheet were used to collect the data. Data were then analyzed using T-test and Mann Whitney based on its characteristic. A conclusion was drawn that the significant value (2-tailed) in students' activity is 0.003 (< 0.05), which means that $H_1$ is acceptable, so there is a different in students' activity using *Jikustik* learning model. And for learning achievement, the result shows that there is no

significant value (2-tailed) in student's learning achievement, proven by the significant value is 0.472 (> 0.05) (the $H_0$ is acceptable).

*Keywords:* Jigsaw, Talking Stick, activity, learning achievement

## A. Introduction

It is a teacher's moral obligation to encourage and motivate students to learn the knowledge and skills well. In addition, a teacher also has to encourage students to be innovative, creative and adaptive to their life. For the consequences, teachers should use various learning models and methods to help students understanding the material (Suyono & Hariyanto, 2011: 4-5). Teachers need to develop an active learning as called student centered learning approach. To enhance the participation of students, the necessary learning model allows students to get involved as a whole, so that students can show their performance. Student activity is important and it can be seen in a wide range of activities undertaken during learning process. Activities undertaken by the student will have an impact on the achievements obtained. As known, learning achievement is a change of behavior, which obtained after a learning activity. Cooperative learning model can be used to enhance students' activity.

Cooperative learning may be broadly defined as any classroom-learning situation in which students of all levels of performance work together in structured groups toward a shared or common goal. According to Johnson, Johnson and Holubc, (1994): "Cooperative learning is the instructional use of small groups through which students work together to maximize their own and each others learning". In classrooms where collaboration is practiced, students pursue learning in groups of varying size: negotiating, initiating, planning and evaluating together. Rather than working as individuals in competition with every other individual in the classroom, students are given the responsibility of creating a learning community where all students participate in

significant and meaningful ways. Cooperative learning requires that students work together to achieve goals, which they could not achieve individually. It also requires several activities learning.

Cooperative learning is a systematic learning model by classifying students who aim to conduct an effective learning approach in order to improve their learning activities. Jigsaw and Talking Stick are the various technique of cooperative learning model. Jigsaw has major activities are: reading, experts group discussion, Jigsaw group discussions, and tests. Sukarni et al. (2013) stated that during the learning activities would be going on a good interaction between teacher and student. Students will actively ask to be able to understand the material well, because students have to explain the material during the discussion phase of the Jigsaw group. On the other hand, as a cooperative learning model, Talking Stick use a "stick" as a tool, which student who get the stick should answer teacher's questions. Each student has the same opportunity to answer questions or express their opinions.

As a mixed-model, Jigsaw requires students to actively participate in the classroom, spesicially to understand the material, whereas Talking Stick is used to conclude the material that has been discussed and provide opportunities for teachers to correct misconceptions. By this, the mixed-model of Jigsaw and Talking Stick (*Jikustik*) is expected to be one of the solutions that can enhance students' activity and their achievement.

Particularly in chemistry, Sunyono et al. (2009) stated that chemistry is a subject containing many difficult concepts for students to understand, because it contains chemical reactions and calculations as well as concerning the concepts that are abstract and considered by students is a relatively new material and have not been studied while in Junior High School. This problems cause students unwilling to study chemistry further. Students feel tired and have less interest to chemistry, so that the atmosphere of a class tend to be passive, very few students who asked the teacher despite being taught the material can not be

understood. In this kind of learning, they will feel as if forced to learn and they will have less motivation to reach the objectives.

Prior study in MAN Yogyakarta II (5 February 2014) shows the average grade of chemisty subject for class X is quite low. Some students need to do remedial to obtain the minimum standard set grade for 70. The low academic achievement was occured because the students assumed chemistry as a difficult subject. As a result, during learning process, the students only listen the teacher's explanation and sometimes make some notes. Students also infrequently asked the teacher and have less attention to the teacher's explanation. According to Zaini (2010: xiv) if students are passive during learning process, they will have less memorization of what they have learned, and it will also give a negative impact to their achievement.

## B. Method

This study aimed to determine the differences in astudents' ctivity and their achievement of using *Jikustik* learning model. This research is a quasi-experimental study using a pretest - posttest design equivalent control group. The experiment was conducted in MAN Yogyakarta II in academic year of 2013/2014 at the subject of Hydrocarbon. Sampling was done with a random sampling technique and was selected X-C as the experimental class (using *Jikustik* learning model) and X-F as the control class (using Two Stay Two Stray learning model). There are three variables which was used, namely: *Jikustik* learning model as a independent variable, activity and academic achievement as a dependent variables, and the subject matter, the implementation of learning by one teacher and a time duration as a control variable. The students' activities in this research are visual activities, oral activities, listening activities, motoric activities and writing activities.

The instrument used was a set of multiple-choice test to determine the students' achievement, a student activity scale (a checklist form with four scales) and student activity sheets observation to determine the students' activities. Instrument test consists of 20 multiple choices

questions, whereas student activity scale consists of 20 of the 40 items tested. Its validity has tested both logically and empirically. On the other hand, the student activity observation sheet only was validated logically. Prior to treatment, both classes were given a pre-test and pre-scale to measure prior knowledge and learning activities. The students in the experimental class were taught-using *Jikustik* learning model; while the control class used Two Stay Two Stray learning model. In the end, the two classes were given a post-test and post-scale to determine the effect of the treatment given.

Analysis of the activity scale and tests were tested using T-test. Prior to the analysis, first tested for normality and homogeneity of variance test as a prerequisite for the T- test. If the test prerequisites are not met, then performed with the nonparametric Mann Whitney test. The mixed-model is said to have differences of activity and student achievement, judging from the results of the analysis of the difference test, ie, if the result of T-test analysis sig. (2 - tailed) > 0.05 then $H_0$ is accepted, and if otherwise then $H_1$ is accepted. The observation of student activity sheet analysis by analyzing scores obtained, converted into qualitative data (interval data) with a four-scale.

## C. Results & Discussion

### 1. Results

a. Pre-scale analysis

Pre-requisite test of normality and homogeneity are met by analyzing test data using two independent samples T-test. Based on the test results, it is known that the assumption of homogeneity of variance similarity (homogeneity) are fulfilled, so that the output value is seen from the t-test for Equality of Means is on the first line (equal variance assumed) obtained sig. (2 - tailed) of 0.347 (> 0.05), meaning that $H_0$ is accepted. Based on these results, it can be seen that there is no difference students' activity in the experimental and control class.

b. Pre-test analysis

Because of test prerequisites are fulfilled only for normality, the data was then analyzed using Mann Whitney test, which was conducted to determine whether the data from the pre-test between the experimental class and the control class are the same or different. Based on the output value of Asym. Sig. (2 taliled) of 0.058 (> 0.05), then $H_0$ is accepted. This means that there is no difference in achievement between the experimental class and control class.

c. Post-scale analysis

Because of test prerequisites are fulfilled only for normality, the data was analyzed using Mann Whitney test. Based on the output value of Asym. Sig. (2 - taliled) of 0.003 (< 0.05), then $H_0$ is rejected and $H_1$ is accepted. This means that there are differences in the activity between the experimental class and control class.

d. Post-test analysis

Pre-requisite test of normality and homogeneity are met by analyzing test data using two independent samples T-test to determine the post-test results data between the experimental class and control class the same or different. Based on the test results, it is known that the assumption of homogeneity of variance similarity (homogeneity) are fulfilled, so that the output value is seen from the t-test for Equality of Means is on the first line (equal variance assumed) obtained sig. (2 - tailed) of 0.475 (> 0.05), meaning that $H_0$ is accepted. Based on these results, it can be seen that there is no difference in students' achievement in the experimental and control class.

e. Analysis of the normalized gain students activity scale

Data analysis using two independent samples T-test was used to determine whether students' activity of the experimental class was higher than the control class. The results of T-test gain normalized scale of student activity can be seen on Table 1.

*Table 1*

*T-test gain normalized of student activity scale*

| | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|
| | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | Lower | Upper |
| Equal variances assumed | 3.965 | 50 | .000 | 13.705 | 3.457 | 6.762 | 20.649 |

Based on the value of output is seen from the T-test for Equality of Means is on the first line (equal variance assumed) obtained sig. (2 - tailed) of 0.000, the sig. (1 - tailed) of 0.00 (< 0.05), $H_1$ is accepted. This means that the students' activity in the experimental class washigher than the control class.

f. Analysis of the normalized gain students achievement

Data analysis using two independent samples T-test was used to determine whether the students' achievement of the experimental class was higher than the control class. The results of T-test gain normalized of students' achievement can be seen on Table 2.

*Table 2*

*T-test gain normalized of students' achievement*

| | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|
| | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | Lower | Upper |
| Equal variances assumed | 0.023 | 50 | 0.928 | 0.117 | 5.198 | -10.324 | 10.558 |

Based on the value of output is seen from the T-test for Equality of Means is on the first line (equal variance assumed) obtained a sig (2 - tailed) of 0.928, the sig. (1 - tailed) of 0.0464 (> 0.05),

$H_0$ is accepted. This means that there is no different on student achievement betwwen the experimental and control class.

g. Data analysis of observation sheet

The observation sheet consists of 11 items. Each meeting of the subtopic, the observer filled the observation sheet. In this study, the experimental class and control class has three observation sheets filled out by two observers. The average score of the experimental class at 34.093, while the average of the control class 33.933. Scores obtained from the student activity sheet observations, converted into qualitative data (interval data) with a scale of four. Table 3 describes the qualitative criteria of the observation sheet.

*Table 3*

*Score categorization of the observation sheet*

| No | Quantitative score | Criteria |
|---|---|---|
| 1 | $35,75 \leq X \leq 44$ | Excellent |
| 2 | $27,5 \leq X \leq 35,75$ | Good |
| 3 | $19,25 \leq X \leq 27,5$ | Average |
| 4 | $11 \leq X \leq 19,25$ | Poor |

The observation data analysis of the students' activity in the experimental class and control class based on the observation can be seen on Table 4.



*Table 4*

*Observation score of students' activity of the experimental class and control class*

| No. | Sheet | Score average | Categori | Score average | Categori |
|---|---|---|---|---|---|
| 1 | 1 | 32,40 | Good | 32,40 | Good |
| 2 | 2 | 34,46 | Good | 34,46 | Good |
| 3 | 3 | 35,42 | Good | 35,42 | Very good |
| Aver-age | | 34,093 | Good | 34,093 | Good |

## 2. Discussion

*Jikustik* learning model is a synthesis of two cooperative learning models, which Jigsaw is used as a way to understand the material whereas Talking Stick is used as a technique for assessing the student comprehension and used for teacher to give feedbacks. The syntaxs of this mixed-model are:

a. splitting students into of the expert group and Jigsaw group;
b. the expert group discussions;
c. the Jigsaw group discussion;
d. the assessment using talking stick;
e. teacher's feedback.

The result of the post-scale analysis shows that there are differences students' activities as the effect of *Jikustik* learning model. It required each student to be active in learning process, because each student has the responsibility to be able to explain material to his friend in Jigsaw group. In the experimental class, students are divided into groups known as the expert group and Jigsaw group. Each student has a responsibility to comprehend each of material in each expert group. In this case, students are exposed to learning situations where students are trained together with classmates to teach each other about new knowledge, resulting in a collective process of knowledge construction (Suyono & Hariyanto, 2011: 116).

Students in the experts group will strive to master the material seriously with the asking, discussing, reading, taking notes, and exercising work on the problems given by the teacher. After that, they should explain the material when they have a discussion in the Jigsaw group. The principle of this mixed-model is learning by teaching. At the time of Jigsaw members gathered in groups, each student will be more active in order to master the entire subject matter of the meeting. Students in the experts group will try to explain the material well and the other students will try to understand what is explained by shared

way to ask, answer questions, discuss, express opinions, take notes, and do the exercises.

Students are also motivated for mastering the material, since the end of the activities will be carried Talking Stick, where students will be singing along, playing the stick and will answer teacher's questions. Students become more relaxed because the learning was accompanied by playing a guitar and music. According to Bassano (2009: 23), music can help in overcoming the tension.

The post-test analysis shows there was no difference in student achievement of *Jikustik* learning model. It assumes that the techniques used in both classes are similar, ie use the same method of discussion then students were required to understand the material and explained it to their friends. In addition, there are factors that are obstacles to the student achievement:

1. Material learned quite complex includes nomenclature, properties, and isomerism of alkanes, alkenes, and alkynes. Students who cannot master the material alkanes, it will be difficult to be able to master the material even alkenes and alkynes.
2. Social environmental factors. Each student in the class certainly has similarities and differences with their friends. This will affect the condition of the relationship among students. Students are not accustomed to do learning activity that requires interacting intensively in order to master the material. However, *Jikustik* learning model expects students to interact intensively with their friends in order to understand and master the material well. When students do not feel comfortable to interact with friends, the ability to master the material does not work well, because students tend to be silent during the discussion group.
3. Students itself. During learning process, students rarely use discussion, let alone using active learning models, then students need to adapt to the new learning environment. Although many

students are getting used to it, but there are some students who still feel confused to do their activities.

Additionally, in one class consists of various students according to the level of intelligence. Students who already have a good intelligence and good social factors supported, will be able to master the material well. Unlike the case with students who have less intelligence, they would have difficulty and require a longer time to understand the material because they must be able to explain material to member of Jigsaw group. As a result, students who are not able to master the material at the meeting will have difficulty at the next meeting.

In addition to intelligence, physical condition also affects students. Before the chemistry lesson in the experimental class is sport, which caused students exhausted. Some of the students there are not concentrating on the expert group discussions that led to the understanding obtained was not optimal. At the Jigsaw group discussion, the students cannot be explained clearly of what is supposed to be delivered, which affected to the comprehension of their friend.

All those factors make students' has less understanding of the material, though a mixed-model (*Jikustik*) is expected to have a significant effect on student achievement. Judging from the average score of the post-test experimental class (74.62) is greater than the control class (71.85). The number of students who did not reach the minimum standard of achievement (KKM) (70) is 6 students, while the control class is 9 students. This indicates that *Jikustik* learning model can be applied to enhance students' achievement. However, based on the statistical tests, the hypothesis was not proven because of the similarity of the learning model used in both the classroom and some of the factors described above.

## D. Conclusion

Based on the data analysis, it can be concluded:

1. There is a difference in students' activity between the experimental class and control class, then it can be said that *Jikustik* learning model affects the students' activity.
2. There is no difference in student achievement between the experimental class and control class, so that *Jikustik* learning model has no effect on student achievement.

Based on the results, it can be expected to put forward some suggestions that can be applied in the development of science and education policy. Researchers advise as follows:

1. In order to enhance the activity and student achievement, especially chemistry, teachers as educators need to implement active learning model that can stimulate students to be able to increase its activity during learning, so understanding and knowledge gained can retain for longer time.
2. The mixed-model sometimes needs to be done in order to complement each other. By using the mixed-model, students competencies can be emerge.



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