



# INTERNATIONAL CONFERENCE **PROCEEDINGS**

The  
**5<sup>th</sup>**  
IPCoRE

International  
**P**ostgraduate  
Colloquium  
of **R**esearch  
in **E**ducation



# **INTERNATIONAL CONFERENCE PROCEEDINGS**

## **The 5<sup>th</sup> INTERNATIONAL POSTGRADUATE COLLOQUIUM ON RESEARCH IN EDUCATION**

**Auditorium JICA FPMIPA UPI, 4-6 November 2016**

Chairman of Students

Communication Forum : Epin Saepudin, M.Pd

Chief Executive The 5<sup>TH</sup> IPCoRE : Gilang Rizqi, S.Pd

Editors

: Prof. H. Yaya S. Kusumah, M.Sc., Ph.D.

Prof. Dr. Anna Permanasari, M.Si.

Prof. Dr H. Agus Rahayu, M.P.

M. Rezza Septian, S.Ud

Silvia Rahmelia, S.Pd

Nur Fadhillah, S.Pd

Published By  
Sekolah Pascasarjana Universitas Pendidikan Indonesia

# **INTERNATIONAL CONFERENCE PROCEEDINGS**

## **The 5<sup>th</sup> INTERNATIONAL POSTGRADUATE COLLOQUIUM ON RESEARCH IN EDUCATION**

### **Editor:**

Prof. H. Yaya S. Kusumah, M.Sc., Ph.D.

Prof. Dr. Anna Permanasari, M.Si.

Prof. Dr H. Agus Rahayu, M.P.

M. Rezza Septian, S.Ud

Silvia Rahmelia, S.Pd

Nur Fadhillah, S.Pd

### **ISBN :**

**978-602-73597-5-8**

#### **Undang-Undang Republik Indonesia Nomor 19 Tahun 2002 tentang Hak Cipta Pasal 72:**

1. Barang siapa dengan sengaja atau tanpa hak melakukan perbuatan sebagaimana dimaksud dalam Pasal 2 ayat (1) dan ayat (2) dipidana dengan pidana penjara masing-masing paling singkat 1 (satu) bulan dan/atau denda paling sedikit Rp.1.000.000,- (satu juta rupiah), atau pidana penjara paling lama 7 (tujuh) tahun dan/atau denda paling banyak Rp.5.000.000.000,- (lima milyar rupiah).
2. Barang siapa dengan sengaja menyiarkan, memamerkan, mengedarkan, atau menjual kepada umum suatu ciptaan atau barang hasil pelanggaran Hak Cipta atau Hak Terkait sebagaimana dimaksud pada ayat (1), dipidana dengan pidana penjara paling lama 5 (lima) tahun dan/atau denda paling banyak Rp.500.000.000,- (lima ratus juta rupiah).

# Preface

First of all, thanks to Allah SWT because of the help of Allah, writer finished writing the proceeding entitled “The 5th International Postgraduated Conference On Research In Education” right in the calculated time.

The purpose in writing this proceeding to fulfill the As the physical form of the article IPCORE participants who have registered.

In arranging this paper, the writer trully get lots challenges and obstructions but with help of many individuals, those obstructions could passed. writer also realized there are still many mistakes in process of writing this proceeding.

Because of that, the writer says thank you to all individuals who helps in the process of writing this paper. hopefully Allah replies all helps and bless you all.the writer realized this paper still imperfect in arrangment and the content. then the writer hope the criticism from the readers can help the writer in perfecting the next paper. Last but not the least, Hopefully, this proceeding can helps the readers to gain more knowledge about the educations in Asean.

Bandung, November 2016

Author



## TABLE OF CONTENTS

	<b>PAGE</b>
<b>PAGE OF COVER</b>	<b>i</b>
<b>PREFACE</b>	<b>iv</b>
<b>TABLE OF CONTENTS</b>	<b>v</b>
<b>FOREWORD MESSAGE FROM</b>	
Prof. H. Yaya S. Kusumah, M.Sc., Ph.D	
Director of Postgraduate Studies, Universitas Pendidikan Indonesia	<b>xiv</b>
<b>WELCOME ADDRESS</b>	
Epin Saepudin, M.Pd	
Chef Excecutive of Forum Komunikasi Mahasiswa Sekolah Pascasarjana Universitas Pendidikan Indonesia	<b>xv</b>
<b>WELCOME ADDRESS</b>	
Gilang Rizqi, S.Pd	
Chief Executive The 5 <sup>th</sup> IPCoRE Conference	<b>xvi</b>
<b>PART I [SCIENCE AND MATHEMATICS EDUCATION]</b>	
<b>PAPER PRESENTATION</b>	<b>PAGE</b>
DIFFERENCES BETWEEN OF STUDENTS' MATHEMATICS LEARNING RESULT WITH CONTEXTUAL APPROACH AND DEDUCTIVE APPROACH ( <i>Lia Arsy Fatimah &amp; Anddi Nurdiansyah</i> )	<b>1-4</b>
THE EFFECT OF SONG METHOD TO OUTCOMES SCIENCE LEARNING IN CLASS V STUDENTS OF SD NEGERI TAJUR ( <i>Amelia Wahyu Wandicha Magel Aziz</i> )	<b>5-9</b>
THE EFFECT OF LEARNING EXPERIMENTS METHOD ON THE IMPROVEMENT OF LEARNING STUDENTS (EXPERIMENTAL STUDY IN CLASS 7TH GREAT SMP NEGERI 1 CIAMIS ON THE CONCEPT OF ENERGY IN THE LIFE SYSTEMS) ( <i>Dina Rahmawati, S.Pd &amp; Riza Amriyanto, S.Pd</i> )	<b>10-13</b>
STUDENT DIFFICULTIES IN SOLVING MATHEMATICAL WORD PROBLEMS ( <i>Eri Erlina Andiriani, Sitti Hardiyanti Ali</i> )	<b>14-19</b>
THE IMPLEMENTATION OF REALISTIC MATHEMATICS EDUCATION APPROACH TOWARD THE MATHEMATICAL PROBLEM SOLVING ABILITY OF STUDENT ( <i>Rima Susantri, Laila Nur Wahidah, Kartini</i> )	<b>20-24</b>
EFFECT OF APPLICATION OF COLLABORATIVE LEARNING GROUP TYPE SYNDICATE WITH MEANS-END ANALYSIS TO IMPROVE MATHEMATICAL CRITICAL THINKING SKILLS OF HIGH SCHOOL STUDENTS ( <i>Isna Asyarah</i> )	<b>25-31</b>



THE EFFECT OF TAPPS METHOD TO STUDENTS MATHEMATICAL COMMUNICATION SKILL <i>(M. Anang jatmiko, Gelar Dwirahayu, Femmy Diwidian)</i>	<b>32-38</b>
THE EFFECT OF PROBLEM BASED LEARNING (PBL) TOWARDS THE STUDENTS' ABILITY IN UNDERSTANDING MATHEMATICAL CONCEPT AT 8TH GRADE SMP NEGERI 13 PADANG IN ACADEMIC YEAR 2014/2015 <i>(Windry Novalia Jufri, Fatimah, Nidia Zuhara)</i>	<b>39-45</b>
DEVELOPING MATHEMATICS LEARNING MATERIALS BASED ON APTITUDE TREATMENT INTERACTION (ATI) LEARNING MODEL AT PRISM AND PYRAMID SUB TOPIC FOR EIGHTH GRADE OF JUNIOR HIGH SCHOOL <i>(Novi Dwi Lestari And Rika Faridah)</i>	<b>46-50</b>
CORRELATION BETWEEN LEARNING STYLE WITH LEARNING ACHIEVEMENT STUDENT IN SMP KOTABUMI <i>(Anggraini Agfar, Darlen Sikumbang, Berti Yolida)</i>	<b>51-55</b>
DEVELOPING INTERACTIVE MULTIMEDIA IN FLASH BASED FORM POWERPOINT EQUIPPED MIND MAP IN PROTISTA LESSON FOR SENIOR HIGH STUDENTS <i>(Sa'diatul Fuadiyah, Ramadhan Sumarmin, Rahmawati)</i>	<b>56-63</b>
THE NUMERICAL ANALYSIS OF BLOOD FLOW IN ARTERIAL STENOSIS BY USING FINITE VOLUME METHOD <i>(Ahmad Sufyan Zauri)</i>	<b>64-66</b>
DEVELOPING WEB-BASE INTERACTIVE WORKSHEETS AS BIOLOGY LEARNING RESOURCE FOR CLASS XI STUDENT OF SENIOR HIGH SCHOOL ON THE CONCEPT OF HUMAN REPRODUCTIVE SYSTEM (Descriptive study in SMAN as the city of Tangerang) <i>(Wahyu Widiyawati)</i>	<b>67-73</b>
APPLICATION OF OPEN ENDED TO IMPROVE MATHEMATICAL PROBLEM SOLVING ABILITY <i>(Cep Ramdan Hidayat, Dadang Djuandi, Ari Septian)</i>	<b>74-78</b>
THE DEVELOPMENT OF MODULE-BASED GUIDED DISCOVERY ON TRIGONOMETRIC EQUATIONS AND IDENTITIES SUBJECTS ON 10th GRADE AT SMAN 1 RAMBATAN <i>(Suci Rahma Putri)</i>	<b>79-83</b>
ANALYSIS OF SENIOR HIGH SCHOOL STUDENTS LEARNING OBSTACLES ON LINEAR-INEQUALITY <i>(Benny Anggara And Muthmainnah)</i>	<b>84-89</b>
IMPROVING THE ABILITY OF MATHEMATIC COMMUNICATION THROUGH THE IMPLEMENTATION OF LEARNING CYCLE STRATEGY FOR THE TENTH GRADE STUDENTS OF MADRASAH ALIAH BABUNNAJAH SIAK HULU KAMPAR <i>(Amalia Pratamawati and Suci Sulistyowati)</i>	<b>90-97</b>
PROBLEM BASED LEARNING MODEL WITH PROBLEM POSING TOWARD STUDENTS' MATHEMATICS ACHIEVEMENT <i>(Nurul Farida)</i>	<b>98-102</b>
IMPLEMENTATION OF CONSTRUCTIVISM APPROACH IN BIOLOGY LEARNING TO IMPROVE THE QUANTITATIVE LITERACY SKILLS AND SCIENTIFIC ATTITUDE OF HIGH SCHOOL STUDENTS IN THE SUBJECT OF ENVIRONMENTAL POLLUTION <i>(Indra Dodo Saputra, Sri Anggraeni, Bambang Supriatno)</i>	<b>103-108</b>



IMPROVING GRADE 5 STUDENTS' MATHEMATICAL COMMUNICATION AND PROBLEM SOLVING (METACOGNITIVE ASPECT) ABILITY WITH RECIPROCAL TEACHING ( <i>Widia Nur Jannah and Titi Rohaeti</i> )	<b>109-117</b>
ANALYSIS OF MATHEMATICAL COMMUNICATION OF STUDENT'S JUNIOR HIGH SCHOOL WITH CONVENTIONAL LEARNING IN PEKANBARU ( <i>Dian Mita Nurhayati, Desrina Hardianti</i> )	<b>118-122</b>
PRE-SERVICE MATHEMATICS TEACHERS' ACADEMIC PROCRASTINATION ( <i>Angriani, Azmidar</i> )	<b>123-124</b>
IMPLEMENTATION STRATEGIES RELATING, EXPERIENCING, APPLYING, COOPERATING, AND TRANSFERRING (REACT) IN LEARNING MATHEMATICS TO IMPROVE MATHEMATICAL GENERALIZATION ABILITY OF JUNIOR HIGH SCHOOL STUDENTS ( <i>Shella Anggun Pertiwi, Jarnawi Afgani Dahlan, and Aan Hasanah</i> )	<b>125-130</b>
DIDACTICAL DESIGN CONCEPT OF THE AREA PARALLELOGRAM IN MATHEMATICS JUNIOR HIGH SCHOOL ( <i>Maya Evayanti</i> )	<b>131-134</b>
THE INFLUENCE OF USING VISUAL AIDS (OPERATIONAL BOX) TOWARDS STUDENTS' CONCEPTUAL COMPREHENSION IN MATERIAL NUMBER ( <i>Hafizh Nizham, Gelar Dwirahayu, Otong Suhyanto</i> )	<b>135-143</b>
COMPARISON OF MATHEMATICAL CREATIVE THINKING ABILITY AMONG STUDENT HIGH SCHOOL USING INQUIRY METHOD WITH EXPOSITORY METHOD ( <i>Angga Permana SLK</i> )	<b>144-148</b>
THE EFFECT GUIDED DISCOVERY MODEL AND EMOTIONAL QUOTIENT OF THE STUDENT LEARNING MATHEMATICSS ( <i>Rina Oktopiani and Era Sovia</i> )	<b>149-156</b>
ANALYSIS OF COMMUNICATION SKILLS THROUGH POSTER PRESENTATION AND PROBLEM SOLVING ABILITY OF ORGANIC WASTE RECYCLING PROJECT ( <i>Nani Rina Suryani</i> )	<b>157-164</b>
SCIENTIFIC INQUIRY APPROACH FOR MATH PROBLEM SOLVING ABILITY OF STUDENTS ( <i>David Tokada and Trias Lembayung</i> )	<b>165-168</b>
AN APPLICATION OF SAVI (SOMATIC, AUDITORY, VISUAL, INTELLECTUAL) MODEL IN MATHEMATICS LEARNING TO IMPROVE CRITICAL THINKING ABILITY OF JUNIOR HIGH SCHOOL STUDENTS ( <i>Heti Yulianti, S.Pd., Yani Kristianti, S.Pd.</i> )	<b>169-174</b>
VISUALIZATION PRESENTATION OF STATISTICAL DISTRIBUTION BY USING R-PROGRAMMING ( <i>Touavue VUE</i> )	<b>175-179</b>
THE INFLUENCE OF PROBLEM BASED LEARNING APPROACH TOWARD THE MATHEMATICAL CRITICAL THINKING ABILITY OF STUDENTS ( <i>Tuwining Panglipur, Rohana</i> )	<b>180</b>
THE EFFECTIVITY OF GROUP INVESTIGATION BY SCAFFOLDING ANIMATION TO IMPROVE STUDENT ACADEMIC ACHIEVEMENT FOR HIGH SCHOOL STUDY ( <i>Herman Jufri</i> )	<b>181-186</b>



THE EFFECT OF MAKE A MATCH LEARNING MODEL TO SENIOR HIGH SCHOOL STUDENTS' UNDERSTANDING MATHEMATICAL CONCEPTS ( <i>Selvi Gustiana and Mardani</i> )	<b>187-190</b>
UPGRADES ARGUMENT ABILITY ON HIGH SCHOOL STUDENTS THROUGH ARGUMENT BASED SCIENCE INQUIRY LEARNING ( <i>Agus Budiyo</i> )	<b>191-202</b>
THE INFLUENCE OF COOPERATIVE LEARNING MODEL NUMBERED HEADS TOGETHER (NHT) WITH PROBLEM CARD TOWARDS STUDENTS MATHEMATICAL CONCEPTUAL UNDERSTANDING ABILITY AT JUNIOR HIGH SCHOOL GRADE VII ( <i>Dita Wahyuni, Liana Berliana</i> )	<b>203-208</b>
RELEVANCE OF HUMAN CHROMOSOME ANALYSIS ACTIVITIES AGAINST MUTATION CONCEPT IN GENETICS COURSE ( <i>Renardi Erwinsyah, Riandi, Mimin Nurjhani</i> )	<b>209-214</b>
THE EFFECT OF REALISTIC MATHEMATICS EDUCATION TOWARD STUDENTS' MATHEMATICAL PROBLEM SOLVING ABILITY ( <i>Rizki Ramadhan Kusumah, Dadang Djuandi, Ari Septian</i> )	<b>215-218</b>
COMPARATION OF STUDENTS MATHEMATICAL CREATIVE THINKING: PROBLEM BASED LEARNING AND DISCOVERY LEARNING ( <i>Sylvia Dalistyana Herman and Osiviana Fadhilla Sari</i> )	<b>219-231</b>
CORRELATION BETWEEN EMOTIONAL INTELLIGENCE AND SPIRITUAL INTELLIGENCE WITH MATHEMATICS LEARNING OUTCOMES OF THE FIRST GRADE STUDENTS OF SMP IT NURUL MUHAJIRIN BATAM IN THE ACADEMIC YEAR OF 2013/2014 ( <i>Wulan Sari</i> )	<b>232-236</b>
<b>PART II [SOCIAL SCIENCE ]</b>	
<b>PAPER PRESENTATION</b>	<b>PAGE</b>
THE EFFECTIVENESS OF THE ABSORPTION PARKING RETRIBUTION ON THE PUBLIC ROAD SIDE IN BANDUNG CITY ( <i>Abdul Azis</i> )	<b>237-243</b>
RECRUITMENT MODEL OF POLITICAL PARTIES PARTICIPANTS ELECTION 2014 (CASE STUDY OF NASDEM PARTY REGIONAL CONSULTATIVE COUNCIL BANDUNG) ( <i>Agung Tesa Gumilar</i> )	<b>244-252</b>
THE COMMUNITY OF 'MUSEUM COMPANIONS' AS A DEVELOPMENT FOR CIVIC ENGAGEMENT OF YOUNG CITIZEN (CASE STUDY ON THE COMMUNITY COMPANIONS OF ASIAN-AFRICAN MUSEUM BANDUNG) ( <i>Silvia Rahmelia and Endang Danial</i> )	<b>253-259</b>
THE DEVELOPMENT OF THE VALUES OF PLURALISM ON STUDENTS THROUGH PEACE EDUCATION BASED ON GUS DUR'S BIOGRAPHY IN HISTORY EDUCATION ( <i>Muhammad Reza Pahlevi</i> )	<b>260-267</b>
THE ROLE OF ISLAMIC STUDENT ASSOCIATIONS ON INCREASE POLITICAL AWARENESS OF STUDENTS IN CAMPUS INDONESIA UNIVERSITY OF EDUCATION ( <i>Andriyana</i> )	<b>268-275</b>
JAVANESE CULTURAL VALUES IN THE TRADITION OF BANCAAN WETON IN SURAKARTA (A Study of Symbolism in Javanese Culture) ( <i>Zuhrian Hendri Kurniawan</i> )	<b>276-291</b>





SOCIAL MEDIA AS A VEHICLE FOR REINFORCEMENT DEVELOPMENT AND CROSS-CULTURAL EDUCATION IN DEVELOPING GLOBAL CITIZENS (DIGITAL CITIZENSHIP) ( <i>Fitriah Artina And Muhammad Amin</i> )	<b>292-297</b>
INTERNALIZING VALUES THROUGH HISTORY LEARNING (A CRITICAL REVIEW) ( <i>Uun Lionar</i> )	<b>298-302</b>
MULTICULTURAL EDUCATION: AN EFFORT to CREATE EQUALITY in EDUCATION for DISABLED PEOPLE ( <i>Happri Novriza Setya Dhewantoro, Nurlaili Handayani</i> )	<b>303-307</b>
STUDY OF FACTORS CAUSING SOMEONE TO JOIN THE LGBT (LESBIAN, GAY, BISEXUAL AND TRANSGENDER) COMMUNITY AT BANDUNG FROM SOCIOLOGICAL PERSPECTIVES ( <i>Wilodati, Mirna Nur Alia Abdullah</i> )	<b>308-311</b>
PERSONALITY OF CIVIC TEACHER AS A SHAPER OF STUDENT’S DEMOCRATIC ATTITUDE (A DESCRIPTIVE STUDY IN JUNIOR HIGH SCHOOL DAARUT TAUHIID BANDUNG) ( <i>Aryanti Dwi Untari, Kokom Komalasari</i> )	<b>312-319</b>
THE CHARACTER OF ECO-CULTURE IN COMMUNITY CIVICS (A CASE STUDY OF KUYAGAYA COMMUNITY IN BANDUNG CITY) ( <i>Ajeng Ayu Milanti, Cecep Darmawan</i> )	<b>320-326</b>
THE PHILOSOPHY OF HUMA BETANG AS THE VALUE OF CIVIC VIRTUE ((Case study on Huma Betang Dayak Ngaju in Central Borneo) ( <i>Chris Apandie, Endang Danial</i> )	<b>327-333</b>
IMPLEMENTATION STRATEGY OF SOCIAL SKILL DEVELOPMENT IN “LS” PLAYGROUP ON COOPERATIVE ASPECT ( <i>Anggita Indah Pratiwi</i> )	<b>334-337</b>
PRACTICES OF CAPITALISM ON SPONGEBOB SQUAREPANTS ANIMATED TELEVESION SERIES AS AN ECONOMIC DESTRUCTIVE EDUCATION (AN ANALYTICAL CRITIQUE) ( <i>Aliet Sutisno</i> )	<b>338-343</b>
USING FINK MODEL OF INTEGRATED LEARNING, AND SIGNIFICANT LEARNING TAXONOMY FOR TEACHING SOCIO-CULTURAL ELEMENTS OF COMMUNICATION TO UNDERGRADUATE STUDENTS OF PAKISTAN ( <i>Shabana Tunio, Jafre Zainol Abidin &amp; Shaik Abdul Malik Mohamed Ismail</i> )	<b>344</b>

### **PART III [EDUCATIONAL SCIENCE ]**

<b>PAPER PRESENTATION</b>	<b>PAGE</b>
THE INFLUENCE OF IMPLEMENTATION OF QUALITY MANAGEMENT SYSTEM ISO 9001: 2008 ON THE PERFORMANCE OF TEACHER AND IMPACT ON QUALITY OF GRADUATE VOCATIONAL STUDENTS IN THE DISTRICT KARAWANG ( <i>Ahmad Deden, Rika Sapriani Fita Puspita</i> )	<b>345-349</b>
CHALLENGES IN IMPLEMENTING COLLABORATIVE PEER FEEDBACK WRITING TECHNIQUE VIEWED FROM STUDENTS’ WRITING ANXIETY: A CASE OF THE WRITING CLASS AT UIN RADEN FATAH PALEMBANG ( <i>Annisa Astrid</i> )	<b>350-356</b>
THE IMPLEMENTATION OF SCIENTIFIC INQUIRY TO THE CRITICAL THINKING ABILITY AND SELF CONFIDENCE ISLAMIC JUNIOR HIGH SCHOOL STUDENTS ( <i>Apip Nursilah, Ummi Khasanah</i> )	<b>357-360</b>



LIFE SKILLS PROGRAM IMPLEMENTATION SEWING FOR WOMEN IN IMPROVING THE INDEPENDENCE LEARNERS LKP MODES MURIA SIDOARJO - EAST JAVA ( <i>Wiwin Yulianingsih</i> )	<b>361-372</b>
EARLY ADOLESCENT SELF ACCEPTANCE PROFILE BASED ON SEX DIFFERENCES (DESCRIPTIVE STUDY OF SIXTH GRADE STUDENTS UPI LABORATORY ELEMENTARY SCHOOL YEAR 2014/2015) ( <i>Mayang Wulan Sari</i> )	<b>373-382</b>
ANALYSIS OF PROSOCIAL ABILITY CHILDHOOD PRESCHOOL 3 YEARS IN SUKASARI BANDUNG ( <i>Nurul Fatonah</i> )	<b>383-384</b>
THE IMPLEMENTATION OF CONCEPTUAL UNDERSTANDING PROCEDURES (CUPS) LEARNING MODEL TO IMPROVE ADAPTIVE REASONING ABILITY OF JUNIOR HIGH SCHOOL STUDENTS ( <i>Yuli dan Hasnul Mujadid</i> )	<b>385-387</b>
EFFORTS TO NURTURE CURIOSITY OF EARLY CHILDHOOD WITH LEARNING SCIENCE THROUGH FINGER PAINTING ACTIVITIES (ACTION RESEARCH IN CHILDREN AGED 3 – 4 YEARS IN PG “LS” BANDUNG) ( <i>Diantifani Rizkita</i> )	<b>388-393</b>
EFFECTIVENESS MODULE ADJUSTMENT IN THE WORLD OF WORK TO IMPROVE ADJUSTMENT IN THE WORLD OF WORK FOR PREPARATION INDUSTRIAL WORK PRACTICES STUDENTS OF SMK N 2 MALANG SCHOOL YEAR 2014/2015 ( <i>Widya Multisari</i> )	<b>394-402</b>
THE ROLE OF CHILD SELF-REGULATION AND PARENTING ON YOUNG CHILDREN’S SPIRITUALITY ( <i>Mahfuzi Irwan, Nurlia Irvani, dan Melsafaradila</i> )	<b>403-409</b>
ANALYSIS OF PSYCHOMOTOR ACHIEVEMENT THROUGH INQUIRY ROLE APPROACH LEARNING (IRA) BASED ON LEARNING STYLE (VISUAL, AUDIOTORY, AND KINESTHETIC) ( <i>Desta Indriana and Novitasari</i> )	<b>410-414</b>
EXPLORING THE MOTIVATION OF ENGLISH LANGUAGE LEARNING STUDENT IN INDONESIA ( <i>Zakir Hussain</i> )	<b>415-419</b>
DEVELOPMENT A MODEL OF REFLECTION ON LESSON STUDY TO IMPROVE THE QUALITY OF LEARNING AND SCIENCE IN SCHOOL ( <i>Susi Laelawati, Siti Sriyati, Diana Rochintaniawati</i> )	<b>420-427</b>
THE IMPROVE OF QUANTITATIVE LITERACY OF 7TH GRADE THROUGH CONTRUCTIVISM APPROACH WITH GROUP INVESTIGATION IN THE ENVIRONMENTAL POLLUTION MATTERIAL ( <i>Dwi Widiarini</i> )	<b>428-433</b>
RESILIENCE PROFILE OF STUDENT RECEIVING BANTUAN KHUSUS MURID (BKM) (A DESCRIPTIVE STUDY OF STUDENT RECEIVING BANTUAN KHUSUS MURID IN STATE SENIOR SECONDARY SCHOOL (SMAN) 1 CIMALAKA SCHOOL YEAR 2013/2014) ( <i>Mutiana Widianti</i> )	<b>434-442</b>



THE RELATIONSHIP BETWEEN SELF-EFFICACY AND STUDENTS' READINESS TO FACE THE EXAM ( <i>Rizka Apriani</i> )	<b>443-449</b>
TOWARDS PRODUCING MEANINGFUL EDUCATION: UNDERSTANDING THE ESSENCES BEYOND THE TRIARCHIC CONNECTION OF KNOWLEDGE, TEACHING AND LEARNING ( <i>Anis Shaari, Hairul Nizam Ismail, Aswati Hamzah</i> )	<b>450-456</b>
EFFECTIVENESS OF TEACHING CRITICAL THINKING AND BARRIERS TO (CT) BASED TEACHING IN PAKISTAN ( <i>Durr-e-Nayab and Dr. Azidah Abu Ziden</i> )	<b>457</b>
EXPLORING LEARNERS' ATTITUDES AND PERCEPTIONS TOWARDS THE USE OF YOUTUBE IN FACILITATING ESL TEACHING AND LEARNING ( <i>Berlian Nur Morat, Mohamad Jafre Zainol Abidin, PhD, Amelia Abdullah, PhD</i> )	<b>458-466</b>
FACTORS INFLUENCING TEACHERS' PRACTICES REGARDING FORMATIVE ASSESSMENT: A CONCEPTUAL FRAMEWORK ( <i>Nguyen Thi Do Quyena, Ahmad Zamri Khairanib</i> )	<b>467</b>
WHAT IS "POTENTIAL" OF STUDENTS? ( <i>Seffetullah Kuldas , Hairul Nizam Ismail, and Shahabuddin Hashim</i> )	<b>468-472</b>
HAZARDS AND DRUG ABUSE AMONG ADOLESCENTS ( <i>Muhammad Rezza Septian</i> )	<b>473-480</b>
 <b>PART IV [LANGUAGE ]</b>	
<b>PAPER PRESENTATION</b>	<b>PAGE</b>
THE ENGLISH ARTICLES CHOICES; AN ANALYSIS OF METALINGUISTIC KNOWLEDGE USED BY INDONESIAN LEARNERS (A QUALITATIVE DESIGN) ( <i>Dian Ardiansah</i> )	<b>481-487</b>
AN ANALYSIS OF LANGUAGE LEARNING STRATEGY USED BY SUNDANESE AND NON SUNDANESE IN STUDYING EFL ( <i>Prihatiningsih</i> )	<b>488-492</b>
A STUDY OF COMMUNICATION STRATEGIES USED BY UNDERGRADUATE STUDENTS ( <i>Reti Wahyuni</i> )	<b>493-500</b>
TEACHING IMPERATIVE THROUGH TREASURE HUNT GAME TO JUNIOR HIGH SCHOOL STUDENTS ( <i>Okti Wilymafidini, Besti Usmafidini</i> )	<b>501-504</b>
ENGLISH TEACHERS' PERSPECTIVES ON SCIENTIFIC APPROACH IN THE 2013 CURRICULUM ( <i>Ria Sukanti Effendi</i> )	<b>505-513</b>
THE USE OF FLASH CARDS IN TEACHING VOCABULARY (A STUDY TOWARD THE FIFTH GRADE STUDENTS OF PELITA INDONESIA ELEMENTARY SCHOOL BANDUNG 2012/2013) ( <i>Purwanti</i> )	<b>514-540</b>
INVESTIGATING THE STUDENTS' MOTIVATIONAL ORIENTATIONS AND ATTITUDE TOWARDS ENGLISH LEARNING (A DESCRIPTIVE STUDY IN AN ISLAMIC BOARDING SCHOOL IN SUBANG) ( <i>Zahra Faula Sinan</i> )	<b>541-547</b>



THE COMPARISON OF ENGLISH LANGUAGE LEARNING ACHIEVEMENT OF NATURAL SCIENCE AND SOCIAL SCIENCE PROGRAM STUDENTS IN ONE OF STATE SENIOR HIGH SCHOOL IN PADANG ( <i>Rizki Merdekawati, Alviaderi Novianti, Friscilla Wulan Tersta, Diki Salman Alqo</i> )	<b>548-558</b>
ESP STUDENTS' PERCEPTION OF AUTONOMOUS LEARNING ( <i>Fitri Kamelia and Dwi Bayu Saputra</i> )	<b>559-567</b>
USING OCS MODULE TO IMPROVE MALAYSIAN WORKING ADULTS' CONFIDENCE LEVEL TO SPEAK ENGLISH ( <i>Nur Ilianis Adnan, Mohamad Jafre Zainol Abidin</i> )	<b>568-575</b>
CLASSROOM SETTING AND SPEAKING SKILLS DEVELOPMENT: IS THERE A RELATION? ( <i>Karwan Mustafa Saeed, Lin Siew Eng, Shaik Abdul Malik Mohamed Ismail</i> )	<b>576-581</b>
JAPANESE LANGUAGE CLASSROOM ANXIETY COPING STRATEGIES: THE CASE OF MALAYSIAN UNDERGRADUATE LEARNERS ( <i>Rokiah Pae and Hairul Nizam Ismail</i> )	<b>582-587</b>
TACTICAL APPROACH TOWARD UNDERSTANDING THE INFLUENCE OF PLAY AND LEARNING DISABILITIES IN FUTSAL GAMES IN SMA BPI 1 BANDUNG ( <i>Arie Abdul Aziz Ramdani, Fahrur Rizal</i> )	<b>588-596</b>
THE IMPLEMENTATION OF HANDBALL LIKE GAMES ACTIVITIES TO INCREASE THE MOTIVATION HANDBALL GAME LEARNING (CLASSROOM ACTION RESEARCH ON CLASS VI AT SDN SUKARASA 3 AND 4 KOTA BANDUNG) ( <i>Novi Eka Kustari &amp; David Sumando S.</i> )	<b>597-601</b>
THE EFFECT OF DIFFERENCES IN LEARNING LINE DANCE WITH GYMNASTICS CLEAN AND HEALTHY FRIDAY AGAINST PLEASURE STUDENTS IN PARTICIPATE PHYSICAL EDUCATION LEARNING IN SMP 29 BANDUNG ( <i>Nuraeni Septiawati</i> )	<b>602-606</b>
AN APPROACH TO POLITICAL DISCOURSE THROUGH FRAMING ANALYSIS FOR JAKARTA GUBERNATORIAL ELECTION ( <i>Rezky Amelda, Lukman Supriadi</i> )	<b>607-611</b>
LOCAL WISDOM VALUES OF CIREBON AGRICULTURE IN ENVIRONMENTAL CONSERVATION AS A LEARNING RESOURCE ( <i>Ahmad Subhan. Hertien Koosbandiah Surtikanti</i> )	<b>612-617</b>
INCREASE STUDENT CREATIIVITY THROUGH USE ROLE PLYING METHOD IN PAKET A PUSAT KEGIATAN BELAJAR MASYARKAT (pkbm) MEKAR SARI, NORTH JAKARTA ( <i>Muhammad Ibrahim, Gallex Simbolon</i> )	<b>618-624</b>
PROFIILE ANALYZE STUDENTS MISCONCEPTION IN LEARNING HUMAN NERVOUS SYSTEM USING CERTAINTY RESPONSE INDEX IN SENIOR HIGH SCHOLL STUDENTS ( <i>Budi Rahayu, Nuryani Rustman</i> )	<b>625-636</b>
WEBLOG-BASED LEARNING FOR TEFL IN YOUNG LEARNERS'S CONTEXT ( <i>Irma Savitri Sadikin</i> )	<b>637-639</b>



ANALYSIS OF PRINCIPAL MANAGERIAL COMPETENCE IN IMPROVING THE PERFORMANCE OF TEACHER ( <i>Moh. Luthfi Adriansyah</i> )	<b>640-644</b>
THE UTILIZATION OF ASTANA GEDE SITE AS A SOURCE OF LEARNING TO DEVELOP STUDENTS' AWARENESS OF LOCAL HISTORY ( <i>Dede Wahyu Firdaus</i> )	<b>645-654</b>
SELF CONTROL AND ADOLESCENT SOCIAL PATHOLOGY ( <i>Muhamad Ikhsan</i> )	<b>655-659</b>
STORYTELLING AS A TEACHING METHOD TO INTRODUCE VOCABULARY TO KINDERGARTEN STUDENTS IN EFL CONTEXTS ( <i>Ghitha Loka Yuniar</i> )	<b>660-666</b>
IMPARTING PATRIOTISM THROUGH THE FARMING THEME FOR EARLY CHILDHOOD TO PRERARE RELIABLE GENERATION 2025 ( <i>Sopa Siti Marwah</i> )	<b>667-673</b>
EFFECTIVENESS GUIDANCE CAREER HOLLAND TO IMPROVE STUDENTS' DECISION SKILLS ( <i>Gilang Rizqi, S.Pd</i> )	<b>674-679</b>
THE USE OF BEHAVIORAL COUNSELING DECREASE CONSUNPTIVE BEHAVIOUR AMONG THE STUDENTS IN GRADE X ACCOUNTING 4 SMK Dr SOETOMO SURABAYA ( <i>Septiani Zaroh, S.Pd</i> )	<b>680-687</b>
THE USE OF PROBLEM BASED LEARNING IN MATHEMATICS LEARNING TO IMPROVE STUDENT'S CRITICAL THINKING SKILL. ( <i>Dadang Muliadi, S.Pd dan Pery Harfan S.Pd</i> )	<b>688-693</b>
IMPLEMENTATION OF QUANTUM LEARNING MODEL TO IMPROVE MATHEMATICAL CRITICAL THINKING SKILL ( <i>Ela Astriani Rohman &amp; Nida Kurniati</i> )	<b>694-697</b>
STANDARDIZATION OF TEACHER EDUCATION AND TEACHERS PROFESSIONALISM ( <i>Dr. Budi Purwoko, M.Pd</i> )	<b>698-706</b>
THE INCREASE OF CREATIVITY AND LEARNING ACADEMIC ACHIEVEMENT IN PHYSICS USING PROBLEM BASED LEARNING WITH POWER POINT MEDIA ( <i>Chairatul Umamah</i> )	<b>707-712</b>
EXISTENCE LEADERSHIP TRADITIONAL IN THE CUSTOMS BADAMAI TO THE COMMUNITY BANJAR ( <i>Mariatul Kiptiah</i> )	<b>713-717</b>

## PROBLEM BASED LEARNING MODEL WITH PROBLEM POSING TOWARD STUDENTS' MATHEMATICS ACHIEVEMENT

**Nurul Farida**

Department of Mathematics Education  
Muhammadiyah University of Metro  
nurulfaridamath@gmail.com

### ABSTRACT

The purpose of the research was to know the effect of Problem Based Learning model with problem posing method on students' mathematics achievement. This is the quasi experimental research with posttest only control design. The population of this research is student in differential equation course at 2015/2016 academic years. They were 90 students that were divided into two groups. One group are experimental groups were taught by problem based learning model with problem posing method and the other is control group taught by problem based learning model. Methods of data collection in this research were documentation, test, and observation. Test requirements included normality test used Lilliefors method and the homogeneity test used the Bartlett test. The hypothesis test used t test. The result from the analysis at 0,05 alpha level to test for significance. The result of this research show  $t_{computation}$  value  $> t_{table}$ ,  $t_{computation}$  value is  $3,566 > 1,645$ . At the end of the research was students who taught by problem based learning model with problem posing method give better mathematics achievement than problem based learning model.

**Keywords:** Mathematics Achievement, PBL, Problem Posing.

### INTRODUCTION

By looking at process standards of NCTM (National Council of Teachers of Mathematics) that solving problems is a major in learning mathematics because the students not only get ways of thinking but also they can acquire about habits of persistence, curiosity, and their confidence. In learning of mathematics there is always many problems. Therefore the teachers must have creativity to help the students develop their creativity in solving the problems, so they have ability to find and solve the problems. Learning model that make students active in class one of them is a problem based learning (PBL). PBL is a learning model make students actively find solutions the problem. Rusman (2011: 247) said that the student centered is one of the characteristics of PBL where students are actively involved in learning and optimizing the capacity to think through collaborative and cooperative inquiry. The result of the research from Ajai, Imoko, & O'kwu (2013) that using PBL achieved significantly higher in the post test than using conventional method of teaching Algebra. It means that active learning give significant impact for students' achievement.

PBL also performs better influence on attaining and gaining mathematics critical and creative thinking abilities, and mathematical attitude than conventional learning (Budiman, 2013). In mathematics, the students not only active in learning process but also creative in finding solutions in solving problems. A method can be

used in optimizing student's creativity is problem posing. In problem posing, the students was directed to create a problem that can be solved in individually or in groups. Thus, they were given the freedom to develop their ability in mathematics. Research on problem posing showed that problem posing intervention had a positive impact on the student learning outcomes, specifically knowledge based, skill based, ability based, and attitude beliefs (Rosli, Capraro, and Capraro, 2015). Akay & Boz (2010) conclude that the effect of problem posing instruction on the attitudes toward mathematics and mathematics self efficacy of elementary prospective mathematics teachers was in a positive way and at significant level. Problem Based Learning with problem posing method can give good effect toward students' mathematics achievement in differential equation course. Based on the background, the aim of this research was to know the effect of Problem Based Learning model with problem posing method on students' mathematics achievement.

### LITERATURE REVIEW

#### Problem Based Learning

Problem Based Learning is a learning model is the model that is used to stimulate students' critical thinking process in solving the problems as revealed by Ibrahim dan Nur (2002) (in Rusman, 2011: 242) that the goal of PBL is to help students develop the ability to think and solve problems as well as the students become independent. Further

Suprijono (2009: 72) said that PBL is a high-level thinking skills where students are not only able to investigate but also can solve the problem. This means that in learning students are required to be able to develop their abilities and creativity so the students have capable and independence resolve many problems. Baden (2003: 3) explain that problem based learning is increasingly being seen as a means of educating students to learn with complexity. Students work in groups or teams to resolve or manage these scenarios but they are not expected to acquire a predetermined series of right answers. Instead, they are expected to engage with the complex scenario presented to them and decide what information they need to learn and what skills they need to gain in order to manage the situation effectively. In PBL, the problems were given to students not only from text book but also it can take from student's environment or their learning experience. Baden & Wilkie (2004) said that problems do not have to be a piece of literature, but our study shows that style does impact on students' learning. What this study indicated was the link between challenge and variety, so that, as the students' self-efficacy and competence levels increase, they rely less on the structure of the problems and look for learning challenges elsewhere.

Riyanto (2010: 285) defined that PBL is an instructional model designed and developed to develop students' ability to solve problems. Problem-based learning is an instructional delivery is done by presenting a problem, ask questions, facilitating the investigation and open a dialogue (Mulyatiningsih, 2010). Further Tan (2009: 47) explain that students have to analyze them by applying analytical thinking skills such as comparing, classifying, logical reasoning, and making inferences. Good analytical thinking involves not only logical reasoning but also knowing when to interpolate and extrapolate. The steps of PBL by Suprijono (2009: 74) as follows:

Table 1. The steps of PBL Model

Phase	Teacher behavior
phase 1: Giving orientation	Teacher provides information about the learning objectives, describing various purposes required in learning, motivate students to engage in problem solving
phase 2: Organize students to learn	Teachers help students define and organize learning tasks related to the problem
phase 3: Help the students to investigate independently and groups	Teachers encourage students to get the right information carry out the experiment, and find solutions
phase 4: Develop and present work	Help students in planning and presenting works that conform such statements
phase 5: Analyze and	Teachers help students reflect

evaluate the process to solve the problem	on their investigations and evaluate the process they used
---	--

### Problem Posing

Problem posing is pose the problem. In mathematics, problem solving is important because the students can develop to other problems and in other contexts (NCTM, 2000). According to Brown (2005: 166) that there is good reason to believe that problem generation might be a critical ingredient in confronting math anxiety because the posing of problems or asking of questions is potentially less threatening than answering them. When the students pose the problem in mathematics, it will improve the ability to think creatively so as to bring creative ideas to make creating and asking questions. Another benefit by asking questions to students or other groups will increase self-confidence and social skills of the students. As research conducted by Rosli, Capraro, and Capraro (2015) that problem posing on teaching and learning of mathematics are positive and meaningful. The students can improve their knowledge, problem solving skills, abilities to pose problem and also attitude toward mathematics at all levels. Silver and Cai (1996) in Siswono (2004) said that problem posing applied to the three forms of different mathematical cognitive activity as follows:

- Problem posing before completion (pre-solution posing) means the student makes the question of the situation provided such stories, pictures, or numbers.
- Problem posing for completion (within-solution posing) means students reformulate the questions with some changes to make it more simple and can be mastered.
- Problem posing after completion (post-solution posing) means that students modify a matter already resolved to create new problems.

In this study will be used problem posing form of post-solution is to modify the questions that have been resolved to create new problems.

### Problem Based Learning With Problem Posing

In PBL model, the problem are presented is not need to problem solving but rather the creation of problems were solved. PBL modification with problem posing method is expected not only to make students able to solve the problem is given, but also encourage students to think more creatively in a filing problem. In addition, the students are directed to improve communication mathematics because when students are challenged to communicate the results of their thinking to others orally or in writing, they learn to be clear, convincing, and precise in their use of mathematical language (NCTM, 2000). Another benefit is the critical thinking skills can also be

improved. As revealed by Siswono (2004) that when the students pose the problem is also task of activities that lead to critical and creative attitude because students are asked to make inquiries of the information provided in which to ask is the root of all creation. Therefore, in this research attempts to modify PBL because in this case meant that the students will not only be able to apply for the problems but also a solver of a problem, as expressed by Guvercin & Verbovskiy (2014) that all parts of problem posing we should not forget that the main aim is not to create the best problem posers instead of this we need to use problem posing as a tool to produce good problem solvers. The steps of PBL with problem posing method in this research as follow:

1. Orientation the problem  
Teacher provides information about the learning objectives, describing various purposes required in learning, motivate students to engage in problem solving
2. Organize students to learn  
Teachers help students define and organize learning tasks related to the problem
3. Help the students to investigate independently and groups  
Teachers encourage students to get the right information carry out the experiment, and find solution.
4. Develop and present work  
Help students in planning and presenting works that conform such statements.
5. Analyze and evaluate the process to solve the problem  
Teachers help students reflect on their investigations and evaluate the process they used
6. Pose the problem  
Teachers give assignments to the students to modify a matter that has been resolved and create new problems either individually or in groups and given to another group to be resolved and provide corrections for the work that has been done other groups

## METHODOLOGY

This is the quasi experimental research with posttest only control design (Table 2). This research used problem based learning model with problem posing and problem based learning model. One group are experimental groups were taught by problem based learning model with problem posing method and the other is control group taught by problem based learning model. After receiving treatment, the two groups given a post test to compare mathematics achievement between experiment class and control class.

The population of this research is student in differential equation course at 2015/2016 academic

years. They were 90 students that were divided into two groups. There were 42 students in the experiment group and 48 students in the control group. This research has been done on May until June 2016 in Department of Mathematics Education, Muhammadiyah University of Metro. Seven meetings are used for learning and one meeting for testing. Methods of data collection in this research were documentation, test, and observation. Documentation was used to know the to determine the number of students taking courses in differential equations. The test is used to determine the value of mathematics achievement of students gained at the end of learning, further observations by making notes about the incident during an ongoing learning activities. Data analysis used normality test, homogeneity test, and t test. Test requirements included normality test used Lilliefors method and the homogeneity test used the Bartlett test. The hypothesis test used t- test.

Table 2. Research design: quasi experimental type posttest only control design

Class	Treatment	Posttest
Experiment	X	O
Control	Z	O

## FINDING AND DISCUSSION

Based on the result of mathematics achievement test, test requirements included normality test as follow:

Table 3. Normality Test on Students' Mathematics Achievement

Class	$L_{max}$	$L_{table}$	Conclusion
PBL with Problem Posing (Experiment)	0,0970	0,1367	Normal
PBL (control)	0,1120	0,1279	Normal

Based on Table 3, the result of the normality test on students' mathematics achievement concluded that from PBL with problem posing group (experiment) and PBL model group (control) the data is normal distributed. Further, for the homogeneity test used the Bartlett test obtained  $\chi^2_{computation}$  value is 0,0568 and  $\chi^2_{table}$  value is 3,8410. It means that  $H_0$  is not denied, so the conclusion of the data from PBL with problem posing group and PBL is homogeneous.

Based on the calculating through the t- test is gotten result in Table 4.

Table 4. The sample paired t-test result of Experiment and Control Group students for Mathematics Achievement post test

Post-test	N	X	St	t	p
-----------	---	---	----	---	---



Result			dev		
PBL with Problem Posing (Experiment)	42	78,8	15,3	3,566	0,001
PBL (control)	48	67,4	14,8		

The result with t test from the analysis at 0,05 alpha level to test for significance. The value of  $t_{computation}$  is 3,566 and  $t_{table}$  is 1,645. That is obvious that  $t_{computation}$  value  $> t_{table}$ , so  $H_0$  is not denied. This is mean that there is difference mathematics achievement on differensial equation course between students taught by PBL with problem posing method and PBL. If viewed from the average, the experiment class (PBL with problem posing method) is higher than control class(PBL model).

During PBL, the students more active learning in the classroom because they are not only given an explanation by the teacher but also interact with each other in their groups. The teacher's role is as a facilitator in the learning. Teachers design problem and help students to be able to search and find solutions the problem. Each group was also given the opportunity to present the result of the answers that have been discussed. Thus, it make the students responsible for the work given to them. Three outcomes of PBL are responsibility, independence, and discipline (Bell, 2010). Further, based on the result of mathematics achievement of the students that PBL with problem posing method is higher than PBL without problem posing method. When the students pose the problem, they can explore their knowledge and also more creative in making the questions. In problem posing also the students become more critical in learning because before the problems were given to other, first members of group try to find a solution. Beside that, it can increase the cooperation and understanding of students on the mathematical concept which leads to the mathematics achievement. This concurs with research conducted by Guvercin and Verbovskiy (2014) that problem posing method of instruction has significantly increased students' mathematical academic achievement.

PBL with problem posing method also give positive point because the student not only communicate with person in their groups but also with another groups. They can give another information with other groups. Likewise it make them enjoy in learning mathematics, more motivated in learning, and enthusiastic in finding the correct answer. Additionally the students can improve their knowledge when they pose the problem. When they discuss to solve the problem from another groups can increase their curiosity and communication in mathematics. Mathematical communication is a way of sharing ideas and clarifying understanding (NCTM, 2000). With share their knowledge and ideas make students become confident to clarify solution of the

problem. Therefore students' mathematics achievement who taught PBL with problem posing method is higher than PBL model.

## CONCLUSIONS

Based on the finding and discussion, it can be conclude that students who taught by problem based learning model with problem posing method give better mathematics achievement than problem based learning model. PBL with problem posing method need many times to do, so discussion to solve the problem can not only be done in the classroom but also outside the classroom. It can also add new knowledge and experiences for students will also be enjoyed in learning, but also can further explore their ability as problem solver. Still many research to do related to PBL with problem posing method. Therefore for other researchers suggested doing extensive research and in depth with different variables.

## REFERENCES

- Akay, H., & Boz, N. 2010. The Effect of Problem Posing Oriented Analyses-II Course on the Attitudes toward Mathematics and Mathematics Self-Efficacy of Elementary Prospective Mathematics Teachers. *Australian Journal of Teacher Education*. Vol 35 (1), pp. 60-75.
- Baden, M.S. 2003. *Facilitating Problem Based Learning*. USA: SRHE and Open University Press.
- Baden, M.S., & Wilkie K. 2004. *Challenging Research into Problem-based Learning*. USA: SRHE and Open University Press.
- Bell, S. 2010. Project Based Learning for the 21 st Century: Skills for the Future, The Claring House: A *Journal of Educational Strategies, Issues and Ideas*. Taylor and Francis Group, LLC 83: 39-43.
- Brown, S.I., & Walter, M.I. 2005. *The Art of problem Posing*. (3rd ed). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Budiman, Heri. 2013. Problem-Based Learning Approach Using Dynamic Geometry Software To Enhance Mathematics Critical And Creative Thinking Abilities. Proceeding. *International Seminar on Mathematics, Science, and Computer Science Education*. Bandung: Indonesia

University of Education. ISBN 978-602-95549-2-2.

- Guvercin, S & Verbovskiy, V. 2014. The Effect Of Problem Posing Taskk Used In Mathematics Instruction To Mathematics Academic Achievement And Attitudes Toward Mathematics. *International Online Journal of Primary Education*. Vol 3(2), pp 59-65.
- Mulyatiningsih, E. 2010. *Model Pembelajaran Aktif Inovatif Kreatif Efektif Dan Menyenangkan*. Diklat Peningkatan Kompetensi Pengawas Dalam Rangka Penjaminan Mutu Pendidikan. Bogor, Jawa Barat: Direktorat Jendral Peningkatan Mutu Pendidik Dan Tenaga Kependidikan. 23-25 Agustus 2010.
- National Council of Teachers of Mathematics. 2000. *Principles and Standards for School Mathematics*. Reston, VA: Author.
- Riyanto, Yatim. 2010. *Paradigma Baru Pembelajaran*. Jakarta: Kencana.
- Rosli, R..., Capraro, M.M., & Capraro, R.M. 2014. The Effect of Problem Posing on Student Mathematical Learning: A Meta-Analysis. *International Education Studies*. Vol 7 (13), pp. 227-241.
- Rusman. 2010. *Model-Model Pembelajaran Mengembangkan Profesionalisme Guru*. Jakarta: Rajagrafindo Persada.
- Siswono, T.Y.E. 2004. *Mendorong Berpikir Kreatif Siswa Melalui Pengajuan Masalah (Problem Posing)*. Konferensi Nasional Matematika XII. Denpasar, Bali: Universitas Udayana. 23-27. July 2004.
- Suprijono, Agus. 2009. *Cooperatif Learning Teori dan Aplikasi Paikem*. Yogyakarta: Pustaka Pelajar.
- Tan, O.S. 2009. *Problem Based Learning and Creativity*. Singapore: Cengage Learning Asia Pte Ltd.