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

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“Educational Research to Endorse Productive and Innovation Generation in The 21th Century”

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October 16-17, 2017

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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 Rahmawati, 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 innovative 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 collaborated in actualizing the seminar.

Director of Postgraduate Unimed

Prof. Dr. Bornok Sinaga, M.Pd
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The Differences Between The Effect of Realistic Mathematics Learning Approach to Conventional Learning with The Students Mathematics Learning Outcomes in Junior High School of 38 Medan Grade VII

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Abstract- The purposes of this research were to know the effect of realistic mathematics learning approach and the conventional approach to the student learning outcomes on fractional materials. This research type was true experimental design (pretest-posttest control group design). The object of this research was taken from the whole population in Junior High School of 38 Medan grade VII as many as six classes. Sample taking was done by simple sampling technique consisting of two classes, namely experiment and control class. The instrument used in this research was description test method consisting of five questions. This research used t-test data analysis (one side test, right side). The research found that t-score > t-table it means H0 was rejected and H1 was accepted such that the effect of realistic mathematics learning approach effect was better than the conventional approach to the students' learning outcomes in Junior High School of 38 Medan grade VII on fractional materials. The implication of this research was by the realistic mathematics approach, the students were easily to understand more about the material and improve the results of learning mathematics on fractional materials.

Keywords - Realistic mathematics learning approach, conventional learning, experimental method and learning outcomes

I. INTRODUCTION

Subjects are math is a subject that is considered difficult for students of Junior High School in 38 Medan. Mulyono Abdurrahman (2003) argues that: "Of the various subjects taught in school, math is a field of study that is considered the most difficult by the students, both of which are not learning disabilities and more so for students learning disabilities". The ability of student competence can be seen by the results of study subjects, especially mathematics subject matter fractions. Learning outcomes in mathematics subject matter fractions observation research results to one of the teachers at Junior High School in 38 Medan is very low. From the data obtained that the number of students who reached the fourth grade level mastery in learning is 54 people or 38.1% while the number of students who do not achieve the level of mastery learning is 88 people or 61.9%. The low value is due to the acquisition of learning outcomes of students, especially in mathematics subject matter fraction is low then the achievement of study results not optimal. The learning result is one of the internal factors that are important in the students themselves optimally enhanced.

But in fact the role of mathematics to enhance these capabilities are still low. Along with the quality of education in Indonesia is still low. As expressed by Zainurie (2007) "A lot of people say" the quality of education in Indonesia ", especially in mathematics is still low. Data supporting this opinion are: UNESCO data show math ranked Indonesia were in row 34 of the 38 countries. So far, Indonesia has not been able to escape from the bottom row occupants ".

In addition to a conventional system that is still learning, the use of props in Junior High School 38 Medan field in mathematics that is still lacking, this is due to the understanding that the use of props that cost is quite expensive. When in fact in mathematics that we can take advantage of the environment to be used as props as well as realistic mathematics learning.

According to Johar (2001), when children learn mathematics apart from their daily experience then the child will quickly forget and can not apply mathematics. This
means that the learning of mathematics in the classroom emphasis on the linkages between mathematical concepts with everyday childhood experiences. To solve these problems used approach to learning math oriented pematematisian everyday experience and apply mathematics in everyday life is a realistic mathematical approaches (PMR). Realistic Mathematics Education (RME) was developed in the Netherlands in the 1970s by the Freudenthal Institute and is now widespread in many countries, including Indonesia.

II. METHODS

This study was conducted in Junior High School of 38 Medan. The population in this study were all class VII as 6 classes. With an average number of students 36 people. Samples taken in this study were two classes of experimental classes and control classes were chosen randomly.

Design or design of this study is true experimental design (pretest-posttest control group) (Sugiyono, 2012). In the design of this research, there are two groups each selected randomly, and then given a pretest to determine the initial state is there a difference between the experimental class and control class. Results pretest was good when the value of the experimental group did not differ significantly. The effect of treatment is (O₂ - O₁). Procedure in this study a preparatory phase and the implementation phase. The instrument used in this study a test item description 5 (pretest and posttest) which already valid before by three experts in student learning outcomes and through interviews informally by students.

III. RESULTS AND DISCUSSION

The data in this study were drawn from two classes of class VII^1 and class VII^2 Junior High School of 38 Medan with the number of students in VII^1 (experimental class) and VII^2 (control group) respectively is 36 people. In this study the data taken is student learning outcomes. The test results are the students’ learning achievement test after learning (posttest) and prior learning (pretest). Range of values pre-test and post-test is 0-100.

Both classes were given a pre-test (O₁ and O₂) with the same problem after being given a pre-test the two classes were given the same learning materials by different methods. After the learning process is complete both classes were given post-tests (O₂ and O₃). The results of pre-test and post-test is checked as the data of student learning outcomes. Data collected in the form of data-pretest posttest difference of (O₂ - O₁) for the experimental class and (O₂ - O₃) for the control classes derived from the test results that the pretest and post-test, amounting to 5 items form essay test.

A. Data difference in the final test-the initial test experimental class (O₂-O₁)

Having held the initial test and final test of the obtained difference as the table below:

<table>
<thead>
<tr>
<th>interval beda</th>
<th>frekuensi</th>
</tr>
</thead>
<tbody>
<tr>
<td>(-6)-0</td>
<td>8</td>
</tr>
<tr>
<td>1-7</td>
<td>10</td>
</tr>
<tr>
<td>8-14</td>
<td>4</td>
</tr>
<tr>
<td>15-21</td>
<td>9</td>
</tr>
<tr>
<td>22-28</td>
<td>4</td>
</tr>
<tr>
<td>29-35</td>
<td>1</td>
</tr>
<tr>
<td>Mean</td>
<td>9.972</td>
</tr>
<tr>
<td>SD</td>
<td>10.57</td>
</tr>
</tbody>
</table>

The highest difference of a given test is 35, the lowest difference is 1, while the mean is 9.972.

B. Data difference in initial tests the final test-control class (O₂-O₃)

Having held the initial test and final test of the obtained difference as the table below:

<table>
<thead>
<tr>
<th>interval beda</th>
<th>frekuensi</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-6</td>
<td>10</td>
</tr>
<tr>
<td>7-12</td>
<td>2</td>
</tr>
<tr>
<td>13-18</td>
<td>11</td>
</tr>
<tr>
<td>19-24</td>
<td>3</td>
</tr>
<tr>
<td>25-30</td>
<td>5</td>
</tr>
<tr>
<td>31-36</td>
<td>5</td>
</tr>
<tr>
<td>Mean</td>
<td>16.889</td>
</tr>
<tr>
<td>SD</td>
<td>10.969</td>
</tr>
</tbody>
</table>

The highest difference of a given test is 35, the lowest difference is 1, while the mean is 16.889.

C. Hypothesis Test

Results data calculation difference achievement test showed that t = 2.721 whereas in the distribution t for df = 70 obtained = 1.668, apparently to test the results of study showed that or located outside the area of acceptance of H₀, it means that H₀ is rejected with the words other H₁ accepted that the effect of realistic mathematics learning approach is better than the conventional approach to the learning outcomes of students in Junior High School of 38 Medan grade VII in the material fractions.

IV. CONCLUSION

Based on the results of research and data processing, it can be concluded that: The effect of realistic mathematics learning approach is better than the conventional approach to the learning outcomes of students in Junior High School of 38 Medan grade VII in the material fractions.
REFERENCES