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Educational Research to Endorse Productive and Innovative Generation in the 21st Century

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Preface

The 2nd Annual International Seminar on Transformative Education and Educational Leadership (AISTEEL with web link is http://aisteel2017.unimed.ac.id/) was held on October 16-17, 2017 in Medan City, Indonesia. This conference was organized by Postgraduate School, State University of Medan (Unimed) and is the routine agenda at Unimed now. The Second Annual International Seminar on Transformative Education and Educational Leadership’ is realized this year with various presenters, researchers, lecturers and students from universities both in and out of North Sumatera participate in the theme of which is “Educational Research to Endorse Productive and Innovative Generation in the 21st Century.”

2nd AISTEEL is the annual international seminar with main aim is to discuss of recent research special for Transformative Education and Education Leadership. Several topics like: Teachers Education Model, Research Global Issue in Education, Mathematics and Science Education, Social, Language Education, Vocational Education, Curriculum, Economic, History and Management Education have been discussed at the 2nd AISTEEL 2017. 2nd AISTEEL international seminar provided experts’ view on transformative education and educational leadership as well as curriculum article presentation. There were five keynote speakers have been came Professor Keiichiro Yoshinaga, Dr. Bambang Sumintono, Dr. Sitti Maesuri Patahuddin, and Dr. Yulia Rahmawaty. The organizer had been use online submission system to receive all abstract, full paper and also communication with authors. All of information include with comment of reviewer can be checked real time by author.

Chairperson

Dr. Rahmad Husein, M.Ed
Welcoming Speech of Director of Postgraduate School State University of Medan

The Second Annual International Seminar on Transformative Education and Educational Leadership (AISTEEL)

The honorable,
- Rector of State University of Medan, Prof. Dr. Syawal Gultom, M.Pd.
- Vice Rectors of UNIMED
- Professor Keiichiro Yoshinaga, PhD, Institute of Liberal Arts and Science, Kanazawa University – Japan
- Dr. Bambang Sumintono, M.Ed., University Malaya – Malaysia
- Dr. Sitti Maesuri Patahuddin, Faculty of Education, Science, Technology and Mathematics, University of Canberra – Australia
- Yuli Rahmawat, Chemistry Education Program, Universitas Negeri Jakarta
- Deans of Faculties of Education, Languages and Arts, Social Sciences, Natural Sciences and Mathematics, Engineering, Sports Sciences, and Economics
- Vice Directors of Postgraduate School of UNIMED
- All speakers, lecturers, researchers, students, and participants

Good Morning
Welcome the honorable guests speakers Professor Keiichiro Yoshinaga, Dr. Bambang Sumintono, Dr. Sitti Maesuri Patahuddin, Assoc. Prof. Emilia Zulmira de FAN, and other speakers, lecturers and students from outside and inside Unimed to this international seminar which is the routine agenda at Postgraduate program of Unimed now. I’m glad that ‘The Second Annual International Seminar on Transformative Education and Educational Leadership’ is realized this year with various presenters, lecturers and students from universities both in and out of North Sumatera and participate in the theme of which is “Educational Research to Endorse Productive and Innovative Generation in the 21st Century.”

Ladies and Gentlemen,
In this second seminar exels the first one related to the administration by online and the publication index by either Thomson Reuters or Google Scholar. By the new policy on student’s publication, postgraduate program really matches the system, particularly for the students who will sit in the oral defence examination. Through the seminar, the postgraduate students improve their article journal writing and it is proved by many articles are submitted by the students.

The plenary speakers coming from 15 provinces in Indonesia will present topics covering multi disciplines. They will contribute a lot of inspiring inputs and new knowledge on current trending educational research topics all over the world. The expectation is that all potential lecturers will share their research findings to educational scientists and researchers as well for improving their teaching process and quality. Thus, this will contribute to the next young generation researchers to produce innovative research findings in education and educational leadership contexts.

This second seminar continues the promotion of the first sequel ‘Developing Future Teachers’ Education Model. Therefore, the propose of this second seminar on the transformative education and educational leadership research will trigger the young professional lecturers and educators to compete in the invention of inovative educational teaching and learning strategies, techniques and leadership.

I hope that the scientific attitude and skills through research will promote Unimed to be a well-known university which persists to be developed and excelled in the future.

Thank you the Rector of Unimed who always supports us in organizing the seminar. Thank you all guest and plenary speakers. Special thanks to both steering and organizing committee who have well-coordinated and colaborated in actualizing the seminar.

Director of Postgraduate Unimed

Prof. Dr. Bornok Sinaga, M.Pd
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Cultivating Children’s Critical Attitude with Educational Philosophy

Daulat Saragi
The Effectiveness of TANDUR Method of Improving Students’ Learning Ability in Junior High School

Rahimatul Islami Elmujahidah¹, Mulyono², H. Banjarnahor³
State University of Medan, Medan, Indonesia
rahimatulislami@gmail.com

Abstract – The problem of this research was whether there is effectiveness of using TANDUR method of improving students' learning ability on concept of set matter to solve problems in grade VII students of Aisyiyah Sumatera Utara junior high school (MTs). As the purpose of this study was to determine whether the effectiveness of the utility of TANDUR method in improving students’ learning abilities on subject the concept of set in solving problems in grade VII students of MTs Aisyiyah Sumatra Utara. The research instruments used were test and observation. As the population in this study were all students in class VII MTs Aisyiyah Sumatra Utara consisting of 2 classes namely class VII-A and class VII-B. Where the number of students from both classes was 44 students and the sample was the whole population. The results of research which have been researched by the author obtained that the hypothesis accepted was H₁, that there was effectiveness of the utility of TANDUR method in improving students’ learning abilities on subject the concept of set in solving problems in grade VII students of MTs Aisyiyah North Sumatra. The effectiveness of using TANDUR method to improve students' learning ability on subject the concept of problem solving in grade VII students of MTs Aisyiyah Sumatra Utara with determination coefficient was 59.2% meant that students' learning ability on subject the concept of set in solving problem was influenced by Students’ creativity factor in learning by using TANDUR method was 59.2% while the rest was influenced by other factors.

Keywords: Effectiveness, TANDUR method, learning ability

I. INTRODUCTION

The development of science and technology requires every human being to be able to adjust to follow the changes that occur, able to solve problems that is faced carefully, precisely and creatively. To compensate for the rate demands of the science and technology development, would someone really need to understand, trains himself to be skilled in solving problems that arise in the daily of life.

This with the purpose of mathematics learning is contained in the curriculum of school mathematics subject at all levels of education, which leads to student’s ability on solving problems encountered in the daily of life. With the enactment f a new curriculum in school is expected to fix the model or method of learning that has been done, so that it can make students creative and innovative to face of every lesson that is taught.

According to observations at MTs Aisyiyah Sumut, the student learning ability in the mathematics is still very less, because 1) the learning method is less precise, where basically the learning that is used is the learning that makes the teacher as the central of activity and the students are left passive, 2) how to explain the monotony that leads to lack of creativity and activity of students in the mathematics learning. In addition, in the process of teaching and learning takes place that is able to answer matters or tasks related to mathematics only 10-15 students or about 34.09% and viewed in terms of learning support facilities, which brought the book of mathematics when mathematics learning only 5-8 students or about 18.18% and who only want to do the homework only 13-15 students or about 34.09%.

The ability of students can develop well and mastery of student concepts can be increase, required an appropriate model of learning. The one of learning model that can be used for the ability of students can develop is a learning model based on students activity and creativity, while the teacher acts as a facilitator and motivator. The situation can be done by developing and applying a more meaningful learning model, one of them by using the method of TANDUR.

The method of TANDUR is the more learningusing strategies to create an effective learning environment, designing curriculum, delivering content and facilitating the learning process, so that the learning becomes more enjoyable. That is said to be fun because in the method of TANDUR has a learning framework that grows, natural, named, demonstrate, repeat and celebrate.

According to Bobby and friends (2000) stated that “regardless of subject, grade level or listener, this skeletal framework ensures students become attractive and interested in each lesson. The method of TANDUR also ensures that they are learning, practicing, making real lessons for themselves and achieving success.

By using the method of TANDUR is expected teaching and learning process can be more effective, especially in learning of mathematics which generally at solving problem. By using this method will be seen how the effectiveness of the method of TANDUR to the learning process of students, especially the creativity of student learning in improving the ability of learning is the ability of mathematics problem solving on students of MTs Aisyiyah Sumut.
Scribed, although the various table text styles are provided. The formatter will need to create these components, incorporating the applicable criteria that follow.

II. METODOLOGY

This research has been done at VII grade of MTs Aisyiyah Sumut where it consists of 2 classes with 44 students and the sample is 44 students. The data retrieval technique use random sampling technique. In this research, the author uses the method of TANDUR is looking for the effectiveness of the use of TANDUR method on students learning creativity in improving the ability of learning is the ability to solve the problem of mathematics on the subject of the concept of the set in the problems solving on the students of 7th grade of MTs Aisyiyah Sumut. This study uses a statistical analysis approach. The data will be collected in this study relate to the variables to be studied. Variables are influencing and influenced factors. As a factor influencing the commonly called independent variable is X variable, namely the creativity of students in learning use the method of TANDUR. While the so-called influenced factor that is commonly called dependent variable is Y variable, namely the ability to solve mathematics problems. In this study, the instruments used are 1. The test questions that the author designed as many as 5 questions essay test form. Tests are performed to see the mathematics problem solving abilities. 2. The observation, observation is done by observing the learning activities directly by observers. This observation aims to observe the creativity of students during the learning process takes place.

III. RESULT

This research consists of independent variable and dependent variable. The independent variable data is student creativity on learning by using TANDUR method (X) and mathematics problems solving ability (Y) at MTs Aisyiyah Sumut.

After the all data has been collected, then the data is processed by making the frequency distribution table, looking for the average, deviation standard, test of normality and the test of T, then coefficient significant testing by using determination test.

Before the analysis of the regression equation and how big the effectiveness of the two variables, first the data of research result is presented into the frequency distribution table. The steps to be performed with respect to the data are to find the average value, the deviation standard of each variable.

The data analysis technique that is used by the author is: 1) Description test is calculating the Mean (the average of count), 2) prerequisite test is done by normality test, linear regression test, F test, 3) hypothesis test that is done by product moment correlation, T test and determination test.

<table>
<thead>
<tr>
<th>Table 1: Summary of data description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>X</td>
</tr>
<tr>
<td>Y</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
</tr>
</tbody>
</table>

Figure 1: Histogram Graph of Student Creativity in Learning by Using TANDUR Method

Figure 2: Histogram Graph Student Mathematics Problems Solving Ability

1. The Analysis Requirements Testing

a. Normality test
   By using SPSS, the result of normality test data mathematics problem solving ability (Y) is:

<table>
<thead>
<tr>
<th>Table 2: Test of Normality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kolmogorov-Smirnov</td>
</tr>
<tr>
<td>Statistic</td>
</tr>
<tr>
<td>Y</td>
</tr>
<tr>
<td>a. Lilliefors Significance Correction</td>
</tr>
</tbody>
</table>

b. Test of linearity regression

<table>
<thead>
<tr>
<th>Table 3: Test of linearity regression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>1 (Constant)</td>
</tr>
<tr>
<td>X</td>
</tr>
<tr>
<td>a. Dependent Variable: Y</td>
</tr>
</tbody>
</table>
c. Test of F (ANAVA)

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>1939.932</td>
<td>1</td>
<td>1939.932</td>
<td>61.054</td>
<td>.000*</td>
</tr>
<tr>
<td>Residual</td>
<td>1334.500</td>
<td>42</td>
<td>31.774</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3274.432</td>
<td>43</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), X
b. Dependent Variable: Y

2. The testing of hypothesis

The testing of analysis requirements shows that the score of each research variable has met the requirements for further statistical testing. In this research, hypothesis tested by using correlation technique, T test and coefficient of determination.

The research hypothesis to be tested is formulated as follows:

\[ H_0 : \rho = 0 \] 

there is no significant effectiveness of the use of TANDUR method seen creativity of students to the students learning ability is the ability to solve mathematics problems. The hypothesis can be formulated as follows:

\[ H_0 : \rho = 0 \] 

there is no significant effectiveness of the use of TANDUR method seen from the creativity of students to the students learning ability on the subject of the concept of the set of problem solving on students at 7\textsuperscript{th} grade of MTs Aisyiyah Sumut.

\[ H_0 : \rho \neq 0 \] 

there is a significant effectiveness of the use of TANDUR method seen from the creativity of students to the students learning ability on the subject of the concept of the set of problem solving on students at 7\textsuperscript{th} grade of MTs Aisyiyah Sumut.

a. The Correlation of Moment Product

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual</td>
<td>.770*</td>
<td>.592</td>
<td>.583</td>
<td>5.63683</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), X
b. Dependent Variable: Y

b. The Test of T

Based on the table 4.3 coefficients can be known that \( t_{count} = 7.814 \). Then the value of \( t_{count} \) compared with \( t_{table} \) with \( \text{term}dk = n - 2 \text{ dan alpha} = 5\% \) so obtained \( t_{table} = 2.021 \) or \( 7.814 > 2.021 \). This means the research hypothesis is accepted or in other words there is the effectiveness of the use of TANDUR method in improving of students learning ability on the subject of the concept of the set in problem solving on students at 7\textsuperscript{th} grade of MTs Aisyiyah Sumut.

c. The coefficient of Determination

From the table 4.5 SummaryModel above is known \( r^2 = 0.592 \) so to calculate the coefficient of determination using the formula:

\[ D = r^2 \times 100\% \]

So the coefficient of determination is \( 0.592 \times 100\% = 59.2\% \).

IV. CONCLUSION

After conducted research analysis and discussion of research, it can be concluded as follows:

1. From the result of this study can be average value of the X variable is 3.395, and the deviation standard is 0, 4676, while the average value of the Y variable is 72.39, and the deviation standard is 8.726.

2. From the result of this study researched the author that the hypothesis received is \( H_0 \), there is a significant effectiveness of the use of TANDUR method seen from the creativity of students to the students learning ability on the subject of the concept of the set of problem solving on students at 7\textsuperscript{th} grade of MTs Aisyiyah Sumut.

3. There is a significant effectiveness of the use of TANDUR method seen from the creativity of students to the students learning ability on the subject of the concept of the set of problem solving on students at 7\textsuperscript{th} grade of MTs Aisyiyah Sumut with the coefficient of determination of 59.2\% the meaning is the students learning ability on the subject of the concept of the set of problem solving is influenced by students creativity factor on the learning by using TANDUR method of 59.2\% while the rest is influenced by other factors.

ACKNOWLEDGMENT

To the teachers are expected to continue to provide learning in various ways or methods and learning models, so that the learning process is not felt too monotonous by the students, especially in learning mathematics.

REFERENCES