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

Supported and Coordinated by:

Indexing By:
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 (Unimed, Indonesia)
Prof. Dr. Aytekis 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. Yunus (University Tun Hussein on Malaysia)
Prof. Dr. Nurahimah Mohd. Yusuf (UTM, Malaysia)
Assoc. Prof. Dr Pedro Isaias (University of Queensland, Australia)
Assoc. Prof. Elisabeth Taylor, Ph.D (Murdoch University, Australia)
Dr. Bambang Sumintono, M.Ed (Universiti Malaya, Malaysia)
Dr. Isma Widyaty, M.Pd (UPI, Indonesia)
Prof. Dr. Syahrul R, M.Pd (UNP, Indonesia)
Prof. Amrin Saragih, MA., Ph.D (Unimed, Indonesia)
Assoc. Prof. Ade Gafar Abdullah, M.Si (Universitas Pendidikan Indonesia)
Eng. Asep Bayu Dani Nandiyanto (Universitas Pendidikan Indonesia)
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 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 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>Nurmala, 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 Dilham</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 Rifa’i, Syafaruddin Siahaan, 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, Syafful 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 Novriana 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
Harani 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 Ramad, 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 Yue, Yusnadi

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

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

The Effect of Suggested Methodology on Student’s Achievement in Vocabulary
Heppy Yersin Digha Purba

Application of Active 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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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
Efforts to in Crease A Motivation to Learning Math Using “Program” Learning Model
Linda Sarı, Edi Syahputra
The Efod 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 Efif, 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 Ruslan, 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 Participationt Mathematics Learning Student of Junior High School
Ribka 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 Saputra, Syafari
The Effect of Value National Exam Standards at Learning Achievement of Students at Senior High School
Nurdiyana Fahmi, Bornok Sinaga, W. Rajagukguk
The Effect of Open Unemployment Rate and Level of Vocational High Education to Poverty in North Sumatera Province
Zulaili, Indra Maipta
The Application of Cooperative Learning of Think-Pair-Share (TPS) Type to Increase the Students’ Ability of Problem-Solving
Madriqah 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, Fauziyah 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

The Application of Cooperative Learning of ‘Think-Pair-Share’ (TPS) Type to Increase the Students’ Ability of Problem-Solving
Madriqah Fadhilah Siregar, Ani Minami, Zul Amry
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, Fauziyah 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

Title

Linda Sarı, Edi Syahputra
The Efod 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 Efif, 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 Ruslan, 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 Participationt Mathematics Learning Student of Junior High School
Ribka 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 Saputra, Syafari
The Effect of Value National Exam Standards at Learning Achievement of Students at Senior High School
Nurdiyana Fahmi, Bornok Sinaga, W. Rajagukguk
The Effect of Open Unemployment Rate and Level of Vocational High Education to Poverty in North Sumatera Province
Zulaili, Indra Maipta
The Application of Cooperative Learning of ‘Think-Pair-Share’ (TPS) Type to Increase the Students’ Ability of Problem-Solving
Madriqah 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, Fauziyah 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
Misdiana

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, Tarzsy 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
Development of Learning Tools Based on Realistic Mathematics Education of Ethnomatematics Nuances to Improve Mathematical Communication Skill Students in Junior High School 2 Percut Sei Tuan

Rizqi Jamiah
Universitas Negeri Medan
Medan, Indonesia
rizqi_jamiah@yahoo.co.id

Edi Syahputra
Universitas Negeri Medan
Medan, Indonesia

Kms. M. Amin Fauzi
Universitas Negeri Medan
Medan, Indonesia

Abstract - Realistic mathematics education of ethnomatematics nuances is an activity which emphasizes students' activity to seek, find, and build their own knowledge from various problems that nuanced local culture. Development of learning tools based on realistic mathematics education of ethnomatematics nuances aims to know: 1) Validity, practicality and effectiveness of learning devices developed, 2) Knowing the improvement of students' mathematical communication skill using learning tools developed. This research was a research development (research and development), using 4-D model developed by Thiagarajan, Semmel and Semmel. The result was the implementation plan of learning, students' book, students' activity sheet and students' mathematical communication skill test. Subjects of this study were students of class VII-4 and VII-5 SMP Negeri 2 Percut Sei Tuan. The result of experiment I and experiment II were: 1) instructional device fulfilling valid, practical and effective criteria, 2) the improvement of mathematical communication skill of students obtained from improvement of average indicator of mathematical communication skill from experiment I to experiment II.

Keywords - learning equipment, realistic mathematics education, ethnomatematic, mathematical communication skill

I. INTRODUCTION

Before teaching a teacher is expected to prepare materials that will be taught, preparing props / practicum to be used, preparing questions and directions to lure students to be more active in learning, studying students' condition, this will be described in the implementation of learning tools. Learning tools between each other affect each other. Lesson Plans and textbooks will be used which will also require a student activity sheet (LAS). Furthermore, the assessment instrument used should be adjusted to the context of life faced by students and attempted to facilitate students in expressing their thinking skill.

Learning tools (Trianto, 2009: 121) is a number of learning resources that enable students and teachers do the learning [1]. Learning tools serve as a measurement for a professional teacher to evaluate the result of teaching. In addition, if the learning tools appropriated to students’ need then the students will be easier to understand the lessons presented by the teacher.

Haggarty and Keynes (Muchayat, 2011: 201) explained that in order to improve the teaching and learning of mathematics in the classroom it is necessary to improve the understanding of teachers, students, materials which used for learning and the interaction between them [2]. For that, teachers are required to be able to create and develop these learning devices.

According to Ministry of Education (Fitriani, et al, 2014: 4) the reasons for the importance of developing learning tools include: the availability of materials according to the curriculum demands, target characteristics, and the demands of solving learning problems [3]. The characteristic of the target is one of the reasons for the need for the development of learning tools because it often does not match the learning tool with the situation and condition of the students. For example the social environment, culture, students' abilities, interest in learning as well as family background. Furthermore, students often have difficulties in understanding the learning materials, which may be caused because the material is unclear,
complicated, strange, and so on. Therefore, it is necessary to develop learning tools that can answer or solve problems or difficulties in learning.

Education and culture are something that cannot be avoided in everyday life, because culture is a unified whole and prevailing in society, and education is a fundamental need for every individual in society, especially mathematics. The existence of the relationship between mathematics, community life and culture, it is appropriate to develop a realistic learning tools based on mathematics education of ethnomathematics nuances.

If reviewed from the current curriculum changes, realistic mathematics education is one of the learning approaches that conforms to the change [4]. In realistic mathematics education, learning must be started from something real so that students are involved in the learning process meaningfully. learning tools based on realistic mathematics education are just stories that are often experienced in everyday life, but with the ethnomathematics nuances, there will be an addition to the culture of the story such as the image of a traditional house, or a regional custom. It will be something new also to the students, because without being realized by students that many activities contain mathematical concept, besides that they also know their culture. For example, about how rice sellers are actually familiar with the concept of symmetry of plane, where they are capable of transforming rectangular oil paper into a circle that has a curved shape at the top, using folding and cutting techniques.

![Figure 1. Rectangular Transformation to Circle](image)

The definition of ethnomathematics by Supriadi (2014) it comes from the word that refers to the ethno-social context of cultures consisting of language, jargon, codes of behavior, myths and symbols [5]. This is same with the opinion of Begg (Riska, 2014: 74), ethnomathematics means cultural mathematics, referring not only to ethnic culture, but also to common experiences such as language, belief, customs, or history [6]. Shirley (Hartoyo, 2012) holds that nowadays the field of ethnomatics, mathematics that grows and develops in society and in accordance with local culture, can be used as the center of the learning process and teaching methods, although it is still relatively new in the world of education [7]. So that the development of learning tools based on realistic mathematics education ethnomathematics nuances considered harmonious to be combined.

Communication is an important component in the learning process likewise in learning mathematics. Sierpinska (1998) states that communication is same with the education system [8]. Emori (Inprasitha: 2012) says that almost all mathematics education is concerned with learning of mathematical communication [9].

The connection between language and mathematics, Cooke and Buchholz (2005) suggests that teachers must be able to make a connection between mathematics and language [10]. This relationship will help students are able to express a mathematical problem into a symbol language or mathematical model. Awareness of the importance of paying attention to students’ ability to communicate using mathematics learned in schools needs to be grown, as one of the functions of mathematics lessons is as a way of communicating ideas in a practical, systematic, and efficient way. Thus it is clear that mathematical communication is one of the important capabilities that must be developed in students.

Baroody (1993) mentions at least two important reasons why communication in learning mathematics needs to be grown developed among students, that is mathematics not just a tool of thinking, aids finding, solving problems or drawing CONCLUSIONs, but also as a mathematical social activity in learning mathematics; mathematics as a vehicle for interaction between students, and also between teachers and students [11].

Teaching activities that have been used by teachers have not been able to help students to answer questions in problems form, active in the learning process, motivate to find student ideas and even the lack of openness between students with teachers, so many students are reluctant to ask about the subject matters. So with the development of learning tools based on realistic mathematics education ethnomathematics nuances intended to create a learning tool that is valid and effective and can improve students' mathematical communication skills.

**II. METHOD**

Type Type of research that would be conducted was development research. With the model that would be used was 4-D Thiagarajan development model and the product in this research was learning tools based on realistic mathematical approach. Thiagarajan, and Semmel & Semmel (1974) describe that there are four stages to be implemented in development, known as 4-D models define, design, develop, and disseminate [14].

a. Define

The purpose of this step is to define and define what is needed in instructional. There are five steps to follow in this stage:

1) Froat analysis

Investigate on the basic issues that teachers felt, understand the teacher's performance level. During this investigation the better and more efficient learning alternatives can be considered.

2) Learner analysis
Identify the character of the students. The characters are students’ competence and background of the student's experience, general behaviors on the topic of learning, media selection, format and language.

3) Task analysis
Identify the main skills which are needed to describe them in more specific and necessary skills.

4) Concept analysis
Identify the main concepts that will be taught, organize the concept into a hierarchy and detail the properties or characteristics of each concept. This analysis helps identifying a set of thoughts about the examples and not examples that can be sung in the development path.

5) Specifying instructional objectives
Convert the results of task analysis and concept analysis became the goals that will be expected. This set of goals became the basis for the preparation of tests and the design of learning. And furthermore this goal is integrated into the learning materials.

b. Design
The purpose of this stage is to design the initial draft of the learning materials. This stage can be started if the purpose of the learning materials has been established in the previous stage. There are four steps at this stage:

1) Constructing criterion-referenced test
This step is a connection phase I and phase II. The criteria developed convert the objectives into the framework of the learning materials.

2) Media selection
Selection of appropriate media to present the content of learning. This process includes adjusting concept analysis and task analysis with characters from students, production sources, dispersion plans that relates to media traits.

3) Format selection
This step is related to previous media selection. The term instructional format itself refers to a combination of media, teaching strategies, and usage techniques. For example: visual format, audiovisual format, non-verbal format, etc. The assessment of the appropriate format depends on the number of factors being discussed.

4) Initial design
Providing the basic things of learning through appropriate media and in the appropriate sequence. This step also includes composing various learning activities such as reading books, interviewing specific students, and applying different skills to pay attention each student.

c. Develop
The purpose of this step is to modify the learning materials in the initial draft. The results of the design stage should be considered as an early version so modifications are required to obtain an effective final version. There are two steps in this stage:

1) Expert appraisal
Is a technique for obtaining suggestions for improving materials. A number of experts are asked to evaluate the material from the point of view of learning and technique. Based on feedback from experts the first draft was modified.

2) Developmental testing
Testing the material on students to define sections that require revision. Based on responses, reactions and students’ comments, the material can be modified. The test cycle, revise and test is done until the material obtained is consistent and effective.

d. Disseminate
The final draft of the learning material is obtained if the developmental testing stage shows consistent results and the expert gives positive comments. At this stage three steps are known: validation testing, packaging, diffusion and adopting. In the validation testing step, the material is used on artificial conditions, to demonstrate who is learning, what to learn, on what conditions and how much time is spent.

III. RESULT AND DISCUSSION

1. Development of Learning Tools Based on Realistic Mathematics Education of Valid, Practical, and Effective Ethnomathematics Nuances Education-Based Learning Tools Realistic Mathematics Valid, Practical and Effective Ethnomatematic Nuances
Learning tools which is developed based on realistic mathematics education of ethnomatematic nuances are in line with the tools developed by Maulydia (2017) namely Lesson Plans (RPP), Students’ Book, Teachers’ Book, LKS and learning outcomes [12]. However, there are differences in the devices developed in this study with Maulydia. This difference is caused of undeveloped of teacher’s guide book in this research, while the research of Maulydia developed the device. Another difference is that Maulydia compiled the tests in accordance with the indicators of problem-solving abilities, whereas in this study the tests were composed of students' ability tests based on indicators of mathematical communication skills.

In accordance with the opinion of Nieven (1997) a learning model is said to be good if the model (1) is valid, (2) practical, and (3) effective [13]. Learning tools that have been prepared through the define and design stage in the form of draft I are tested in advance by submitting all components of instructional tools developed such as lesson plans (RPP), students’ book, students’ activity sheet, and communication skill test to experts. The following validation results from the validator.

Tools development in this research is validation process by validator and validation of statistic in field to fulfill enough requirement to be good device. The fulfillment of the validity aspect is in line with the opinion of Akker (1999: 10) which states that validity refers to the extent to which the design of
the device is based on the latest state of technology, art, or science (‘content validity’) and the various components of the device consistently related to each other (‘construct validity’) [14].

<table>
<thead>
<tr>
<th>No</th>
<th>Learning Tools</th>
<th>Validation Results (Total Average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Students’ Book</td>
<td>4.33</td>
</tr>
<tr>
<td>2</td>
<td>Lesson Plans</td>
<td>4.18</td>
</tr>
<tr>
<td>3</td>
<td>Students’ Activity Sheet</td>
<td>4.28</td>
</tr>
<tr>
<td>4</td>
<td>Test of Students’ Mathematical Communication Skills</td>
<td>Without Validation</td>
</tr>
</tbody>
</table>

Table 1. Total Average Validation Results of Validator

From the validation results for each learning tools component developed by using realistic mathematics education based education ethnomathematics nuances is in "valid" category. But even though the learning tools components developed have met the criteria of validity, there are some components that need to be fixed appropriate with the notes provided by the expert team covering the use of language, writing or typing and animation display that must be appropriate with the material conditions. So based on the results of records from experts that the learning tools have met the criteria of validity with the category "valid" with a note must be revised.

Besides validity, it is also required effectiveness as a good tool requirements. This is in line with the opinion of Nieveen (1997) which states that effectiveness refers to the way students do curriculum experience and student achievement results in accordance with the goals set by the developer [15].

<table>
<thead>
<tr>
<th>No</th>
<th>Explanations</th>
<th>Value</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Highest Score</td>
<td>3.60</td>
<td>3.90</td>
</tr>
<tr>
<td>2</td>
<td>Lowest Score</td>
<td>2.10</td>
<td>2.30</td>
</tr>
<tr>
<td>3</td>
<td>Average</td>
<td>3.02</td>
<td>3.22</td>
</tr>
<tr>
<td>4</td>
<td>Percentage of Classical Completeness</td>
<td>83.33%</td>
<td>86.66%</td>
</tr>
</tbody>
</table>

Table 2. Completeness of Students Learning Clasically

Based on the results of student observations during the learning and analysis of data that has been stated previously that students’ activity on experiment II is within the limits of tolerance set and the completeness obtained during test I conducted in class VII-4 SMP Negeri 2 Percut Sei Tuan, from 30 the average students of classical completeness of mathematical communication skills is 83.33%. After obtaining the result of experiment I, revision was made to correct the deficiencies in experiment I, then the learning device was tested again in experiment II with the average of classical completeness of mathematical communication skills is 86.66%.

In experiment I, the students’ response analysis related to students' feelings toward the learning component of students' opinions on the material, student's books and the way the teacher perceived the students was above 80%. The percentage of learning atmosphere aspect is lower than other aspect of device that is 72.73%. Based on comments and interviews made to two students who responded negatively, the reason they expressed was the dislike of group learning that made the class atmosphere even more fussed.

Furthermore, the analysis of students’ responses related to the tools components of both the student's book, the LAS and how the teacher taught has reached 80%, but the learning atmosphere has not reached 80% that is only 66.67%. This happens because students are already accustomed to study in groups at the school. To improve this aspect, there is little revision in the students’ book and LAS.

From the enthusiastic aspect of the students follow the learning, students give positive response above 90%, it means that the students are interested to continue next learning activity. Aspects of language clarity used in students’ books and LAS has also reached 80%, but the words, sentences and instructions that students ask during the learning as a reference language improvement. Incomprehensible words or phrases added explanations or replaced with simpler and problem solving in student's books added important conclusions or concepts that students must understand.

Table 3. Completeness of Learning Goals

<table>
<thead>
<tr>
<th>No</th>
<th>Learning Goals</th>
<th>% Completeness of Learning Goals</th>
<th>Explanations</th>
<th>% Completeness of Learning Goals</th>
<th>Explanations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Students are able to write what they know and what is being asked</td>
<td>96%</td>
<td>Achieved</td>
<td>97%</td>
<td>Achieved</td>
</tr>
<tr>
<td>2</td>
<td>Students are able to make planning of problems</td>
<td>90%</td>
<td>Achieved</td>
<td>94%</td>
<td>Achieved</td>
</tr>
<tr>
<td>3</td>
<td>Students are able to do the calculations with the planning that has been made</td>
<td>69%</td>
<td>Not achieved</td>
<td>83%</td>
<td>Achieved</td>
</tr>
<tr>
<td>4</td>
<td>Students are able to make conclusion from the result of resolving the problem that have been done</td>
<td>46%</td>
<td>Not achieved</td>
<td>75%</td>
<td>Achieved</td>
</tr>
</tbody>
</table>
2. Improving Mathematical Communication Skills Using Educational-Based Learning Tools Realistic Mathematics Ethnomatematic Nuances

After the tools are developed to a good quality includes validity, practically and effectiveness, it will be seen how much improvement of students' mathematical communication skills using learning tools developed based on realistic mathematics education ethnomatematics nuances. The result of the development research obtained by Syahputra (2017) is a significant improvement in students’ problem solving abilities [21]. Enhancement will be seen through N-Gain from the pre-test results and post-test of students' mathematical communication skills on experiment 2. The N-Gain results of students' mathematical communication skills are presented in Table 4.

<table>
<thead>
<tr>
<th>N-Gain</th>
<th>Interpretation</th>
<th>Number of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>g ≥ 0.7</td>
<td>High</td>
<td>10</td>
</tr>
<tr>
<td>0.3 ≤ g &lt; 0.7</td>
<td>Medium</td>
<td>20</td>
</tr>
<tr>
<td>g &lt; 0.3</td>
<td>Low</td>
<td>0</td>
</tr>
</tbody>
</table>

Based on the table, it can be seen that 10 students got a Gain score in the range (0.7 or increased "High" category communication skills.) For students experiencing the "Medium" category improvement or Gain score at 0.3 (g ≤ 0.7) amounted to 20 and none of the students experienced an increase in "Low" category communication skills. The result of Gain for improvement of communication skills per indicator can be seen in the following table.

<table>
<thead>
<tr>
<th>No</th>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>0.77</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>0.48</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>0.4</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>0.37</td>
</tr>
</tbody>
</table>

The total pretest score of students 'mathematical communication skills is 1813 from a maximum score of 2400. While the total post-test score of students' mathematical communication skills is 2127. Based on that value, we can see large N-Gain communication skills as follows:

\[ \text{Gain normalized (g) = } \frac{\text{Posttest Score} - \text{Pretest Score}}{\text{Maximum Score} - \text{Pretest Score}} \]

\[ = \frac{2127 - 1813}{2400 - 1813} \]

\[ = \frac{314}{587} \]

\[ = 0.53 \]

N-Gain value of 0.53 if interpreted into the classification described in Chapter III, then the total increase in communication skills obtained are in the "Medium" category. This means that learning tools developed based on realistic mathematics education ethnomathematics nuances has improved the ability of mathematical communication with a large increase in the category "Medium" ie with the value of 0.53 Gain.

The improvement of students' mathematical communication skills from learning tools developed based on realistic mathematics education ethnomatematics nuances in accordance with Bruner's theory. Bruner emphasized the influence of culture on one's behavior. He emphasized that the learning process would work well and creatively if the teacher gave students the opportunity to discover a concept, theory, rule, or understanding through the examples encountered in their lives.

The Gain values of communication ability performances were 0.37, 0.4, 0.48, and 0.77, respectively, and all in the medium and high improvement categories.

IV CONCLUSIONS

From the results of research that has been obtained can be described the following conclusions.

1. The validity of the learning tools product based on the realistic mathematics education of the developed ethnomatematic nuances has fulfilled the validity criteria and valid categories with little revision.

2. The practicality of the learning device product based on the realistic mathematics education of the developed ethnomatematic nuances has fulfilled the good category.

3. The effectiveness of product of learning tools based on realistic mathematics education of ethnomatematic nuances developed, obtained by the average of classical completeness of mathematical communication skills in experiment I 47% and 86.7% for second try, so the learning tools is effective.

4. Improving students' mathematical communication skills using the tools that have been developed based on realistic mathematics education of ethnomatematic nuances seen from the value of N-Gain 0.53 means being in the medium category.

REFERENCES


