

ISBN 979-604-171-5



PROCEEDING

INTERNATIONAL CONFERENCE
ON STATISTICS, MATHEMATICS,
TEACHING, AND RESEARCH

ICSMTR 2015

*Increasing Statistical and Mathematical Literacy through
High Quality Teaching and Research*

October 9-10, 2015
Makassar, South Sulawesi, Indonesia

STATISTICS DEPARTMENT AND MATHEMATICS DEPARTMENT
STATE UNIVERSITY OF MAKASSAR
INDONESIA

CONFERENCE PROCEEDING

International Conference on Statistics, Mathematics, Teaching, and Research

Makassar, South Sulawesi, Indonesia
October 9 – 10, 2015

*Increasing Statistical and Mathematical
Literacy through High Quality Teaching and
Research*

**Statistics Department and Mathematics
Department
Faculty of Mathematics and Natural Sciences
State University of Makassar
Indonesia**

**ICSMTR 2015: INCREASING STATISTICAL AND MATHEMATICAL
LITERACY THROUGH HIGH QUALITY TEACHING
AND RESEARCH**

- Editor** : Dr. Syafruddin Side
Dr. Awi Dassa
Dr. Ilham Minggu
Dr. Muhammad Darwis
Dr. Alimuddin
Dr. Rahmat Syam
Dr. Asdar
Dr. Hisyam Ihsan
Dr. Muhammad Abdy
- Editorial Assistant** : Ansari Saleh Ahmar, M.Sc.
Said Fachry Assagaf, M.Sc.
Muhammad Husnul Khuluq, M.Sc.
Zulkifli Rais, M.Si.
- Layouter** : Rahmat H.S., S.Pd.
Bahri H.B
- Cover Administrator** : Iswan Achlan Setiawan, S.Pd.
- Reviewer Board** : Professor Kerrie Mengersen
Professor Shigehiko Kanaya
Professor Ahmad A. Bahnassy
Professor I Gusti Ngurah Agung
Professor Hamzah Upu
Professor Muhammad Arif Tiro
Professor Mohd. Salmi Md Noorani
Professor Ruslan
Professor Suradi Tahmir
Professor Nurdin Arsyad
Professor Najib Bustang
Professor Usman Mulbar
Professor Abdul Rahman
Dr. Darfiana Nur
Suwardi Annas, Ph.D.
Wahidah Sanusi, Ph.D.

Copyright © October 2015
ISBN 979-604-171-5

Printed in Indonesia

WELCOME SPEECH

Forewords from the Head of Committee

Bismillahirrahmanirrahim

Assalamu'alaikum Warahmatullahi Wabarakatuh

First, I want to give our welcome to all the delegates, speakers, and participants coming today. Welcome to the State University of Makassar, UNM.

This International Conference on Statistics, Mathematics, Teaching, and Research (ICSMTR) 2015 is primarily organized by Statistics Department and Mathematics Department, Faculty of Mathematics and Sciences, State University of Makassar. It is conducted in two days from 9th to 10th October 2015. It involves one keynote speaker, Governor of South Sulawesi, eight invited speakers, and approximately 80 parallel speakers. Besides, this conference also invites delegates from twelve LPTKs (Institute of Teacher Education) to conduct a scientific meeting reviewing KKNi for Mathematics Education curriculum in higher education.

Ladies and gentlemen, as I previously said, the conference proudly invites eight invited speakers coming from several countries. Therefore, on behalf of the committee members, I would like to express my sincere thanks to the invited speakers, specifically:

1. Professor Kerrie Mengersen (Queensland University of Technology, Australia)
2. Professor Shigehiko Kanaya (Nara Institute of Science and Technology, Japan)
3. Professor Ahmad A. Bahnassy (Faculty of Medicine, King Fahd Medical City, Saudi Arabia)
4. Professor I Gusti Ngurah Agung (State University of Makassar, Indonesia)
5. Professor Hamzah Upu (State University of Makassar, Indonesia)
6. Professor Muhammad Arif Tiro (State University of Makassar, Indonesia)
7. Professor Mohd. Salmi Md Noorani (Universiti Kebangsaan Malaysia, Malaysia)
8. Dr. Darfiana Nur (Flinders University, Australia)

Next, it is my privilege to thank all organizing committee members for their contributions to the success of this event. I would like also to apologize for all of you if there are some inconvenience during this conference.

Finally, I would like to thank to the speakers and participants. I wish you all have two fruitful days in Makassar.

Thank you very much for the attention.

Wassalamu'alaikum Warahmatullahi Wabarakatuh

Suardi Annas, Ph.D.

Head of Committee



**Forewords from the Dean of Mathematics and Sciences Faculty,
State University of Makassar**

*Bismillahirrahmanirrahim
Assalamu'alaikum Warahmatullahi Wabarakatuh*

Alhamdulillah, all praises be to the Almighty God, Allah subhanahu wata'ala.

I would like to say that I welcome and highly appreciate any attempts of both the Statistics Department and Mathematics Department to organize this International Conference on Statistics, Mathematics, Teaching, and Research in the State University of Makassar. I do hope that this conference would be a great chance for you as researchers or scholars in enhancing your research quality within a framework of evolving sciences. May Allah *subhanahu wata'ala* opens our mind, widens our view, strengthens our soul, and blesses our conference that it will be useful as we are hoping.

At last, as the Dean of the Faculty of Mathematics and Natural Sciences, State University of Makassar (FMIPA UNM), I am sure that there are some weaknesses and mistakes in performing this conference. I therefore do apologize to you and may Allah *subhanahu wata'ala* forgive all of us.

Wassalamu'alaikum Warahmatullahi Wabarakatuh

Professor Abdul Rahman

Dean of Faculty of Mathematics and Sciences
State University of Makassar

Forewords from Rector of UNM

*Bismillahirrahmanirrahim
Assalamu'alaikum Warahmatullahi Wabarakatuh*

Your respectable, the high officials of State University of Makassar, the committee, the speakers, and the participants of conference.

It gives me great pleasure to extend to you all a very warm welcome, especially to our keynote speakers who have accepted our invitation to convene the conference. ICSMTR is one of our educational activities that covers a wide range of very interesting items relating to statistics, mathematics, teaching and research.

By taking participation of this conference, it is highly expected to all of us to share our research findings to society and continuously develop new ideas and knowledge. Those things are two significant steps in improving the quality of nations around the world, increasing our familiarity to each other, and even avoiding underdevelopment.

Furthermore, I would like to take this opportunity to express my heartfelt gratitude to all organizing committee especially for Statistics Department and Mathematics Department of Faculty Mathematics and Natural Sciences that primarily hosts this conference.

Finally, this is a great time for me to declare the official opening of the International Conference on Statistics, Mathematics, Teaching, and Research (ICSMTR) 2015.

I wish you a very enjoyable stay in Makassar
I warmly welcome you again, as in Makassar, we say "*salamakki battu ri mangkasara*"

Wassalamu'alaikum Warahmatullahi Wabarakatuh.

Prof. Dr. H. Arismunandar, M.Pd.

Rector of State University of Makassar



TABLE OF CONTENTS

Welcome Speech	iv
Table of Contents	vii
Keynote Speakers	
The Power and Promise of Immersive Virtual Environments: Extracting Expert Information to Support Rare or Unseen Spatial events <i>Kerrie Mengersen</i>	1
Teaching Biostatistics for Health Care Professionals <i>Ahmed A. Bahnassy</i>	2
Projective Lag Synchronization in Complex Dynamical Networks Via Hybrid Feedback Control <i>Mohd. Salmi Md Noorani, Ghada Al-Mahbashi</i>	3
Experiences in Online Teaching of Statistics Topics <i>Darfiana Nur</i>	4
Jamu Informatics: Strategy for Data Accumulation and Mining Concerning to Plane-Diseases Relations by KNApSACK DB toward Big Data Science <i>Sony Hartono Wijaya, Shigehiko Kanaya</i>	5
Misinterpretation of Some Selected Theoretical Concepts of Mathematical Statistics <i>I Gusti Ngurah Agung</i>	6
Research on Teaching Statistics <i>Muh. Arif Tiro</i>	7 – 16
Trend of Education Quality Improvement in Indonesia <i>Hamzah Upu</i>	17 – 26
Parallel Speakers	
Heterogeneous Regressions, Fixed Effects, or Random Effects Models. Is your Accounting Model Appropriately Presented? <i>I Gusti Ngurah Agung, Dodik Siswanto</i>	27 – 55
The Estimation of Generalized Seasonal Autoregressive Integrated Moving Average (GSARIMA) Models using Bayesian Approach for Forecasting the Number of Dengue Hemorrhagic Fever (DHF) Patients <i>Asrirawan, Suhartono</i>	56 – 65

Bayesian Spatial Modeling and Mapping of Dengue Fever The Case of the City of Bandung, Indonesia <i>I Gede Nyoman Mindra Jaya, Henk Folmer, Budi Nurani Ruchjana</i>	66 – 75
Bayesian Dengue Disease Mapping for Juvenile and Adult in Bandung, Indonesia <i>F. Kristiani, N.A. Samat, S.A. Ghani</i>	76 – 89
Bayesian Estimation of Meta-Regression Model in Meta-Analysis Using a Linear Model Theorem <i>Junaidi, Darfiana Nur, Irene Hudson</i>	90 – 101
Estimation of Loading Factor for Reflective and Formative Measurement Model SEM <i>Ruliana, I.N Budiantara, B. W Otok, W.Wibowo</i>	102 - 115
Estimation Parameters and Testing Hypotheses for Geographically Weighted Negative Binomial Bivariate Regression <i>M. Ichsan Nawawi, I Nyoman Latra, Purhadi</i>	129 – 129
Circular Descriptive Statistics for Describing Students' Sleeping Time <i>Cici Suhaeni, I Made Sumertajaya</i>	130 – 137
Forecasting the Exchange Rate of U.S. Dollar against the Rupiah Using Model Threshold Autoregressive Conditional Heteroscedasticity (TARCH) <i>Hisyam Ihsan, Aswi, Ihram</i>	138 – 151
Population Problem Indexes By <i>Kabupaten</i> in <i>Sulawesi Selatan</i> : A Study based on <i>SUSENAS</i> 2013 <i>I Gusti Ngurah Agung, Muhammad Nusrang</i>	152 – 168
Bias Comparison of Parameter Estimates In Cox Proportional Hazard and Logistic Regression (<i>Case Study in Student's Length of Study at Cokroaminoto University</i>) <i>Rahmat Hidayat</i>	169 – 181
Spatial Analysis of the Spread of Tuberculosis using Local Indicator of Spatial Association (LISA) in Makassar, Indonesia <i>Aswi, Ahmad Zaki, Hijrayanti</i>	182 – 192
The Worst ANCOVA Model among All Possible Models With The Same Set of Variables <i>I Gusti Ngurah Agung, Suwardi Annas</i>	193 – 210
Algorithm of Spatial Outlier Detection <i>NbrAvg</i> And <i>AvgDiff</i> (Case Study on HDI in the province of South Sulawesi) <i>Muhammad Nusrang</i>	211 – 223



Analysis of Susceptible, Infected, Recovered, Susceptible (SIRS) Model for Spread of the Acute Respiratory Tract Infections (ARI) Disease <i>Yulita Molliq Rangkuti, Syafruddin Side, Elvira Nanda Faramitri Harahap</i>	224 – 237
The Characteristics of Conicoid Based on Its Center <i>Sahlan Sidjara, Bahar</i>	238 – 245
Stability Analysis Susceptible, Exposed, Infected, Recovered (SEIR) Model for Spread of Dengue Fever in Medan <i>Syafruddin Side, Yulita Molliq Rangkuti, Dian Gerhana Pane, Marlina Setia Sinaga</i>	246 – 259
Some Remarks on Submodule Almost Prime of Multiplication Modules <i>Sahlan Sidjara</i>	260 – 263
Membership Function of Depth Hypnosis with Davis Husband Scale <i>Ja'faruddin, Muhammad Kasim Aidid, Sitti Indah Rahmadana Darwis</i>	264 – 272
The Application of Algebraic Methods in Balanced Incomplete Block Design. <i>Muhammad Abdy</i>	273 – 277
Modeling the Spread of Tuberculosis with Bayesian Car <i>Muhammad Kasim Aidid, Aswi, Ansari Saleh</i>	278 – 288
Application Rank Matrix to Determine the Type of Conics <i>Bahar, Fitriani</i>	289 – 399
The Odd Risks of Pregnancy Mothers with CED (Chronic Energy Deficiency) to the Baby with LBW (Low Birth Weight), and SBBL (Short Birth Body Length) in the Public Health Center of Pattingaloang Makassar <i>Muhammad Nadjib Bustan, Amaliyah Maulana Asis</i>	300 – 310
Using of C-Means Cluster Analysis in Object Grouping (Study of Poor Villages Grouping in Pangkep). <i>Irwan, Zulkifli, Firdaus</i>	311 – 318
Huffman Code to Transmit Messages in Data Communication <i>Sulaiman</i>	319 – 321
Genetic Algorithm in Solving Traveling Salesman Problem (TSP) <i>Sulaiman</i>	322 – 340
Inferential Statistical Reasoning of Preservice Teachers Based on Gender Differences in Solving Statistical Problem. <i>Rosidah</i>	341 – 349

Association between the Perception on Statistics and Statistical Thinking Ability of the Students in Integrated Social Science Education of Social Faculty in State University of Makassar <i>Misveria Villa Waru, Ilham Minggu, Suwardi Annas</i>	350 – 360
A Cross-National Comparative Analysis of Statistics Problems in Indonesia and Australia Secondary School Mathematics Textbooks: What Might We Learn? <i>Bustang, Usman Mulbar</i>	361 – 365
Description of Probability Literacy and Randomized Events Literacy for Statistics Student at FMIPA UNM <i>Sudarmin, Muhammad Arif Tiro, Irwan</i>	366 – 377
Innovation in Statistics for Learning <i>Andi Arisyi Zulwaqar, Nurfadhila Fahmi Utami, Muhammad Nusrang</i>	378 – 386
Preservice Teacher's Reflective Thinking process in Solving Mathematical Problem who has Field Independent Cognitive Style <i>Agustan S., Dwi Juniati, Tatag Y.E.S.</i>	387 – 398
Development of Mathematics Learning Model Based on Student Character Involving Student Emotional Intelligence as a Prospective Teacher <i>Muhammad Ilyas</i>	399 – 411
Developing Hypnoteaching Model in Mathematic Teaching (Hypnomatching) <i>Rusli, Ja'faruddin</i>	412 – 421
Prospective Mathematics Teachers' Ability in Solving Contextual Problem Concerning Geometry <i>Syahrullah Asyari, Rahmat Kamaruddin, Sitti Busyrah Muchsin, Ikhbariaty Kautsar Qadry</i>	422 – 441
Assessing Mathematics Skills through KONCAMA Learning <i>Asdar, Jeranah</i>	442 – 451
The Development of Social Learning Model based on Metacognitive Strategies to Foster Mathematics Self-Efficacy of the Senior High School Students <i>Ramlan Mahmud, Alimuddin Mahmud, Suradi Tahmir</i>	452 – 468
Adaptive Reasoning and Strategic Competence in Solving Mathematical Problems <i>Andi Syukriani</i>	469 – 478



Effectiveness of Appropriation Motivation toward Students' Problem Solving Capability in Math Lessons <i>Khaerunnisa Syatir, Kartika Cahyaningrum, Amirah Aminanty, Ahmad Ridfah</i>	479 – 486
Development Model of Authentic Assessment based Showcase Portfolio on Learning of Mathematical Problem Solving in Senior High School <i>Sukmawati, Faihatuz Zuhairoh</i>	487 – 499
Students' Metacognition in Constructivism based Mathematics Learning <i>Usman Mulbar</i>	500 – 511
Identification of Students' Misconceptions In Understanding the Concept of Simple Fractions Using CRI (Certainty of Response Index) <i>Darwan, Asdar, Nasrullah</i>	512 – 520
Realistic Mathematics Education with the Sense of Madurese Culture <i>Sri Indriati Hasanah</i>	521 – 525
The Model of Learning Instructional Design Evoking Cognitive Conflict and Intellectual Awareness: Study in the Topic of Combinatorics <i>Djadir, Dinar, Fajar Arwadi</i>	526 – 536
Teacher Training and Recharging about Learning Models in Curriculum 2013 to Improve Teaching Quality of Math Teachers <i>Suradi Tahmir, Nasrullah</i>	537 – 545
Mathematics Learning Software Development Involving Adversity Intelligence Approach Through the Submission of the Problem <i>Vivi Rosida, Bakhtiar</i>	546 – 564
Relation among Attitude toward Mathematics, Mathematics Self-Efficacy, and Mathematics Achievement <i>Fajar Arwadi</i>	565 – 576
A Profile of the Quality of Problem Posing Based Mathematics Learning Model in Improving Prospective Teachers' Creativity <i>Alimuddin, Syahrullah Asyari</i>	575 – 590
The Development of Mathematical Communication based Worksheet with Character of Indonesian Culture <i>Izwita Dewi, Tiur Malasari Siregar, Nurhasanah Siregar</i>	591 – 599
Pedagogical Content Knowledge (PCK): Type of Particular Knowledge for Teacher to Effective Learning (Case study of Mathematics Teacher at SMA) <i>Ma'rufi</i>	600 – 611

Development of Learning Devices of Cybernetic Cooperative in Discussing the Simplex Method in Mathematics Education Students of FKIP UHO <i>Arvyaty, Ld. Ahmad Jazuli, Saleh, Latif Sahidin, Ikman, Kadir Tya, Yoo Ekayana Kansil, Hastuti Musa</i>	612 - 621
Design Research : Evoking Cognitive Conflict and Problem Simplification Strategy to Improve Students' Concept understanding in Problem Solving Skills in The Topic of Combinatorics <i>Nurdin Arsyad, Djudir, Fajar Arwadi</i>	622 - 634
The Model Development of Interprofessional Education (IPE) in the Faculty of Health Sciences (FIK) Islamic State University (UIN) Alauddin Makassar <i>Nur Hidayah, Saldi Yusuf</i>	635 – 643
Implementation of Learning Base-Guided Inquiry in the Lecture of Interaction between Physical Factors at Teacher Science Candidate <i>Muh. Tawil, Sitti Rahma Yunus</i>	644 – 649
Teaching Physics through Top Down Approach to Teach Critical Thinking Skills <i>Aisyah Azis, Muhammad Aqil Rusli, A Momang Yusuf</i>	650 – 656
Gasing Physics as Solution for Teaching Kinematics <i>Muhammad Aqil Rusli, A.Momang Yusuf, Aisyah Azis, Agus Purwanto, Jutri Taruna</i>	657 – 665
The Application of Student Worksheet based Local Wisdom in Physics Learning <i>M. Agus Martawijaya</i>	666 – 677
Implementation of Dynamic Problem Solving Strategies (DPSS) for Basic Electronics Subject, Physics Department, Makassar State University <i>Abdul Haris, Nurul Kusuma Wardani, Sirajuddin Jalil, Risnawati, Subaer</i>	678 – 682
The Effect of Teacher Competence toward Physics Achievement by Controlling Prior Knowledge <i>Salamang Salmiah Sari</i>	683 – 699
Utilizing ADDIE Model for Developing Brilian, Learning Application in Institute of Business and Informatics STIKOM Surabaya, Indonesia <i>Dewiyani, Bambang Hariadi</i>	700 – 712
Identification of Game Model for Health Education in Preschoolers <i>Arbianingsih, Yeni Rustina</i>	713 – 719
The Effect of Educational Level and Environmental Attitude toward the Hygienic and Healthy Life Behavior of Housewives at Bontoa District Maros Regency <i>Firdaus Daud, Muhammad Wiharto, Halifah Pagarra</i>	720 - 737



Development of Teaching Material for Geography in SMA/MA on Grade X with Dick and Carey Model <i>Maddatuang</i>	738 – 752
Mapping Protected and Cultivation Zone in North Luwu, South Sulawesi, Indonesia <i>Rosmini Maru, Muh. Rais Abidin, Amal, Ibrahim Abbas, Suprpta</i>	753 – 760
The Development of Investigation-Based Chemistry Learning Tools for Senior High School and Its Effect toward Student's Critical Thinking Skill and Concept Mastery <i>Muhammad Danial, Pince Salempa, Anis Muliati, Husnaeni</i>	761 – 772
The Influence of Using Instructional Media Lectora Inspire to Student's Learning Outcomes of Class X at Material of Invertebrate at SMA Negeri 9 Bulukumba <i>Andi Asmawati Aziz, Nurhayati B, Andi Irma Mutmainnahtul Adawiyah</i>	773 – 783
Contextual Teaching Learning Approach in Economy Improving Learning Outcomes in SMA Negeri 1 Maros <i>Muhammad Azis</i>	784 – 803