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THE 2nd ANNUAL INTERNATIONAL SEMINAR ON TRANSFORMATIVE EDUCATION AND EDUCATIONAL LEADERSHIP

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 cheked 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)

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 colaborated in actualizing the seminar.

Director of Postgraduate Unimed

Prof. Dr. Bornok Sinaga, M.Pd
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The Application of Comic Learning Media to Improve Student’s Achievement on Reduction and Oxidation Reaction Topic

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Abstract - Among many reinforcement learning media, comic learning media is a strategy to give a good quality learning process. The research aims to improve the student’s achievement on reduction and oxidation reaction topic in class X MAN 2 MODEL MIA Pekanbaru. This study uses a quantitative approach and is included in the type of experiment research with pretest-posttest design. The research subject is determined on similarity of the average value of prasyarat exam and measurement instruments using objective test. Data analysis technique used is the t-test. Based on data analysis, average gain score student’s achievement in experiment class is equal to 0.81 that included in high category, while the category improvement of student achievement in control class was medium category with gainscore is 0.68. This means that H0 refuse and H1 accepted so there is influence of comic learning media on student’s achievement.

Keywords : comics learning media, learning achievement, reduction and oxidation reaction

I. INTRODUCTION

Providing appropriate learning towards the needs of all students is crucial to achieve their full potential. Learning is a process that contains a series of actions of teachers and learners on a reciprocal relationship that takes place in educational situations to achieve certain goals [1]. The successful achievement of learning objectives depend on how the learning process experienced by learners. Teachers have an important role in the learning process, between the role of the teacher is to make learning design, using learning materials adapted to the conditions of learners and school conditions [2].

The use of a media of learning in the learning process can streamline and facilitate achieving the learning objectives. Learning media can attract and motivate learners to the material, including the chemistry lesson. One subject on chemical subjects studied in class X SMA / MA is the reduction and oxidation reactions. On the subject of reduction and oxidation reactions containing material about the development of the concept of reduction and oxidation reactions, the determination of the oxidation number and nomenclature of compounds based on the rule of oxidation states. In general, the material being studied is rote and count [3].

Based on observations and interviews in MAN 2 MODEL Pekanbaru data obtained semester 2014/2015 academic year that the average value of learners who took the exam subjects, especially on the subject of chemical redox under 75. Based on the range of curriculum assessment ratings in 2013, the average test scores obtained by the students included in the low category because it is below a predetermined KKM school of 80. this is because the students understanding of the material is still lacking. The learning process is usually done with a redox materials group discussions, but in the process of group discussion was dominated by clever and diligent learners learners read while others still seem difficult to convey the idea due to lack of understanding of the material. In the process of discussion worksheets teachers also provide learners serves
to help obtain more information about the subject matter. However, learners' worksheets that are generally used are still monotonous (reading text without pictures, colorless and unattractive views) causes quick learners feel bored so that the learning process has been applied is still visible lack of interest and motivation of learners.

Efforts to do is use the appropriate learning media. One media that can be used is the comic learning media. Comic learning media is a form of visual communication media have the power to convey information in a popular and easy to understand [4]. Comic learning media allows students to learn not only with text but also with pictures, so consider that comics can increase student interest that learning is slow [5]. Comic learning media is an art form that uses no moving images are arranged so that an storyline. Will Eisner, senior cartoonist said the comics as the order image and set of words in sequence [6]

The aim of research are as follow: (1) To know what the application of comic learning media can improve student’s achievement on reduction and oxidation reaction topic, (2) To know how the categories improve student’s achievement with the application of comic learning media on reduction and oxidation reaction topic.

Use of the comic learning media can be applied in various forms such as media presentations, modules, handouts, and student worksheet. The finding relate about Research has been conducted on the application of the comics media showed that the use of comics as a learning tool to increase student interest in fifth grade elementary school learners Wiropaten [5]. Studies have found that comics appeal to students from a myriad of backgrounds, cultures and personalities, educators also urged the use of comics as an alternative, exciting way for students to analyze the development of the characters, as well as develop writing and research skills [7].

Based on the description that has been stated, the authors are interested in doing research about “The application of comic learning media to improve student’s achievement on reduction and oxidation reaction topic”.

II. METHODS

The subject or research selected for this study in class X MAN 2 MODEL Pekanbaru second semester of the academic year 2014/2015. Time of research in april until may 2015. The population in this study are all students who took the class X science subjects are chemistry series 1 class: XScience1, XScience2, and XScience3 whereas the samples was determined at random based on test results of material preconditions that have normal distribution and tested kehomogenannya. Retrieved class X Science1, as an experimental class and class X Science2 as the control class. This study uses a quantitative approach to research methods experiments conducted on two classes with design pretest-posttest [8].

Data collection techniques in research are engineering technique. The data collected are derived from: (1) The results of the test material preconditions, (2) pretest, conducted at both the class before teaching the subject of the reduction reaction and oxidation, and (3) posttest, given on the second class after learning the subject of the reduction reaction and oxidation, data analysis technique used in this research is the t-test. Statistical testing using t-test can be carried out based on the criteria of normal distributed data. Normality Test normality test using test Lilliefors[9]. After the data were normally distributed, then carried variance homogeneity test by testing two samples (homogeneous or not) and the median equality test using t-test two parties to determine the capabilities of both the sample homogeneity. Formula t-test on homogeneity test is also used to see the changes in the form of achievement of learning outcomes of learners between the experimental class and control class (hypothesis testing research). Hypothesis test used is the right party t-test [10].

Category achievement of learners after applying the comics medium is measured by a test of normality(N-gain) with value classification N-gain ternomalisasi can be seen in Table 1 [11].

<table>
<thead>
<tr>
<th>Avg -average N -gain normalized</th>
<th>category</th>
</tr>
</thead>
<tbody>
<tr>
<td>N -gain ≥ 0.70</td>
<td>High</td>
</tr>
<tr>
<td>0.30 ≤ N - gain &lt;0.70</td>
<td>medium</td>
</tr>
<tr>
<td>N - gain &lt;0.30</td>
<td>Low</td>
</tr>
</tbody>
</table>

III. RESULTS AND DISCUSSION

The application of comic learning media on research carried out during the group discussion process. The experimental class using comic learning media, while the control class using conventional media. Utilization of media that is acceptable to arouse the interest of learners (Syafufl Bahri Djamarah and Aswan Zain, 2002). One media that can be used in the form of worksheets students with the subject matter and the oxidation reduction reaction with instructions student worksheet workmanship, learning objectives, subject matter and practice. The subject matter for each meeting contained in student worksheet comics presented in dialogue form, played by characters in comics in the form of a story, beginning with the observation of problems in comics related to everyday life that require learners to be able to formulate problems related with the purpose of learning, then answer the problem formulation aimed at advanced reading stories in comics and draw conclusions from problems in the comic strip.

The initial activity of research, the entire population is 3 classes of class X MAN 2 MODEL Pekanbaru taking chemistry series 1 in the second semester of 2014/2015 academic year in advance given the test material prerequisites. The results of the data analysismaterial tests prerequisite performed using Lilliefors test to determine the normal distribution of data. Furthermore, the class tested the
normal distribution and homogeneity of variance. Homogeneity of variance test and the test is a test conducted on the two classes to determine these two classes of homogeneous or not. After testing the homogeneity then selected randomly, class X Science4 as an experimental class and class X Science 1 as the control class. Further test data analysis of the data acquisition.

A. Normality Test Grade Control and Experiment

Results of normality test score pretest and posttest experimental and control classes are presented in Table 2.

<table>
<thead>
<tr>
<th>Data</th>
<th>Class</th>
<th>N</th>
<th>x</th>
<th>S</th>
<th>Lmax</th>
<th>Ltabel</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>Exp.</td>
<td>23</td>
<td>32.9</td>
<td>3</td>
<td>1247.5</td>
<td>54.2391</td>
<td>normal distribution</td>
</tr>
<tr>
<td></td>
<td>Con.</td>
<td>22</td>
<td>27.5</td>
<td>0</td>
<td>1087.5</td>
<td>49.4318</td>
<td>normal distribution</td>
</tr>
<tr>
<td>Posttest</td>
<td>Exp.</td>
<td>87</td>
<td>23</td>
<td>6.5</td>
<td>32.9</td>
<td>54.2391</td>
<td>normal distribution</td>
</tr>
<tr>
<td></td>
<td>Con.</td>
<td>22</td>
<td>76.9</td>
<td>3</td>
<td>76.9</td>
<td>49.4318</td>
<td>normal distribution</td>
</tr>
</tbody>
</table>

Table 2. Results of Analysis of Normality Test Data pretest, posttest

Description:

N = the number of data in the sample,

x = the average value of the sample,

s = standard deviation, and

L = statistical symbol to test the normality.

Table 2 shows the results of data normality test pretest and posttest in the experimental class and control class that has LmaxLtabel price so that the data pretest and posttest normal distribution.

B. Hypothesis Test

Data used to test the hypothesis in this study is the difference between the pretest and posttest. Difference in value indicates the magnitude of the increase in student’s achievement before and after learning the subject of reduction and oxidation reactions with perlakuan. The result given hypothesis test analysis are shown in Table 3.

<table>
<thead>
<tr>
<th>Class</th>
<th>N</th>
<th>x</th>
<th>S</th>
<th>Lmax</th>
<th>Ltabel</th>
<th>t</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exp.</td>
<td>23</td>
<td>1247.5</td>
<td>54.2391</td>
<td>5.07</td>
<td>1.67</td>
<td>3.18</td>
<td>hypothesis is accepted</td>
</tr>
<tr>
<td>Con.</td>
<td>22</td>
<td>1087.5</td>
<td>49.4318</td>
<td>0.13</td>
<td>0.19</td>
<td>0.81</td>
<td></td>
</tr>
</tbody>
</table>

Table 3. Test Results Hypothesis

Improving learning achievements of students with the use of the comic learning media is greater than the achievement of learners without the use of the comic learning media. Hypothesis testing is done by using the t test right, H1 is accepted if they meet the criteria t 1.67, N = n1 + n2 - 2. The result of the calculation is t 3.18 and ttable at α = 0.05 df = 67 is 1.67. Value, is greater than ttable (3.18 > 1.67) so that the application of the comic medium can improve the achievement of learners on the subject of reduction and oxidation reactions in class X MAN 2 MODEL Science Pekanbaru.

C. Category Improving Learning Achievement Learners

Results of the analysis categories of learners achievement test based on gain the normalizedis presented in Table 4.

<table>
<thead>
<tr>
<th>Class</th>
<th>N</th>
<th>Pretest (Xi)</th>
<th>Posttest (Xi)</th>
<th>N gained</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exp.</td>
<td>23</td>
<td>32.9</td>
<td>87.1</td>
<td>87.1 - 32.9</td>
<td>54.2391</td>
</tr>
<tr>
<td>Con.</td>
<td>22</td>
<td>27.5</td>
<td>76.9</td>
<td>76.9 - 27.5</td>
<td>49.4318</td>
</tr>
</tbody>
</table>

Table 4 shows the category of learners achievement experimental class was high with N-gain = 0.81 while the control class category is being with N-gain = 0.68.

D. Results Average Value Worksheets learners and Evaluation of Students

Improving learning achievements of learners can be seen from the average value student worksheet and evaluation of each meeting are presented in Figures 1 and 2.

Fig. 1 Diagram Value Worksheet Learners (STUDENT WORKSHEET) to experiment and control Each class meeting.

Fig. 2 Diagram value evaluation for classroom experiment and control Each meeting.

Fig. 1 and Fig. 2. Result of value of the average student worksheet and evaluation of experimental class than control classes due to the use of student worksheet comics during the process of group discussion. Materials of oxidation and
reduction reactions require learners to further streamline absorption, memory and extending the exercise to work on the problems in order to better understand the absorption materi. Keefektifan learners to study materials that are difficult and complicated can happen with the help of tools such as instructional media. Even the acclaimed instructional media can generate good feedback from learners [12].

The discussion process using comic student worksheet seen students who have read student worksheet began actively asking for things he does not know and express opinions about he knew, so that interest and motivation to generate curiosity of self-learners, especially in the matter of concluding observations and work on the problems. Motivation is an attempt to create a certain condition that makes people curious and interest to do something to achieve a high learning motivation. Then motivation cause increased student achievement [2].

IV. CONCLUSIONS

Based on the results of this study concluded that application of comic learning media in chemistry learning can improve achievement of students on reduction and oxidation reactions topic in class X Science MAN 2 Model Pekanbaru. Based on data analysis, average gain score student’s achievement in experiment class is equal to 0.81 that included in high category, while the category improvement of student achievement in control class was medium category with gainscore is 0.68. This means that $H_0$ refuse and $H_1$ accepted so there is influence of comic learning media on student’s achievement.

REFERENCES
