
“EDUCATION TRANSFORMATION TOWARD EXCELLENT QUALIT BASED ON ASEAN COMMUNITY CHARACTERISTICS”

**Islamic State University Sunan Kalijaga
Faculty of Tarbiya and Teacher Training**

STATE ISLAMIC UNIVERSITY
SUNAN KALIJAGA
YOGYAKARTA

**“EDUCATION TRANSFORMATION TOWARD
EXCELLENT QUALITY BASED ON ASEAN COMMUNITY
CHARACTERISTICS”**

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viii + 274 hlm; 16 x 24 cm
Cetakan I, November 2014
ISBN: 978-602-9010-...

Penulis: Prof. Dr. H. Hamruni, M. Si. dkk
Lay Out: Lentera Kreasindo
Desain Sampul: Lentera Kreasindo

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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 comparison 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 Hussien Onn Malaya (UTHM), Faculty of Education University of Brunei Darussalam, Faculty of Education Thaksin University Thailand, and last but not least from UIN Sunan Kalijaga Yogyakarta, Indonesia.

Rosmawijah Jawawi, from the Sultan Hassanah 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 Hassanah 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, SHBI transformed 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 conclusion 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 al, 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 wilters, 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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BUILDING THE CHARACTER OF COOPERATIVE, CREATIVE, AND RESPONSIBLE STUDENTS OF TEACHER EDUCATION OF MADRASA (PGMI) THROUGH MATHEMATIC LEARNING BASED ON MULTIPLE INTELLIGENCES¹

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ABSTRACT

This quasi experiment research aim at knowing the influence of mathematic learning based on multiple intelligences toward the character of student of teacher education of madrasa (PGMI) in the aspects of cooperation, responsibility, and creativity.

The population of this research is the student of teacher education of madrasa (PGMI) in UIN Sunan Kalijaga, and the samples are the student of the department of the teacher education of madrasa (PGMI) from the A class and B class who are in the fourth semester from the grade of 2010 and their numbers are 60 students. The data are collected through three techniques and those are questionnaire, interview, and

¹ This research is funded by the faculty of education and teacher in the year of 2012

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the documentation of the mathematic learning based on the multiple intelligences. In this research, validation test is done with validation test of point with item analysis. Based on the Pearson Moment's correlation with the same coefficient of correlation or more than 0,3, then the point of instrument is stated as valid. Whereas for ensuring its reliability, researcher uses the Cronbach's alpha formulation or Spearman Brown's techniques of two splitting. The analysis of the data uses the comparative test of two directions.

Based of the data of questionnaire, the result of the research states that there is a positive influence from the mathematic learning based on the multiple intelligences (multiple intelligences) in three aspects of student's character: cooperation, responsibility, and creativity in the level of trustworthiness in 95%. The positive influences can be seen from: the cooperation between students in conducting an assignment, active participation, and the existence of support. In the aspect of responsibility, it seems that there is improvement of character through: the earnest obedience to the rule and the conduction of assignment. The aspects of creativity are seen in the: the contribution of suggestion and ideas, the production of work in the shape of yells, costumes, and LCC program, and also the appreciation of art and the utilization of model from the material in the environment.

This quasi experiment research aims to know the influence of multiple intelligences based math learning to PGMI student's character especially on teamwork, responsibility and creativity. The population is all PGMI students, and the sample is student at year 2010 class A and B. Collecting data with questionnaire, interview and documentation. Validity test is using item analysis. Based on Moment Pearson correlation, if correlation coefficient equal or more than 0,3 then it is valid. The reliability

is using alpha Cornbach formula or Spearman Brown split 2 technique. Data analysis is using 2 tailed comparative test.

The result from questionnaire is giving conclusion : there is positive influence of multiple intelligences based math learning to 3 PGMI student's character aspects: teamwork, responsibility and creativity on interval confidence 95 %.Positive influence on teamwork can be seen at helping each other, support each other and active participation. On responsibility can be seen at following the rule and doing the task truly. On creativity aspect is seen giving idea, making art product: yel, costume, detail of LCC ceremony, also art appreciation and using matter form their environment.

Keywords : Character, Multiple intelligences (multiple intelligences), mathematic learning

A. INTRODUCTION

The phenomenon of anarchic behavior, fighting and fighting between students, between people, between schools, vigilante, abuse of authority, corruption, drug abuse, as well as interpersonal relationships which start to ignore the ethical values and manners has become a special concern in our educational world.³ Certainly, this would be fatal if the world of education does not immediately fix it.

To deal with this, the government has responded swiftly, so that it has prompted the Indonesian government to create a national policy of National Character Development of 2010-2025.

Some researches have proven that the paradigm of multiple intelligences can make a positive contribution toward the learning

³ Hamruni, Pendidikan Karakter dalam Pembelajaran Anak Usia dini Berbasis Edutainment (Musik dan Lagu Model)dalam Proceeding Pendidikan Karakter-Spiritual Anak Sebagai Pilar Membangun Masyarakat yang Beradab; (Prodi PGMI Fakultas Tarbiyah dan Keguruan UIN Sunan Kalijaga Yogyakarta: 2012)page:1

process which is conducted. It encourages researchers to be interested in conducting research about the EFFECT of mathematics learning based multiple intelligences in building character of students. According to the explanations which exist on the background of the problem, we can formulate the problem to be analyzed, namely: how are the influences of multiple intelligences based mathematics instruction in building student character, aspects of cooperation, responsibility and creativity?

B. THE METHODS OF RESEARCH

This research is the quasi experiment research (*quasi experiment*). Schematically, the design of this research can be conveyed in the following table 1.

Table 1
The Draft of the Design of the Research

Group	Pre-treatment	Treatment	Post-treatment
Controlling Class	-	-	O1
Experimental Class	-	X	O2

X: Treatment which is achieved by the experimental class with mathematic learning based on the multiple intelligences.

O1: The result of questionnaire after the treatment in control class

O2: The result of questionnaire after the treatment in the experimental class.

The time of the research is when the conduction of second mathematic subjects and the learning process is in the even semester in the year of 2011/2012 and it is added with the processing of data in the August-September of 2012. The time which is spent is from the February-September of 2012. The learning process is specialized in the second, third, sixth, seventh, eleventh-fourteenth meetings. The population of the research is the student of the PGMI department. The samples of the research are the sixty students which are placed in two class, and those classes are the A class as the experimental class and the

B class as the controlling class. The conduction of the lectures in the A class uses the mathematic learning based on multiple intelligences, whereas the B class uses the mathematic learning based on the content.

Independent Variables

Independent variable (*Independent variable*) is the variable which is suspected as the cause of the occurrence of other variable. Independent variable commonly is manipulated, observed, and measured to get to know the influence or the contribution of the independent variable toward other variables. The independent variables in this research are the mathematic learning based on the multiple intelligences.

Dependent Variable

Dependent variable is the variable which rises as the consequence of the manipulation or treatment from the independent variable. Dependent variable commonly can be understood through observing and measuring as the consequences of the independent variable. The dependent variable in this research is the character, especially in the aspects of responsibility, cooperation, and creativity.

Techniques of Data Collection

a. Documentation

Documentation is conducted with collecting the data of SAP of second mathematic and its learning process, journal of lecturing, photographs, and the conduction of the learning based on multiple intelligences, namely, LCC, and also the file and the script of the mathematic lectures with multiple intelligences.

b. Interviews

Interviews can be conducted with regarding three assumptions which according to Sutrisno Hadi, it needs to be known by the researcher⁴ and there are (1) respondent is the person who knows

⁴ Sugiyono, *Metode Penelitian Kuantitatif, Kualitatif dan R&D* (Bandung, ALFABETA, 2009), p. 138

well about themselves, (2) who is considered as respondent by the researcher is true and can be trusted, (3) respondent's interpretation toward questions in the guide for interview is same with the researcher's interpretation.

c. **The Questionnaire Filling**

Questionnaire is the technique of data collection where the respondent gets a set of written questions to be answered⁵. In this research, questionnaire is in the shape of a set of questions that need to be answered using four alternative answers which uses Likert's scale.

Table 2. The Score of Lakert's Scale

The Choice of Alternatives	The Variety of Positive Questions
Always	4
Often	3
Seldom	2
Never	1

The Validity and Reliability of Instrument

1. **The Validity of Instrument**

Validity is the degree of accuracy between the data which happen in the object of research with the force which can be reported by the researchers⁶. Thus, the valid data mean that there is no different between the data which are reported with the data which happen in the object of research. The test of the validity can be seen from the construct and the content. In this research, the test of validity uses point test of validity with the analysis of item, namely, correlating each point with the total score which is the total of each point of score. Based on Pearson Moment's correlation, when the same

⁵ Sugiyono, p. 142

⁶ Sugiyono, Metode Penelitian Kuantitatif, Kualitatif dan R&D, Penerbit Alfabeta Bandung, 2009;p. 267

correlation or more than 0,3, the point of instrument is considered valid.⁷

2. The Reliability of Instrument

The test of the reliability of instrument aims at testing whether an instrument can be trusted or not as the collector of data. The points of questionnaire which has been stated as valid in the test of validity can be calculated its reliability with the Cronbach's alpha formulation or with the Spearman Brown's technique of two splitting.⁸ If the coefficient of reliability is more than or similar to 0,70 point, it means that the group of instrument can be stated as reliable.

The Technique of Data Analysis

The analysis data from the questionnaire that can be conducted for filling the answer from the hypothesis contains a significant influence between the mathematic learning based on the multiple intelligences toward the character of students when it is seen from the aspects of cooperation, responsibility, and creativity.

The testing of data can be conducted with orders: the test of normality and homogeneity as the requirement for the test of difference, then it can be tested for its difference.

1. The Test of Normality

The test of normality can be conducted for measuring the score of questionnaire for the character of the experimental group and controlling group. Hypothesis which is suggested for measuring the normality of the distribution of population in this research are as follow:

Ho : Population Data with Normal Distribution

Ha : Population Data with Non-Normal Distribution

⁷ Sugiyono, p. 134

⁸ Sugiyono, p. 136

Some criteria for the test which is used for measuring the normality of population in this research is H_0 which is accepted if the Sig. value $>$ from the level of defined alpha which is 5% (0,05).

2. The Test of Homogeneity

The test of homogeneity is used for defining the level of homogeneity of the score of character questionnaire which is conducted using the st homogeneity of value of the significance with the facility of SPSS version 15.00 for windows. Hypothesis which is suggested in homogeneity is as follow:

H_0 : Population from the same data (Homogeneous)

H_a : Population from the dissimilar data (Heterogeneous)

The criteria which is used for defining the homogeneity of population in this research is H_0 which is accepted if the sig. value $>$ from the alpha level which has been defined which and those are 5% (0, 05 and H_0 is denied if the sig. value $<$ from the defined alpha.

3. The Test of Hypothesis of Difference of Two Directions

Hypothesis which is tested in this comparative analysis are

H_0 : The mathematic learning process based on the multiple intelligences does not affect positively toward the character of student (Controlling class and experimental class are similar or there is no different).

H_a : The mathematic learning based on multiple intelligences affects positively toward the character of student (controlling class and experimental class are different).

H_0 will be accepted if the sig. value is $>$ 0, 05 and will be denied if the sig. value is $<$ 0, 05.

C. THE RESULT OF THE RESEARCH AND THE DISCUSSION

1. THE RESULT OF RESEARCH

The design of the mathematic learning based on the multiple intelligences

The design of the mathematic learning/lectures based on the multiple intelligences is conducted as follow:

- The second and third meeting is practicing the abacus and the mathematic fingers.
- The sixth and seventh meeting is conducting the topic of prime numbers, lowest common multiple, greatest common divisor, and problem solving using the practical equipment: beads, the game of enlightening lamp which is changed to knocking things (the play of rhythms).
- The eleventh till the fourteenth meeting: It is conducted with the material of Cartesian coordinates ("playing: where is your position?" and the series of LCC (Quiz competition).

The Description of Data

Table 3. The data of the controlling class

N	30	
Mean	55,87	
Standard Deviation	8,631	

Table 4. The data of the experimental class

N	30	
Mean	61,53	
Standard Deviation	10,833	

The Test of Validity

Based in the value of correlation between each item with the entire total, the result is achieved;

The highest validity which is existed has the eleventh items with the value of the correlation in 0,804 and the sixteenth point with the correlation of 0,772. The other points are approximately between 0,332 till 0,765 and those are the first point and the fifth point. The twentieth point is eliminated because it has correlation value of 0,146.

The Test of Reliability

After the twentieth point has been changed with the valid data which is measured with Cronbach's alpha coefficient, we get a value of 0,913.

The Test of the Hypothetic Requirement

Table 5. The Normality of the Controlling Class

		The Development of the Student's Characters	
N		30	
Most Extreme	Absolute	.202	
Differences	Positive	.145	
	Negative	-.202	
Kolmogorov-Sminov Z		1.105	
Asymp. Sig. (2 –tailed)		.174	

The Homogeneity of Controlling Class

The criteria of the tests which is used for defining the homogeneity in this research is the H_0 which is accepted if the sig. value is $>$ from the level of defined alpha which is 5% (0,05) and H_0 is denied if the sig. value is $<$ from the defined alpha.

The Normality of the Experimental Class

The table 6 will present the resume of the result of the test of normality in the distribution of the score of population from the experimental group with *Kalmogorov-Smirnov's* methods using the *SPSS 15 for windows*.

Table 6

The Development of the Student's Characters			
N		30	
Most Extreme	Absolute	.202	
Differences	Positive	.145	
	Negative	-.202	
Kolmogorov-Sminov Z		1.105	
Asymp. Sig. (2 -tailed)		.174	

The Homogeneity of Experimental Class

The criteria of test used for defining the homogeneity of the population in the research is H_0 which is accepted if the *sig.* value is $>$ from the level or defined alpha which is 5% (0, 05) and it is denied if the *sig.* value is $<$ from the defined alpha.

The Test of Hypothesis

Hypothesis which is tested in the comparative analysis is.

H_0 : Mathematic learning based on the multiple intelligences does not affect positively in student's characters.

H_a : Mathematic learning based on the multiple intelligences affects positively in student's characters.

H_0 will be accepted if the *sig.* value is $>$ 0, 05 and it is denied if the *sig.* value is $<$ 0, 05.

Table 7. The Result of Processing the Data Based on t-Tests t

	F	Sig	T	df	Sig (2-tailed)
Equal variances assumed	1,679	.081	2,268	58	.027
Equal variances not assumed			2,268	54.501	.027

2. DISCUSSION

The design of Mathematic learning based on multiple intelligences

- a. The second and third meetings are used for practicing abacus of mathematic fingers.
- b. The sixth and seventh meetings conduct the topic of learning in prime number, lowest common multiple, greatest common divisor, and problem solving using the practical equipment: beads, the game of enlightening lamp which is changed into knocking things (the play of rhythms).
- c. The eleventh till fourteenth meetings: conducted with the material of Cartesian coordinates ("Playing: where is your position?" and a series of LCC (Quiz competition).

The Test of Validity

Based on the calculation of Pearson Moment's value of correlation with the same coefficient or with coefficient which is more than 0,3, then the point of instrument is stated as valid. In the test of validity, the twentieth point has a low value of correlation and it is 0,146.

The Test of Reliability

After the twentieth point is changed with the valid data which is measured in Cronbach's alpha coefficient, the value of 0,913 is acquired. This thing has filled the requirement the validity of questionnaire, namely, the Cronbach's alpha value is $0,913 > 0,70$.

The Test of Hypothetic Requirement

a. Normality

Hypothesis which is suggested for measuring the normality of distribution of population in the research is as follow.

Ho : Population data of normal distribution

Ha : Population Data of Non-normal Distribution

The criteria of the test which is used for measuring the normality of population in this research is H_0 which is accepted if the *sig.* value $>$ from the defined alpha level which is 5% (0, 05)

The normality of controlling group can be seen from the *Kolmogorov-Smirnov* coefficient which is $1,105 > 0,05$. It means that H_0 is accepted, namely, the distribution of population is normal. It is also allowed to use the value of the most extreme absolute of 0,202.

The normality of the experimental group can be seen from the *kolmogorov-Smirnov* coefficient which is $0,858 > 0,05$. It means that the H_0 is accepted, namely, the population of experimental has a normal distribution. It is also allowed to use the value of the most extreme absolute of 0,157.

b. Homogeneity

The hypothesis which is suggested in the homogeneity is as follow.

H_0 : Population from the same data (homogeneous)

H_a : Population from the dissimilar data (heterogeneous)

The criteria of test which is used for defining the homogeneity of population in the research is the H_0 which is accepted if the *sig.* value $>$ from the defined alpha level which is 5% (0, 05) and H_0 is denied if the *sig.* value is $<$ from the defined alpha.

Homogeneity of controlling class can be seen from the Asymp sig (2-tailed) value which is $0,174 > 0,05$ and that means that H_0 is accepted, namely, the population of the controlling group is from the homogeneous data.

The homogeneity of experimental class can be seen from the Asymp Sig (2-tailed) value which is $0,453 > 0,05$ and that means that the H_0 is accepted, namely, the population of the experimental group is from the homogeneous data.

The Test of Hypothesis

The hypothesis which is tested in this comparative analysis is.

Ho : The mathematic learning based on the multiple intelligences does not affect positively toward student's characters.

Ha : The mathematic learning based on the multiple intelligences affect positively toward the student's characters.

Ho will be accepted if the *sig. value* $> 0,05$ and it is denied if the *sig. value* $< 0,05$.

The test of hypothesis can be analyzed from the number of F marks, counted marks, and the value of significant (2-tailed). If it is analyzed from the value of sig(2-tailed), the *sig value* can be derived in $0,027 < 0,05$. In the other words, Ho is denied or Ha is accepted that means the mathematic learning based on the multiple intelligences affects positively toward the student's character.

General Discussion Based on The Interview

Based on the unstructured interview toward six respondents which is based on two students in low category, 2 students in average category, and two students in high category in accordance with the guide of interview, there is an information that four of the respondents state that mathematic learning based on the multiple intelligences has a contribution toward student's characters. All respondents also state that the conduction of the mathematic learning based on multiple intelligence last excitingly, dig the potentials of skill outside the math. But, there is a weakness in it which is that it needs more time in the outside of the class for preparing the conduction of the mathematic learning based on the multiple intelligences inside the class.

D. CONCLUSION

The conduction of mathematic learning based on the multiple intelligences with the model, games, and design of quiz competition can develop the intelligences else than logical-mathematic and also

the linguistic intelligences, kinesthetic, musical, visual, interpersonal and intrapersonal.

Mathematic learning based on the multiple intelligences contributes the positive influences in the student's character with the level of trustworthiness which is up to 95%.

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