PROCEEDINGS AISTEEL 2017

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

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

16-17 October 2017
Ball Room Grand Mercure Hotel, Medan - Indonesia

Organized by:
Post Graduate School
State University of Medan
North Sumatera, Indonesia

ISSN: 2548 - 4613
Vol. 2, December 2017
Proceedings of The 2nd Annual International Seminar on Transformative Education and Educational Leadership (AISTEEL 2017)

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

Grand Mercure Hotel, Medan City, North Sumatera, Indonesia
October 16-17, 2017

Editorial Board

Editorial-in-Chief
Dr. Juniastel Rajagukguk, M.Si (State University of Medan, Unimed)

Deputy Editor
Dr. Saronom Silaban, M.Pd (State University of Medan, Unimed)

International Advisory Board / Scientific Committee
Prof. Dr. Kala Saravanamuthu (University of Newcastle, Australia)
Prof. Arjen EJ Wals (University of Gothenburg, Sweden)
Prof. Dr. Bornok Sinaga, M.Pd (Universitas Indonesia, Indonesia)
Prof. Dr. Aytekin Isman (Sakarya University, Turkey)
Prof. Peter Charles Taylor, Ph.D., Med., B.Sc., Dip.Ed (Murdoch University, Australia)
Prof. Dr. Mukhlas Samani, Ph.D (Indonesia)
Prof. Dr. Jailani bin Md. Yunos (University Tun Hussein on Malaysia)
Prof. Dr. Nurahimah Mohd. Yusuf (UTM, Malaysia)
Assoc. Prof. Dr Pedro Isaia (University of Queensland, Australia)
Assoc. Prof. Elisabeth Taylor, Ph.D (Murdoch University, Australia)
Dr. Bambang Sumintono, M.Ed (Universiti Malaya, Malaysia)
Dr. Isma Widya, M.Pd (UPI, Indonesia)
Prof. Dr. Syahrul R, M.Pd (UNP, Indonesia)
Prof. Amrin Saraghi, MA., Ph.D (Universitas Indonesia, Indonesia)
Assoc. Prof. Ade Gafar Abdullah, M.Si (Universitas Negeri Semarang)
Eng. Asep Bayu Dani Nandiyanto (Universitas Negeri Semarang)
Prof. Dr. Hartono, M.Pd (Universitas Negeri Semarang)

Please cite the proceeding as “Proceeding of the First Annual International Seminar on Transformative Education and Educational Leadership Vol. 2” with the following abbreviation: *Proc. Aist.*, 2
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)

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 excels the first one related to the administration by online and the publication index by either Thomson Reuters or Google Schoolar. 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
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Effect of Using Collaborative Learning Strategy on The Student’s Achievement in Writing Descriptive Text</td>
<td>1</td>
</tr>
<tr>
<td>Nursyah Handayani</td>
<td></td>
</tr>
<tr>
<td>The Development of Multicultural Based Teaching Materials on the Observation Report Text for Senior High School Student</td>
<td>5</td>
</tr>
<tr>
<td>Nurhasanah Permata Sari Sembiring, Khairil Ansari, Mutsyuhito Solin</td>
<td></td>
</tr>
<tr>
<td>The Power Behind Advertisement</td>
<td>10</td>
</tr>
<tr>
<td>Endang Larasati</td>
<td></td>
</tr>
<tr>
<td>The Effect of Using Audio Visual Media on Student’s Vocabulary Mastery</td>
<td>13</td>
</tr>
<tr>
<td>Resti Citra Dewi</td>
<td></td>
</tr>
<tr>
<td>Ideational Taxonomic Relation of Hata Pangupa in Tapanuli Selatan Wedding Ceremony</td>
<td>17</td>
</tr>
<tr>
<td>Mutia Nasution</td>
<td></td>
</tr>
<tr>
<td>Pal’s Leadership Style and Teacher’s Performance of Islamic Junior High State School (MTsN) Hamparan Perak Deliserdang Distric</td>
<td>21</td>
</tr>
<tr>
<td>Nurmalia, Maria Ulfah Handayani, Denny Khairani, Desi Prawita</td>
<td></td>
</tr>
<tr>
<td>The Influence of Work Motivation on Teacher’s Job Performance of Vocational High School in Medan</td>
<td>24</td>
</tr>
<tr>
<td>Darmawati, Sri Melfayetti, Selamat Triono Ahmad</td>
<td></td>
</tr>
<tr>
<td>Error Analysis by Using Tenses of Senior High School</td>
<td>28</td>
</tr>
<tr>
<td>Hariyanto</td>
<td></td>
</tr>
<tr>
<td>The Traditional Custom and Ceremonial Tradition in Suku Anak Dalam Language</td>
<td>32</td>
</tr>
<tr>
<td>Putri Ayu Lestari</td>
<td></td>
</tr>
<tr>
<td>The Impact of Internet Marketing on Success of Women Micro, Small and Medium Enterprises Innovation as Intervening Variable</td>
<td>36</td>
</tr>
<tr>
<td>Fivi Rahmatus Sofiyah, Ami Diliham</td>
<td></td>
</tr>
<tr>
<td>The Effect of Cooperative Integrated Reading and Composition (CIRC) Technique on Students Reading Comprehension</td>
<td>40</td>
</tr>
<tr>
<td>Linda Efrina Nasution</td>
<td></td>
</tr>
<tr>
<td>Translation Shifts in Translating Didong from Gayonese in to Bahasa Indonesia</td>
<td>44</td>
</tr>
<tr>
<td>Wike Yurida</td>
<td></td>
</tr>
<tr>
<td>The Effect of Team Assisted Individualization (TAI) Strategy on Student’s Reading Comprehension</td>
<td>48</td>
</tr>
<tr>
<td>Khairuni Syafitri</td>
<td></td>
</tr>
<tr>
<td>The Effect of Organizational Culture on Working Disciplines of Madrasah Ibtidaiyah Head Master in Deliserdang</td>
<td>53</td>
</tr>
<tr>
<td>Muhammad Ri’i, Syfaruddin Ishaan, Siman Nurhadi</td>
<td></td>
</tr>
<tr>
<td>Student’s Achievement on Reading Comprehension in Narrative Text by Using Think Pair Share Technique (TPS) at SMPN 1 Lubuk Pakam</td>
<td>58</td>
</tr>
<tr>
<td>Eprima Lestari Hutabarat</td>
<td></td>
</tr>
<tr>
<td>Ideational Taxonomic Relations of Hobar on Parpokatan Orja of South Tapanuli</td>
<td>63</td>
</tr>
<tr>
<td>Novria Grahmayanurani</td>
<td></td>
</tr>
<tr>
<td>The Effect of Using Task Based Learning Method on the Student’s Achievement in Reading Comprehension</td>
<td>69</td>
</tr>
<tr>
<td>Nilam Ulami Siregar</td>
<td></td>
</tr>
<tr>
<td>Relationship of Initiation Structure and Consideration with Effectiveness Leadership</td>
<td>72</td>
</tr>
<tr>
<td>Wanti Simanjuntak, Syaiful Sagala</td>
<td></td>
</tr>
<tr>
<td>The Effect of Storytelling Method on Students Writing Narrative Text Ability at the Eleventh Grade Students of MAN Panyabungan</td>
<td>77</td>
</tr>
<tr>
<td>Armita Novriiana Rambe</td>
<td></td>
</tr>
</tbody>
</table>
The Implementation of Curriculum 2013 in Vocational High School 4 Takengon
Zainal Arifin, Herbert C.B. Manalu, Rini Deliana, Fitri Ariyanti
Proceedings of The 2nd Annual International Seminar on Transformative Education and Educational Leadership (AISTEEL) eISSN: 2548-4613

The Difference of Mathematical Problem Solving Ability by Using Student Teams Achievement Division (STAD) and Direct Instruction on System Linear Equation Two Variable in Grade VIII SMP Negeri 11 Medan
Faradilla Bafaqih, Cecep Nandar

The Influence of Problem-Based Learning and Every One is A Teacher Here Models on Higher Order Thinking Skills in Environmental Pollution Topics
Kurnia Putra, Hasruddin, Ahmad Rafiqi Tantawi

The Effect of Applying Task Based Learning (TBL) Approach on The Student’s Ability in Writing Descriptive Paragraph
Vijay Khana

Teacher’s Language Style in English Course Class
Dyan Yosephin Hutagalung

Differences Between Students Mark Taught With Co-Operative Learning Model Type TGT With Guess The Words Media Compared With Students Mark Taught With Co-Operative Learning Models With Words Square Media in Hydrocarbon Subject
Hariani Siregar, Gulmah Sugiharti

Language Used by Male and Female of Darul Ilmi Murni
Syakri Hidayati

The Use of Journal Writing in Improving Student’s Writing Skill of Recount Text
Muhammad Ilham Adha

Teacher and Student Perceptions Toward Practical Implementation Obstacles at Learning Chemistry
Sepra Pajar, Ramlan Silaban, Zainuddin Muchtar

The Analysis of the Implementation and Problems of Lab Work on Chemistry Learning
Elvira Lastri, Iis Siti Jahro, Marham Sitorus

The Implementation of Using Library Card and ICT Based Library Service System in Increasing Reading Interest of Primary School Students at Tanjung Gading of Batu Bara Regency
Suci Amalia, Asih Menanti

Project Based Learning Tools Development on Alcohol and Ether Materials at Natural Science Faculty State University of Medan
Nadia Armina Ramud, Jamalum Purba

The Development of Teaching Material to Write Explanation Text Based on Mind Map
Pienti Mala Ningsih Manalu, Biner Ambarita, Rosmawaty Harahap

Improvement of Student Learning Outcome Using Model of Collaborative Based Lesson Study with Student’s Worksheet on Materials Hydrolisis
Agus Muliaman, Laila Majnun Hutagaol

The Application of Comic Learning Media to Improve Student’s Achievement on Reduction and Oxidation Reaction Topic
Anggi Desviana Siregar, Rini, Herdini

The Application of Cooperative Learning Round Robin to Improves Student Learning Achievement on the Subject of Electrolyte-Nonelectrolyte and Redoxin Class X SMAN 1 Seberida
Nora Santi, Betty Holiwarni, Johni Azmi

The Effect of Combination Cooperative Learning Models Toward Learning Result
Sapnita Idamarna Daulay

The Maintenance of Hokkien Among Chinese Speakers in Stabat
Widya Ningsih

Effect of Blended Learning Model and Learning Style to Civic Education Learning Results in Class VII in Junior High School Panca Budi Medan
Madina Qudsia Lubis, Reh Bungana Br.Perangin-angin, Mursid

EFL Student’s Uses of Um as Fillers in Speaking
Eka Riana
The Influence of Role Playing Method and Self Concept of Social Skills of 5-6 Years Old Child
Rabiah Hanum Hasibuan, Anita Yuse, Yusnadi

172

The Effect of Learning Approach and Personality Type Towards Learning Outcomes
Dwoy Dinda Sari, Julaga Situmorang, Busmin Gurning

178

The Effect of Learning Models and Critical Thinking Skills on Social Science Learning Outcomes
Juriah Siregar, Julaga Situmorang, Baharuddin

183

The Effect of Suggestopedia Method on Student’s Achievement in Vocabulary
Heppy Yersin Digiwa Purba

188

The Effect of Cooperative Learning Strategy Type Everyone is A Teacher Here (ETH) to Increase Student Activity and Learning Outcomes in Chemistry on Salt Hydrolysis
Wulta Fajrina, Darra Utari Ningsih, Sri Adelila Sari, Habibati

193

The Effect of Learning Strategy and Type of Personality on Student’s Achievement in Economic Science
Dewi Shara Dalimunthe

198

Development of Learning Tools Based on Realistic Mathematics Education of Ethnomathematics Nuances to Improve Mathematical Communication Skill Students in Junior High School 2 Percut Seiuncan
Rizqi Jamiah, Edi Syahputra, Kms. M. Amin Fauzi

202

The Impact of Cooperative Learning Strategy and Learning Interest Toward the Learning Result of Second Year of Senior High School Students in 2016/2017
Riswan Sianturi, Abdul Muin Sibuea, Edward Purba

208

The Development of Flash Program as a Media of Chemistry Learning on Chemical Equilibrium
Lenni Khotimah Harahap, Albinus Silalahi, Isi Siti Jahro

210

The Ethnic Mandailing Tradition of Courtship (Markusip) and Revitalization Efforts in the Formation of the Character Youth
Riadi Syafputra Siregar, Ratih Baiduri, Robert Sibarani

214

The Effect of Education on Unemployment Rate in Indonesia
Rahmat Putra Ahmad Hasibuan, Dede Ruslan, Fitrawaty

218

Development of Explanatory Text Materials Based on Problem Solving in Senior High School Pematangsiantar
Tiarma Nova Intan Malasari, Biner Ambarita, Malan Lubis

222

Learning Model of Strengthening Vocational Life Skills With Entrepreneurship Knowledge to Improve Student Learning Outcomes
Husni Wardi Tanjung

226

A Critical Discourse Analysis Wardah Halal Beauty Advertisements
Ayu Lestari Siregar, Mei Lastri E.F. Butar-Butar

229

Influence of Creative Problem Solving (CPS) Mathematics Learning Model to Mathematical Problem Solving and Self Efficacy Students of SMA Negeri 3 Binjai
Nurcahaya Hutaisos, Martua Manullang, Ani Minarni

232

Differences in Mathematics Problems Solving Students With Implementing Learning Model Think Pair Square and Group Investigation in Junior High Schools
Abdul Halim, Edy Surya

236

The Acquisition of Nouns and Verbs of Mandailingnese by Two-Year-Old Mandailing Children
Marwah, Amrin Saragih, Sri Minda Murni

240

Utilization of ICT Learning in Senior High School Teladan Medan
Tengku Salwa Miranti

244

The Effect of Cooperative Learning Model Based Interactive Media and Interpersonal Communication on Student’s Achievement
Catur Ayu Wialandari, Efendi Napitupulu, Keysar Panjaitan

248

Developing of Learning Material Based on Problem Based Learning to Increase Student’s Mathematical Reasoning Ability and Self-Efficacy in Grade X SMA Negeri 1 Medan
Anggi Paramita Daulay, Dian Armanto, Waminton R

253
Efforts to InCREASE A Motivation to Learning Math Using “Program” Learning Model
Linda Sari, Edi Syahputra

The Eford of Improving Mathematics Learning Outcome on Quadrilateral and Triangle Matter by Using Gradually Exercise Strategy with The Assistance of Image Media
Ady Putra, KMS, Muhammad Amin Fauzi, Yulita Moliq

The Difference on Students’ Mathematical Creative Thinking Ability Between Realistic Approach with Conventional in The State Madrasah Tsanawiyah 2 of Medan
Siska Lestari, Zul Amry, Hasratuddin

Developing Learning Materials Using Realistic Mathematics Education to Increase Junior High School Students’ Mathematical Disposition and Connection Ability
Syu’aida Hazar Nasution, Izwita Dewi, E.Elvis Napitupulu

Developing Learning Materials Using Problem Based Learning to Increase Senior High School Student’s Mathematical Disposition and Representation Ability
Dewi Khairani, Mulyono, Izwita Dewi

The Effect of Question Students Have Strategy on The Result of Students Learning in Mathematics
Yuliani Aruan, Edi Syahputra

Analysis of Academic Supervision Competence and Managerial Supervision in Improving the Performance of Vocational High School Supervisors in Langsa City
Muhammad Hendra, Saut Purba, Mian Siahaan

The Use in Active Learning Strategy of Learning Starts with a Question Type in the Mathematics Learning
Jeni Putria Efis, Ani Minami, Pardomuan Sitompul

Improving the Ability to Learn Math by Using Rubu’ al-Mujayyab Media
Muhammad Hidayat, Edi Syahputra, E.Elvis Napitupulu

The Impact of Education Cost and Government Spending the Interest Rate of Bank Indonesia Subtitle
Julika Rahma Siagian, Dede Rusli, Arwansyah

The Implementation of Problem Based Learning Models to Improve Mathematical Problem Solving Ability of Students on Arithmetic Materials in Class VII Junior High School
Elidar Tanjung, Izwita Dewi, Mulyono

The Effect of Learning Strategies to Trial By Jury in Participation Math Learning Student of Junior High School
Rizka Putri Rahayu, Ani Minami, Zul Amry

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
Diah Ari Saputri, Syafari

The Effect of Value National Exam Standards at Learning Achievement of Students at Senior High School
Nurdiana Fahmi, Bornok Sinaga, W. Rajagukguk

The Effect of Open Unemployment Rate and Level of Vocational High Education to Poverty in North Sumatera Province
Zulailli, Indra Majita

The Application of Cooperative Learning of Think-Pair-Share (TPS) Type to Increase the Students’ Ability of Problem-Solving
Mudriqah Fadhilah Siregar, Zul Amry, Syafari

The Relationship Between Metacognitive With the Results of Learning Outcomes on the Fungi Topic.
Elizabeth, Herbert Sipahutar, Syahmi Edi

Comparison of DNA Isolation Methods from Economically Valuable Plants in Indonesia
Chairiyani Rizka, Faiziyah Harahap, Syahmi Edi

Development of Learning Device Based on Realistic Approach to Improve Problem Solving Ability Mathematic of Student at Junior High School
Susanna Romaria Harahap
Efforts to Improve Understanding and Use Concept of Additive Fractions and Reduction Using Media Comics on Model Cooperative Learning Type Student Team Achievement Division (STAD)........................................................................................................................339
Ratu Natalia Perangin-angin, Sahat Siahaan

The Effect of Cooperative Learning Type Games Teams Tournament (TGT) of Mathematics Learning Outcomes in the Fractions Matter........................................................................................................342
Ansori Hasibuan, Asmin Panjaitan, Asrin Lubis

Development of Authentic Mathematics Assessment in Application of Problem Based Learning Model to Improve Problem Solving Ability and Understanding of Student Mathematics Concept at Namorambe Secondary Private Middle School Junior High..........................................................................................................................347
Kartika Sari, Asmin, Bornok Sinaga

The Increasing of Student’s Mathematics Problem Solving Ability and Learning Motivation Through Problem Based Learning Model..................................................................................................................351
Ridha Maulida

Dialect of Batak Language Used by Senior High School Students’..........................................................................................................................358
Rafika Nur Rahman

The Effectiveness of Tandur Method of Improving Students’ Learning Ability in Junior High School........................................................................................................................................................362
Rahmatul Islam Elmujahidah, Mulyono, H. Banjarnahor

The Effect of Reciprocal Teaching Approach to Student Achievement on Ecosystem Topic in Junior High School........................................................................................................................................................365
Nilawati, Nurtika Dewi

Improvement of Student Learning Result by Using Cooperative Learning Model of Teams Games Tournament Type on Algebra Function Limit............................................................................................................367
Rismalyah Manalu, E. Elvis Napitupulu, Martua Manullang

Noun Phrase of Culture Articles in The Jakarta Post..........................................................................................................................371
Misidiana

Application of Cooperative Learning Model Type Think Pair Share for Improved Communication..........................................................................................................................................................374
Nurhasanah

Implementation Model of School Policy in Constructing Behavior of Troubled Students..........................................................................................................................................................378
Khairtati Purnama Nasution, H. Syaiful Sagala

Efforts to Improving Creativity and Mathematics Learning Outcomes of Students With SPLET Strategy..........................................................................................................................................................382
Antoni

The Influence of Physical Education in Establishment of Self Esteem..........................................................................................................................................................386
Yustinus Tarigan, Tarsyat Nugraha

The Improvement of Dance Art Learning Achievement for Deaf Students Through Total Communication Application (Gesture/Signal) in Sekolah Luar Biasa (SLB) - E Negeri Pembina Tingkat Provinsi Sumatera Utara..........................................................................................................................................................390
Siti Maryam

Innovation of Media Video Compact Disc Instructional Pencak Silat for High School..........................................................................................................................................................393
Marli Perangin-angin, Imran Akhmad, Agung Sunarno

Achievement Strategy of the Indonesian National Qualification Framework Based Curriculum Generic Description of Sport Education Postgraduate Program Universitas Negeri Medan..........................................................................................................................................................397
Muhammad Supriadi Siregar, Nurhayati Simatupang, Albadi Sinulingga

The Effect of Teaching Styles and Motor Ability as The Result of Study Dribbling Football..........................................................................................................................................................401
Muhammad Fajar Doli Siregar

Semantic Analysis of English Loan Words in Indonesian Electronic Paper (Analisa)..........................................................................................................................................................404
Putri Nurul Rahmadani Siregar

Analysis of Empowerment of Competence Sinergity on Optimization of Education System..........................................................................................................................................................408
Rameyanti Tampubolon

Inquiry-Based Video Learning Media For Overcoming Student Learning Difficulty (Case Study at State Junior High School 3 Lubuk Pakam Deliserdang District)..........................................................................................................................................................412
Megawati
The Development of Mathematics Learning Tool Oriented on Problem Based Learning to Enhance Mathematics Problem Solving Ability and Self Efficacy
Solawati Nainggolan, Mulyono, Hasratuddin

The Effectiveness of Contextual Inquiry-Based Worksheet on the Matter of Fungi on Food Towards Students’ Higher-Order Thinking and Science Process Skills of Biology Education
Nurjamiah Siregar, Hasruddin, Syahmi Edi

The Function of Limits Mastery on Mathematics Learning Achievement in Derivative Subject at the Eleventh Grade of Madrasah Aliyah Yayasan Pendidikan Karya Setia Padangsidimpuan
Hasna Dewi Ritonga

Effect of Education Level, Income, Inflation on Community Consumption Pattern in North Sumatera Province
Nelly Hutajulu, Fitrawaty, M.Fitri Rahmadana

Application of Problem Based Learning Model Assisted by Cabri Software to Improve Problem Solving Ability of Mathematics Students
Ahmad Darmawan, Edi Syahputra, Kms. M. Amin Fauzi

Optimization of Academic Supervision Competence of High School Supervisor in Karo Regency with Critical Events Model (CEM)
Karyawan Keliat, Yasaratodo Wau, Irsan

The Concept of Physics Learning Media Based Computer Animation
Ratna Tanjung, Mukhtar, Efendi Napitupulu

Cultivating Children’s Critical Attitude with Educational Philosophy
Daulat Saragi
Improving the Ability to Learn Math by Using *Rubu’ al-Mujayyab* Media

Muhammad Hidayat  
The Student of Graduated Program  
University Negeri Medan  
Medan, Indonesia  
Corenponding email: dayatc4@gmail.com

Edi Syahputra  
Graduated Program  
Universitas Negeri Medan  
Medan, Indonesia

E Elvis Napitupulu  
Graduated Program  
Universitas Negeri Medan  
Medan, Indonesia

---

**Abstract**—This study (research) aims to determine whether there is an increase in the ability to learn mathematics by using *Rubu’ al-Mujayyab* media on 9th grade students of Muhammadiyah Junior High School of Medan Year of learning 2015/2016. The study uses qualitative approach and the type of research used is classroom action research and has several stages which are the cycle. So that the problem is not too broad, the author limits his research in the subject of mathematics, “similarity” material by using *Rubu’ al-Mujayyab* media. The result of this study show by using *Rubu’ al-Mujayyab* media students mathematics learning ability increases, this can be demonstrated by the increase in learning mastery in the classical reaches 54% in 1st cycle increased to 70% in 2nd cycle the in 3rd cycle increased to 87%. Because of the level of mastery is 75% has been metclassically, it can be concluded that using *Rubu’ Al-Mujayyab* media can improve students mathematics learning ability in 9th grade students of Muhammadiyah junior high school of Medan Year of learning 2015/2016.

**Keywords**—mathematics learning ability, *rubu’ al-mujayyab*

---

**I. INTRODUCTION**

The effective learning is learning that can generate learning that is useful and focused in the learner through the use of appropriate procedures. Someone is said to have experienced the process of learning if in himself has been a change, from not knowing to know, from not understand to understand and so forth. In the learning process, the result of learning can be seen directly. Therefore in order to be controlled and developed optimally through learning in the classroom, then the learning program must be designed by the teacher by observing the principles that have been proven the superiority empirically.

The learning of mathematics should involve students in the filing of problems in daily of life that related to mathematics material so that the learners understand what relationship is learned with reality in their life that related to mathematics.

Considering the importance of mathematics in daily of life as well as in various sciences, that in order to advance the intelligence of his nation, the defence power of his country, the advancement of technology and its economy, it is necessary that humans who master mathematics.[1] The mathematics is an efficient tool and required by all science and without the help of mathematics, all science will not be a means of meaningful progress, the quality learning provided by the teacher is important to note, the selection of models and the media of mathematics learning that will make mathematics appropriateness by students and students will understand the math lesson.

The task as a school teacher is how to choose the right way of learning, it is the media in accordance with the subject matter, mathematics subjects are expected to become subjects favoured by learners as well as the ability of solving problems of mathematics by learners can increase which ultimately affect the results of learning at the school.[2]

---

**A. Rubu’ al-Mujayyab Media**

*Rubu’ al-Mujayyab* is a tool whose shape is a quarter of a circle useful for calculating and measuring the height of an object.[3] Until now, *Rubu’ al-Mujayyab* is still used by some (Muslims) people in Indonesia to calculate and determine the direction of qibla, longitude ekliptika and declination of the *Rubu’ al-Mujayyab* sun is part of the astronomy program taught in traditional of Islamic boarding school. Even today, *Rubu’ al-Mujayyab* is produced for educational purposes.[4]
Historical records show that the early period of Rubu’ al-Mujayyab creation has been begun since the 3/9th century, precisely in the city of Baghdad that survived a thousand years more. Thus again in Syria, this tool existed and continued to be used until the 8/14th century. Al-Khawarizmi, the inventor of algebra, is thought to be the first person to use the tool. As noted earlier, the initial use of this tool was initially limited to timing based on the position of the sun. But entering the 4/10th century its use began to expand and increase in the solving of astronomical problems. Through this tool has been found the formulations of the ball triangle, with this tool also appeared popular terms in the world of modern mathematics such as sine, cosine, tangent, cotangent. The function of this tool is also seen in the solution of geometric problems numerically.[5]

The main parts of Rubu’ al-Mujayyab are as follows:

- **Markaz**: the central point of the rubu’ where there is a small hole attached to it a thread.
- **Qaus’ashr**: the main arc that surrounds the rubu’ that is given a scale of 0 to 0 degrees (from right to left).
- **Jaib Tama>m**: the right side where connect the markaz to the beginning of qaus. Jaib Tama>m is given a scale from 0 to 60 degrees. Each point of the scale unit is drawn a straight line up to the qaus. The lines are called juyub al-manksah.
- **Sitti>ni>**: the left side where connect the markaz to the ending of qaus. This part is given a scale from 0 to 60 degrees, each point of the scale unit is drawn a straight line up to the qaus. The lines are called juyub almabsuthah.
- **Hadafah**: the reconnaissance hole that is found on the rubu’ and its position is parallel to sitti>ni>.
- **Khawth**: fine yarn mounted on markaz.
- **Syakn1**: pendulum mounted as ballast khaith.
- **Mur1**: short thread tied to khaith and can be shifted up and down.
- **Tajyi>b**: bow semi-circular with radius ½ times the main arc radius. If the center of tajyi>b lies in jaib tama>m on 30jaib, it is called as tajyi>b ulâ>, and if the center of tajyi>b lies in sitti>ni> on 30jaib, it is called as tajyi>b tsani>.
- **Qaus’ashr**: the curved line that is drawn from the beginning of qaus to the sitti>ni> on the 42.3 jaib.
- **Da’irah mail a”zha>m**: ¼ circular arc representing the maximum sun declination of 23º 27’ (23º 45’). [3]

**Explanation:**

Though simple, it keeps a great treasury of scholarship. This instrument counts as the first astronomical instrument to emerge in human civilization along with astrolabe instrument. Before the list of logarithms, astronomical calculations are generally done with this tool.

In its use Rubu’ al-Mujayyab can be installed vertically or horizontally depending on the necessary. Functionally, Rubu’ al-Mujayyab has three main functions as a:

1. Calculating tool
2. Measuring instrument
3. Astronomical table.

The main function Rubu’ al-Mujayyab is as an angle count tool or known as orthogonal grid which can be processed by using a certainty that suits the necessary of user.[6]

### B. Application of Rubu’ al-Mujayyab media to mathematics learning

The media of Rubu’ al-Mujayyab is a classical tool that will help students in understanding similarity concept and expected to improve the ability to learn.

The similarity is the one of the most important mathematics concepts to learn. In the daily of life, there are many applications about the concepts of similarity, include the making of floor plans or replicas of buildings, making batik patterns, calculating the height of unreached buildings and so on. But in the reality, some people especially the students, don’t understand the concept of similarity, so they have difficulty to solve problems that related to the concept of similarity.[7]

The terms of two similar wake flats Similar, “two wake flats are said to be similar if the corresponding angles are equal and the corresponding sides are proportional.”
The terms of two similar triangles

Similar triangle, if the two triangles of corresponding angles are equal, so the two triangles are similar.

Therefore the application of similarity material by using the media of Rubu’ al-Mujayyab isis done with the following stages:

1. The teacher starts the explanation of the similarity material to students by explaining the benefits of learning the material.
2. The teacher explains the similarity material and its operations.
3. The teacher introduces the media of Rubu’ al-Mujayyab to students.
4. The teacher explains the concept of similarity that often found in the natural surroundings with the settlement using the media of Rubu’ al-Mujayyab.
5. Students are asked to make a replica of Rubu’ al-Mujayyab with simple materials.
6. Teacher with students practicing Rubu’ al-Mujayyab is related to the completion of the concept of similarity.
7. Teacher provides tasks that related to the concept of similarity often found in the nature around individually.

Rubu’ Al-Mujayyab

II. METHODOLOGY

The type of research is Classroom Action Research. The approach used is a qualitative approach that aims to describe the process and the result of Rubu’ al-Mujayyab media in an effort to improve the ability to learn mathematics on similarity material. The location of this study was carried out at 48 Muhammadiyah Junior High School of Medan. This location is located on the street of TanggukBongkar, Mandala by pass Medan. This time of this study was carried out on December until March 2016 in the 9th grade of 48 Muhammadiyah Junior High School of Medan. As for who will be the subject of this study are the students of 9th grade of 48 Muhammadiyah Junior High School of Medan who numbered 32 students, consisting of 17 female students and 15 male students. The object of this study is the using of Rubu’ al-Mujayyab media on similarity material on the students of 9th grade of 48 Muhammadiyah Junior High School of Medan Years of Learning 2015/2016.

According to this type of research is classroom action research, so this research has several stages which are a cycle. Each cycle is implemented in accordance with the changes to be achieved. In this study, if the 1st cycle is not successful is the teaching process does not run well, so implemented 2nd cycle and so on. The cycle will cease if the logical reasoning of a student math has been completed classically.

III. THE RESULT AND THE DISCUSSION

Before the implementation of the action done, firstly held the initial test to the students who numbered 32 students, consisting of 17 female students and 15 male students as many as 5 questions to determine the ability of students before the lesson learned by using Rubu’ al-Mujayyab media. After the initial test result obtained the level of mastery learning with the results of the average score of 41% of students from 24, 7 students achieve mastery learning. To improve the students mathematics learning ability, it is designed in a cycle, initially this research is planned to be done is several cycles until the research goal is achieved, it turns out that in 3 cycles of students score has reached the established classical completeness of 75%.

<table>
<thead>
<tr>
<th>No</th>
<th>Test Results</th>
<th>Average Value</th>
<th>Mastery by classical</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Initial Test</td>
<td>61.66</td>
<td>41%</td>
<td>Incomplete</td>
</tr>
<tr>
<td>2.</td>
<td>Cycle I</td>
<td>68.2</td>
<td>54%</td>
<td>Incomplete</td>
</tr>
<tr>
<td>3.</td>
<td>Cycle II</td>
<td>74.16</td>
<td>70%</td>
<td>Incomplete</td>
</tr>
<tr>
<td>4.</td>
<td>Cycle III</td>
<td>80.62</td>
<td>87%</td>
<td>Complete</td>
</tr>
</tbody>
</table>

Source : Author

IV. CONCLUSION

It can be seen by using Rubu’ al-Mujayyab media, the students mathematics learning ability increases, this is indicated by the increases of learning mastery results in the classical reach 54% in 1st cycle increased to 70% in 2nd cycle then in 3rd cycle increased to 87%. Because the level of mastery by classical that is 75% has been completed, thus it can be concluded that by using Rubu’ al-Mujayyab media can improve students mathematics learning ability of 9th grade of
48 Muhammadiyah Junior High School of Medan Years of Learning 2015/2016.

ACKNOWLEDGMENT
This work is supported by Observatorium Ilmu Falak UMSU

REFERENCE