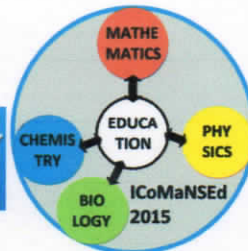




*fmipa unima*



**Annual Meeting of Mathematics and Natural Sciences Forum of  
Indonesian Institutes of Teacher Training and Education  
Personnel (MatricesFor IITTEP)**

**In Conjunction With:**

**International Conference on Mathematics, Natural Sciences,  
and Education (ICoMaNSEd 2015)**

**August 07-08, 2015, Aryaduta Hotel Manado, Indonesia**

# Book of Abstracts & Program



**Theme:**

**"Enhancement and Acceleration on Research and Learning in Mathematics and  
Natural Sciences for the Utilization of Natural Resources"**

**Supported and Coordinated by:**



*Yusda K.S*

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## WELCOME MESSAGE FROM EVENTS CHAIR



Best wishes to us

May God bless upon us

*Assalamu'alaikum wa Rahmatullahi wa Barakatuh*

Your excellency The President of Manado State University (UNIMA) Prof. Dr. Ph. E. A. Tuerah, M.Si., DEA., ladies and gentlemen, good morning and welcome to Manado, North Sulawesi, especially to Manado State University.

This seminar entitled the International Conference on Mathematics, Natural Sciences, and its Education (ICoMaNSEd): ***Enhancement and Acceleration on Research and Learning in Mathematics and Natural Science for the Utilization of Natural Resources*** is organized by Faculty of Mathematics and Natural Sciences, Manado State University, supported and coordinated by 12 members of Association of the Faculty of Mathematics and Natural Sciences from Teacher Program (LPTK).

Ladies and gentlemen, on behalf of the committee of this conference, I would like to thanks and give the highest appreciation to keynote speakers including:

1. Prof. David F. Treagust, Ph.D., FSB., FAERA (Curtin University, Perth, Australia)
2. Rebecca Johnson, MA (Columbia University, USA)
3. Ed van den Berg, Ph.D (Free University, Amsterdam, The Netherlands)
4. Assoc. Prof. Dr. Vichit Rangpan (Yala Rajabhat University, Thailand)
5. Prof. Dr. Syamsu Qamar Badu, M.Pd (State University of Gorontalo, Indonesia)

I would like also to give thanks and gratitude to the invited speakers from 12 universities including:

1. Assoc.Prof. Dr. Kamisah Osman (The National University of Malaysia)

2. Dr. Ir. Sri Nurdianti, M.Sc (Bogor Agricultural University, Indonesia)
3. Prof. Ferdy S. Rondonuwu, Ph.D (Satya Wacana Christian University, Salatiga, Indonesia)
4. Prof. Dr. Zulkardi, M.I.Komp, M.Sc (Sriwijaya University, Palembang, Indonesia)
5. Prof. Dr. Julius H. Lolombulan, MS (Manado State University, Indonesia)
6. Prof. Drs. Manihar Situmorang, M.Sc., Ph.D (Medan State University, Indonesia)
7. Prof. Dr. Liliasari, M.Pd (Indonesian Education University, Bandung, Indonesia)
8. Dr. Slamet Suyanto (Yogyakarta State University, Indonesia)
9. Dr. Suharto Linuwih, M.Si (Semarang State University, Indonesia)
10. Prof. Dr. Subandi, M.Si (Malang State University, Indonesia)
11. Dr. Hj. Yuni Sri Rahayu, M.Si (Surabaya State University, Indonesia)
12. Suwardi Anas, M.Sc., Ph.D (Makasar State University)

Now, I would like to special thanks to 156 speakers and all of participant required in this seminar.

Ladies and gentlemen, to be able to display text in the real international standard, required not only the international community of scientists involved in the research process, but is also involved in the process of publication. Therefore, I expect this event to be a dissemination of the lecturer researches.

Finally, I am delighted to thank to all the members of the committee who have been working very hard for the success of this conference.

Please enjoy the conference and enjoy in Manado city. Thank you very much.

Dr. Rymond J. Rumampuk, M.Si

## WELCOME MESSAGE FR



Distinguished Rector of  
Unima, Deans of the Fac  
Distinguished Rector of  
today;

Distinguished Chairman  
Indonesian Institution o  
Distinguished Deans of  
IITTEP along with vice  
delegates from Faculty  
Especially, distinguishe  
ICoMaNSEd 2015, and I

Praise and tha  
event can be held to  
community, we can t  
between scholars thro  
present here, to share  
field of Mathematics  
various parts of Indo  
thanked to Rector of S  
IITTEP, deans of Math  
deans and heads of d  
support this event so  
Keynotes Speakers an  
their articles in ICoMa

Implementat  
such as symposium,  
form of scientists ac



**WELCOME MESSAGE FROM DEAN**

Best wishes for all of us

*Assalamu'alaikum wa Rahmatullahi wa Barakatuh*

Distinguished Rector of the State University of Manado with the vices rector of Unima, Deans of the Faculties and Chairs of the Institutions;

Distinguished Rector of the State University of Gorontalo and chairmans present today;

Distinguished Chairman of the Forum of Mathematics and Natural Science of Indonesian Institution of Teacher Training and Education Personels (IITTEP)

Distinguished Deans of Mathematics and Natural Sciences Forum members of IITTEP along with vice deans and heads of Departments and Study Programs, and delegates from Faculty of Mathematics and Natural Science of IITTEP;

Especially, distinguished Keynote Speakers, invited Speakers, all the speakers in ICoMaNSEd 2015, and Participants joining this Scientific Conference,

Praise and thanks to the presence of the Lord, because ICoMaNSEd 2015 event can be held today. We are proud because as a part of the academic community, we can take part in enriching the scientific communication forum between scholars through ICoMaNSEd. Through this Scientific Conference, we are present here, to share and to exchange experiences through various experts in the field of Mathematics and Natural Science Education from several countries and various parts of Indonesia. For the implementation of ICoMaNSEd 2015, we thanked to Rector of State University of Manado, Chairman of the Forum of Science IITTEP, deans of Mathematics and Natural Sciences Faculty of IITTEP along with vice deans and heads of departments and study programs, Lecturers and students who support this event so it could be held. In particular, we express our gratitude to Keynotes Speakers and Invited Speakers who have agreed to attend and to present their articles in ICoMaNSEd 2015.

Implementation of Scientific Conference or other scientific meetings forms such as symposium, seminar or FGD, etc by a university or research institute, is a form of scientists activities that always continue to strengthen scientific attitude



and the scientists identity to be opened, objectived, and criticals to the science developments, especially for the further of science development. In ICoMaNSEd forum 2015, these things are reflected in the context of improvement and development in the learning of Natural Sciences and Mathematics. The experts involved not only from IITTEP-universities, but also involve the faculty of Mathematics and Natural Sciences of non- IITTEP ones. We strongly hope that the implementation of present Scientific Conference in State University of Manado, will be the pillars and a reference for the implementation of other scientific events in Indonesia, especially Manado, North Sulawesi. We welcome all the audiences to Manado, North Sulawesi, land of Nyiur Melambai, which is famous for its hospitality and beautiful landscapes.

Distinguished participants and honorable guests,

Last but not least, on this occasion, I would like to quoted from a Nobel laureate in Medicine Physiology back in 1960, Sir Peter Medawar, a British scientist, born in Rio de Janeiro Brazil. His advice for us academics and scientists started from the following question: "Do we need a sharp mind to be able to succeed as a scientist?". It is an anxiety that does not need to be considered, because one does not need to be too clever in order to be a successful scientist. Well-thoughts must be possessed. On the other hand, it would be very helpful to have some good qualities from ancient times that somehow now have been regarded as a trait that less ignored by the scientists. Those properties are: a practical view; perseverance; determination; ability to concentrate; tenacity to not despair when facing difficulties".

Hopefully the advice from the Nobel laureate Sir Peter Medawar, could be an inspiration to all the academics who gathered today towards successful stages in our scientific careers. Keep this adage: "God does not call us to be a successful man, but to believe. Believe, in order to succes".

Shaloom,  
Wasalamu alaikum warahmatulahi wabarakatuh.  
Thank you.

Manado, August 3, 2015,  
Dean of the Faculty Unima,  
Prof.Dr.Cosmas Poluakan, M.Si

# WELCOME MESSAGE FR



Shaloom,  
Assalamu'alaikum warra  
May peace and God's b

I am delighted to be l  
Mathematics and Nat  
Training and Education  
by 12 universities fo  
Conference on Mather  
my privilege and plea  
organized by the Facu  
Manado in North Sul  
mathematics and sci  
experiences, expecta  
welcome to all of yo  
honour to host so m  
Netherland, and Tha  
Universities namely:  
UNDIKSHA, UNM , UN

Distinguished guest,



## WELCOME MESSAGE FROM RECTOR



Honourable Vice Rectors and Deans of all faculties,

Honourable keynote speakers from outstanding  
universities,

Distinguished all invited speakers and all other speakers,

Distinguished guests,

All participants,

Ladies and gentlemen,

Syaloom,

Assalamu'alaikum warrahmatullah wabarakatuh.

May peace and God's blessings be upon you all.

I am delighted to be here with you today, as you start the Annual Meeting of Mathematics and Natural Sciences Forum of Indonesian Institute for Teacher Training and Education Personnel (Matrices for IITTEP), conducted and sponsored by 12 universities former known as IKIP, in conjunction with International Conference on Mathematics, Natural Sciences and Education (ICoMaNSEd). It is my privilege and pleasure to welcome you all to the Forum and Conference organized by the Faculty of Mathematics and Natural Sciences, State University of Manado in North Sulawesi, Indonesia in which researchers and practitioners on mathematics and science and the education, to get together, share ideas, experiences, expectations, and research findings. I want to extend a warm welcome to all of you, on behalf of the State University of Manado. It is a great honour to host so many distinguished keynote speakers from the USA, Australia, Netherland, and Thailand, distinguished invited speakers from 12 Indonesian Universities namely: UNJ, UPI, UNY, UNNES, UNESA, UM, UNP, UNIMED, UNDIKSHA, UNM, UNG, and UNIMA, and also Malaysia and all participants.

Distinguished guest, Ladies and gentlemen,

The theme of the conference is "Enhancement and Acceleration on Research and Learning in Mathematics and Natural Sciences for the Utilization of Natural Resources".

This event is aimed to providing dissemination and publication media for research results, theoretical studies, and best practices in the field of Mathematics, Natural Sciences, and Education; more over, strengthening the interaction and communication between researchers , promote mathematics and science research activities by the researchers in Indonesia and overseas, in hope to build networks and collaborations.

By promoting collaboration across disciplines, we can further extend the opportunity to discover innovations, gain better understanding and enhance the advancement of science body.

The development of Mathematics and Natural Science can not be separated from the scientific characteristics that encourage high-curiosity in doing research. We hope, IITTEP always creating, maintaining, facilitating, and developing the world class academic atmosphere that encourage students and faculty to continue doing research, and community services

Research is one of the Tri Dharma of the higher education . It is a systematic effort to solve the problems or answer the questions through data collecting , formulating the generalities based on the data, then finding and developing organized knowledge by scientific method. It is expected that from research activities valuable empirical facts can be obtained to improve and develop the theory and practice to bring a better quality of education. We do hope this conference will bear fruitful results and promote networking and future collaborations for all participants from diverse background of expertise, institutions, and countries to promote science, mathematics, and the education.

Distinguished guest, Ladies and gentlemen,

In this very precious moment, I would like to express my highest appreciation and gratitude to the keynote speakers from Australia, the USA, Netherland, Thailand and Indonesia.

I also would like to take this opportunity to express my gratitude to all delegates for their full support, cooperation and contribution to the Forum and Conference 2015. I also wish to express my gratitude especially to the Dean of Faculty of Mathematics and Science, Prof. Dr. Cosmas Poluakan, M.Si, and to the Organizing Committee who dedicated their time and energy to attend meeting and for their hard work to make this conference a big success. However, should you find any shortcomings and inconveniences, please accept my apologies.

In closing, I realize that y  
do hope you will also  
ambience.

Let me wish you all a pr  
Also I wish you all great  
fruitful benefits in educ  
Thank you very much.  
Syaloom

Wassalamu'alaikum wa  
May peace and God's b

Manado, 8 August 201

Rector,

Prof. Dr. Ph. E A Tuer



In closing, I realize that you are fully dedicated to the sessions that will follow but I do hope you will also take time to enjoy fascinating Manado with its tropical ambience.

Let me wish you all a productive conference and enjoyable stay here in Manado . Also I wish you all great success and this international conference will bring us fruitful benefits in education.

Thank you very much.

Syaloom

Wassalamu'alaikum warahmatullah wabarakatuh.

May peace and God's blessings be upon you all.

Manado, 8 August 2015

Rector,

Prof. Dr. Ph. E A Tuerah, M.Si, DEA

**ICoMaNSEd 2015 COMMITTEE****Steering Committee**

Prof. Dr. Ph. E. A. Tuerah, M.Si., DEA.	(Rector)
Prof. Dr. H. Lumapow, M.Pd.	(1 <sup>st</sup> Vice Rector)
Dr. Adensi Timomor, SH., MH.	(2 <sup>nd</sup> Vice Rector)

**The Committee in Charge**

Prof. Dr. Cosmas Poluakan, M.Si.	(Dean)
----------------------------------	--------

**Organizing Committee**

Dr. Rymond J. Rumampuk, M.Si.	(Chairman of the Events)
Dr. Heroike D. Rompas, M.Si.	(Vice Chairman of the Forum Event)
Dr. Hetty H. Langkudi, M.Pd.	(Vice Chairman of the Conference)
Dr. Tinny D. Kaunang, M.Si.	(Secretary of the Forum Event)
Dr. Alfonds A. Maramis, M.Si.	(Secretary of the Conference)
Dr. Anetha L. F. Tilaar, M.Si.	(Treasurer)
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Dr. Emma Moko, M.Si	(Secretariat, Health, & Safety Division)
Dra. Ch. Rompas, M.Si	(Secretariat, Health, & Safety Division)
James Mangobi, S.Pd., M.Si	(Secretariat, Health, & Safety Division)
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Septiani Palilingan, S.Si., M.Si	(Secretariat, Health, & Safety Division)
Dr. Wilson A.R. Rombang, M.Si	(Program Division)
Dr. Joan Lawalata, M.Si	(Program Division)
Ir. M.L.S. Taulu, M.Si	(Program Division)
V.I.Y. Roring, SIK., M.Sc	(Program Division)
U. Satiman, Sp., M.Si	(Program Division)
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Eldad Santa, S.Si., M.Si	(Publication & Documentation Division)
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Drs. Fr. Waworuntu, M.Pd	(Logistic & Transportation Division)
Drs. Ontang Manurung, M.Pd	(Logistic & Transportation Division)
Drs. Jorry Monoarfa, M.Si	(Logistic & Transportation Division)
Drs. Hardin F. Rares, M.Si	(Logistic & Transportation Division)
Dra. V. Regar, M.Si	(Logistic & Transportation Division)
Dra. M. Sulistyaningsih, M.Si	(Logistic & Transportation Division)
Derel Kaunang, S.Pd., M.Pd	(Logistic & Transportation Division)
Dr. D.R. Wenas, M.Si	(ICT Division)
Dr. Y. Mokusuli, M.Si	(ICT Division)

Dr. Y. Mokusuli, M.Si  
 Dr. Jovialin A. Rungkat  
 Dr. M. Rengkuan, M.P.  
 Dian Howan, S.Si., M.P.  
 Navel Mangelep, S.Pd.  
 Soenandar M. T. Teng  
 Dr. Rantje L. Worang,  
 Dr. S.N. Kaunang, M.P.  
 Dr. C. Buyung, M.Si  
 Prof. Dr. T. Londa, M.Si  
 Dra. Fanny Nanlohy, I  
 Patricia Silangen, S.Pd.  
 Drs. Dokri Gumolung,  
 M.N. Mamuaaja, S.Pt  
 Dr. Emma J. Pongoh, I  
 W. Nangoy, M.Teol  
 Dr. Susye Warouw, M  
 Dra. Evelin A. Karund  
 Dra. M.L. Dumanauw,  
 Dr. Sukmarayu Gedoa  
 Prof. Dr. Ariyani, M.Si  
 Prof. Dr. R. Palilingan,  
 Prof. Dr. J. Lolombula  
 Prof. Dr. I.R.S. Santos  
 Prof. Dr. Sanusi Gugul  
 Prof. Dr. Revelson Me  
 Dr. A. Komansilan, M.  
 Dr. A. Mandolang, M.  
 Dr. F. Dungus, M.Si  
 Dr. J. Mamangkey, M.



Dr. Y. Mokusuli, M.Si	(ICT Division)
Dr. Jovialin A. Rungkat, M.Pd	(ICT Division)
Dr. M. Rengkuan, M.Pd	(ICT Division)
Dian Howan, S.Si., Mphil	(ICT Division)
Navel Mangelep, S.Pd., M.Pd	(ICT Division)
Soenandar M. T. Tengker, S.Si., M.Sc.	(ICT Division)
Dr. Rantje L. Worang, M.Si	(Guide and Field Trip Division)
Dr. S.N. Kaunang, M.Pd	(Guide and Field Trip Division)
Dr. C. Buyung, M.Si	(Guide and Field Trip Division)
Prof. Dr. T. Londa, M.Si	(Guide and Field Trip Division)
Dra. Fanny Nanlohy, DEA., DHET	(Guide and Field Trip Division)
Patricia Silangen, S.Pd., M.Si	(Guide and Field Trip Division)
Drs. Dokri Gumolung, M.Si	(Guide and Field Trip Division)
M.N. Mamuja, S.Pt	(Guide and Field Trip Division)
Dr. Emma J. Pongoh, M.Si	(Banquet Division)
W. Nangoy, M.Teol	(Banquet Division)
Dr. Susye Warouw, M.Pd	(Banquet Division)
Dra. Evelin A. Karundeng, M.Si	(Banquet Division)
Dra. M.L. Dumanauw, M.Si	(Banquet Division)
Dr. Sukmarayu Gedoan, MP	(Banquet Division)
Prof. Dr. Arijani, M.Si	(Proceeding Division)
Prof. Dr. R. Palilingan, M.Si	(Proceeding Division)
Prof. Dr. J. Lolombulan, M.Si	(Proceeding Division)
Prof. Dr. I.R.S. Santoso, M.Si	(Proceeding Division)
Prof. Dr. Sanusi Gugule, M.Si	(Proceeding Division)
Prof. Dr. Revelson Mege, M.Si	(Proceeding Division)
Dr. A. Komansilan, M.Si	(Proceeding Division)
Dr. A. Mandolang, M.Pd	(Proceeding Division)
Dr. F. Dungus, M.Si	(Proceeding Division)
Dr. J. Mamangkey, M.Si	(Proceeding Division)

## EVENTS PROGRAM

### FINAL SCHEDULE OF THE EVENTS: ICoMaNSEd2015

Saturday, August 08 2015		Grand Ballroom Lobby
07.00-08.00	Registration for ICoMaNSEd Participant	Grand Ballroom MC: Dr. Helly Langkudi, M.Pd.
08.00-08.30	Opening Ceremony	Grand Ballroom
08.30-08.45	Scienza Choir	
08.45-10.00	Plenary Lecture I (Talk Duration for Every Keynote Speaker: 30 min)	
	• Prof. David F. Treagust, Ph.D, FSB, FAERA Curtin University, Perth, Australia "Current Issues in Science Education Research"	
	• Rebecca Johnson, MA. Columbia University, USA "Developing STEM and Environmental Literacy via 21 <sup>st</sup> Century Instruction"	
	• Prof. Dr. Otto Cornelis Kalligis, SH., MH. OCK & Associates, Indonesia "Legal Aspect of the Utilization of Natural Resources: Some Advocacy Experience in the Case of Exploitation of Natural Resources"	Grand Ballroom Moderator: Mercy Rampengan, S.Pi., M.App.Sc., Ph.D.
Discussion (15 min)		
10.00-10.15	Coffee Break + Poster Presentation	Grand Ballroom Lobby
10.15-12.00	Plenary Lecture II (Talk Duration for Every Keynote Speaker: 30 min)	
	• Ed van den Berg, Ph.D. Free University, Amsterdam, The Netherlands "Generating Pedagogical Content Knowledge in Science Teacher Education Student"	
	• Assoc. Prof. Dr. Vichit Rangpan Yala Rajabhat University, Thailand "Pattani Watershed Management for Sustainable in the Future"	
	• Prof. Dr. Syamsu Qamar Badu, M.Pd. State University of Gorontalo, Indonesia "Leadership in Higher Education: An Experience of State University of Gorontalo"	Grand Ballroom Moderator: Dian O. Howan, S.Si., M.Phil.
Discussion (15 min)		
12.00-13.00	Lunch + Poster Presentation	Grand Ballroom Lobby

Contributed Talk from Invited Speaker (Talk Duration for Every Invited Speaker: 30 min)		
Mathematics and Education	Chemistry and Chemistry Education	Biology and Biology Education
Room 1	Room 2	Room 3
Prof. Dr. Zulkardi, M.I.Komp., M.Sc. University of Sriwijaya	Prof. Dr. Subandi, M.Si. Department of Chemistry, Faculty of Mathematics and Natural Science, State University of Sriwijaya	Dr. Slamet Suyanto State University of Yogyakarta (UNY)
		Prof. Ferdy S. Rondonuwu, M.Sc., Ph.D. Satya Wacana Christian University, Salatiga "Carotenoids: From Natural Science to Higher Order Thinking"
		Prof. Dr. Lilliasari, M.Pd. Natural Science Education, Indonesian Education University "Enhancing Students' Higher Order Thinking"



12.00-13.00	Discussion (15 min) Lunch + Poster Presentation	Grand Ballroom Lobby
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Contributed Talk from Invited Speaker (Talk Duration for Every Invited Speaker: 20 min)				
	Mathematics and Mathematics Education Room 1	Chemistry and Chemistry Education Room 2	Biology and Biology Education Room 3	Physics and Physics Education Room 4 & 5
13.00-14.00	Prof. Dr. Zulkardi, M.I.Komp., M.Sc. University of Sriwijaya, Palembang "Using PMRI and PISA for Improving Research and Learning on Mathematics Literacy of Indonesian Student"	Prof. Dr. Subandi, M.Si. Department of Chemistry, Faculty of Mathematics and Natural Science, State University of Malang (UM)	Dr. Slamet Suyanto State University of Yogyakarta (UNY)	Prof. Dr. Liliyasi, M.Pd. Natural Science Education, Indonesian Education University "Enhancing Students' Higher Order Thinking Skills Through Sciences Education"
	Prof. Dr. Julius H. Lolombulan, MS. State University of Manado "Mistakes of Statistical Methodology in Educational Research"	Dr. Ir. Sri Nurdianti, M.Sc. Bogor Agricultural University "The Role of University to Raise STEM Performance in Indonesian Secondary Education"	Dr. Hj. Yuni Sri Rahayu, M.Si. Invited Speaker from State University of Surabaya (UNESA)	Prof. Drs. Manihar Situmorang, M.Sc., Ph.D. State University of Medan (UNIMED)
14.00-17.15	Discussion (15 min)	Discussion (15 min)	Discussion (15 min)	Discussion (15 min)
	PARALLEL SESSION			



Contribute Talk from Oral Presentation Session I, II, III (Talk Duration for Every Presenter: max. 8 min)									
SESSION	Mathematics and Mathematics Education	Chemistry	Biology	Biology	Biology Education	Physics	ROOM 8	ROOM 9	Natural Sciences Education
	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9
	Moderator:	Moderator:	Moderator:	Moderator:	Moderator:	Moderator:	Moderator:	Moderator:	Moderator:
14.00-14.08	080Math	023Chem	021ChemEd	027Bio	112Bio	050BioEd	030Phys	025PhysEd	029NSEd
14.08-14.16	121Math	024Chem	031ChemEd	035Bio	114Bio	051BioEd	037Phys	029PhysEd	033NSEd
14.16-14.24	163Math	049Chem	053ChemEd	038Bio	115Bio	088BioEd	043Phys	032PhysEd	039NSEd
14.24-14.32	055MathEd	058Chem	076ChemEd	041Bio	116Bio	089BioEd	046Phys	034PhysEd	077NSEd
14.32-14.40	063MathEd	073Chem		042Bio	126Bio	097BioEd	047Phys	036PhysEd	079NSEd
14.40-14.48	083MathEd	074Chem		045Bio	132Bio	098BioEd		039PhysEd	085NSEd
Discussion (10 min)									
15.00-15.15	COFFEE BREAK								
15.15-15.23	096MathEd	091Chem	085ChemEd	054Bio	145Bio	103BioEd	052Phys	040PhysEd	108NSEd
15.23-15.31	104MathEd	092Chem	140ChemEd	057Bio	149Bio	128BioEd	062Phys	044PhysEd	109NSEd
15.31-15.39	117MathEd	093Chem	141ChemEd	059Bio	152Bio	139BioEd	070Phys	048PhysEd	125NSEd
15.39-15.47	119MathEd	099Chem	157ChemEd	067Bio	154Bio	143BioEd	071Phys	060PhysEd	130NSEd
15.47-15.55	120MathEd	101Chem		068Bio	155Bio	158BioEd	100Phys	061PhysEd	134NSEd
15.55-16.03	146MathEd	106Chem		072Bio	162Bio			064PhysEd	
Discussion (10 min)									
16.15-16.23	148MathEd	111Chem	131Chem	075Bio	164Bio	127PhysEd	118Phys	065PhysEd	135NSEd
16.23-16.31	160MathEd	113Chem	147Chem	082Bio	165Bio	129PhysEd	138Phys	066PhysEd	136NSEd
16.31-16.39	170MathEd	122Chem	161Chem	090Bio	166Bio	137PhysEd	142Phys	069PhysEd	144NSEd
16.39-16.47	172MathEd	123Chem	169Chem	094Bio	168Bio	153PhysEd	150Phys	081PhysEd	151NSEd
16.47-16.55	173MathEd	124Chem	176Chem	095Bio	171Bio	167PhysEd	159Phys	084PhysEd	156NSEd
16.55-17.03	174MathEd			105Bio	175Bio			087PhysEd	
Discussion (10 min)									
17.15-18.30	B R E A K								
18.30-18.40	GATHERING AT LOBBY HOTEL FOR GALA DINNER								
19.00-21.00	CLOSING CEREMONY AND GALA DINNER AT MAYOR HOUSE								

## LIST OF ABSTRACTS

## ORAL PRESENTATION

## CATEGORY: MATHEMATICS

080Math Dr. Harto  
Stability of

121Math James Ur  
EIR Model

055MathEd Patricia V  
The Poter  
The Imple  
Instruction

063MathEd Navel O  
The Stud  
Type Ma

063MathEd Sahid, M  
Utilizing  
Teaching

096MathEd Robby J  
The Effe  
Authent  
Mathem

104MathEd Abdul R  
The Infl  
Learnin  
Learnin

117MathEd Tatag Y  
and Yu  
Explori  
about



Contribute Talk from Oral Presentation Session I, II, III (Talk Duration for Every Presenter: max. 8 min)									
SESSION	Mathematics and Mathematics Education	Chemistry	Biology	Biology	Biology Education	Physics	ROOM 8	ROOM 9	Natural Sciences Education
	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9
	Moderator:	Moderator:	Moderator:	Moderator:	Moderator:	Moderator:	Moderator:	Moderator:	Moderator:
14.00-14.08	080Math	023Chem	021ChemEd	027Bio	112Bio	050BioEd	030Phys	025PhysEd	029NSEd
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14.24-14.32	055MathEd	058Chem	076ChemEd	041Bio	116Bio	089BioEd	046Phys	034PhysEd	077NSEd
14.32-14.40	063MathEd	073Chem		042Bio	126Bio	097BioEd	047Phys	036PhysEd	079NSEd
14.40-14.48	083MathEd	074Chem		045Bio	132Bio	098BioEd		039PhysEd	085NSEd
Discussion (10 min)									
15.00-15.15	COFFEE BREAK								
15.15-15.23	096MathEd	091Chem	085ChemEd	054Bio	145Bio	103BioEd	052Phys	040PhysEd	108NSEd
15.23-15.31	104MathEd	092Chem	140ChemEd	057Bio	149Bio	128BioEd	062Phys	044PhysEd	109NSEd
15.31-15.39	117MathEd	093Chem	141ChemEd	059Bio	152Bio	139BioEd	070Phys	048PhysEd	125NSEd
15.39-15.47	119MathEd	099Chem	157ChemEd	067Bio	154Bio	143BioEd	071Phys	060PhysEd	130NSEd
15.47-15.55	120MathEd	101Chem		068Bio	155Bio	158BioEd	100Phys	061PhysEd	134NSEd
15.55-16.03	146MathEd	106Chem		072Bio	162Bio			064PhysEd	
Discussion (10 min)									
16.15-16.23	148MathEd	111Chem	131Chem	075Bio	164Bio	127PhysEd	118Phys	065PhysEd	135NSEd
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16.31-16.39	170MathEd	122Chem	161Chem	090Bio	166Bio	137PhysEd	142Phys	069PhysEd	144NSEd
16.39-16.47	172MathEd	123Chem	169Chem	094Bio	168Bio	153PhysEd	150Phys	081PhysEd	151NSEd
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18.30-18.40	GATHERING AT LOBBY HOTEL FOR GALA DINNER								
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063MathEd Navel O  
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063MathEd Sahid, M  
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096MathEd Robby J  
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| 121Math   | <b>James Uriel Livingstone Mangobi</b><br><i>EIR Model Simulation with Half-Infected Mosquitoes</i>   |
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| 063MathEd | <b>Navel Oktaviandy Mangelep</b><br><i>The Students' Mathematical Literacy Skill in Solving Pisa-Type Mathematics Problems</i>  |
| 083MathEd | <b>Sahid, M.Sc.</b><br><i>Utilizing ICT to Support Joyful Learning in Mathematics Teaching and Learning</i>   |
| 096MathEd | <b>Robby J. Wenas</b><br><i>The Effect of Realistic Mathematics Learning Approach and Authentic Assessment on Students' The Achievement In Mathematics by Controlling The Students' Prior Knowledge</i>     |
| 104MathEd | <b>Abdul Rahman, Ansari Saleh Ahmar</b><br><i>The Influence of Cooperative Learning Model Towards Learning Outcomes in Mathematics Based on Students' Learning Style at X Class at SMANegeri 3 Makassar</i> |
| 117MathEd | <b>Tatag Yuli Eko Siswono, Abdul Haris Rosyidi, Ika Kurniasari, and Yuliani Puji Astuti</b><br><i>Exploring Elementary Teachers' Belief and Understanding about Mathematical Problem Solving</i>            |



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078NSEd

Jeffry O. Raturandang

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## KEYNOTE/INVITED SPEAKERS PROFILE



**David F. Treagust, Ph.D., FSB, FAERA**

John Curtin Distinguished Professor  
Professor of Science Education  
Science and Mathematics Education Centre  
Curtin University Perth, Australia

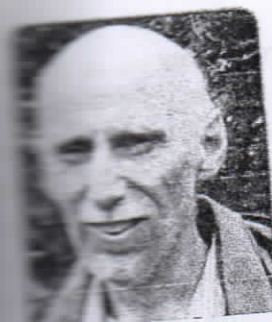
David Treagust is Professor of Science Education at Curtin University in Perth, Western Australia where he teaches courses in campus-based and international programs related to teaching and learning science. His research interests include understanding students' ideas about science concepts and how these ideas relate to conceptual change, the design of curricula and teachers' classroom practices. He is a former President of the National Association for Research in Science Teaching (1999-2001) and in 2011 he is the recipient of the American Chemical Society Award for Achievement in Research for the Teaching and Learning of Chemistry.



**Rebecca Johnson, MA**

Center for Environment, Economy, and Society  
(CEES),  
Columbia University, USA

Combines over 14 years expertise in global environmental education program development and implementation, with a lifelong commitment to environmental conservation and educational issues. Skilled at managing the full cycle of education and training design, to structure, build, and deliver innovative academic and professional development programming – in the US and abroad – in collaboration with universities, government agencies, non-profits, and subject matter experts. Extensive exposure to global cultures gained working, living, and traveling abroad in Indonesia, France, England, Israel, the Caribbean, Mexico, Southeast Asia, and Eastern and Western Europe.



Ed v

Ed van den Berg (1951) is a  
University in Amsterdam and  
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at the Free University in Amsterdam  
Education from the University  
opportunity to develop an  
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in Indonesia (1981-91), N  
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member of the Editorial Board  
over 350 articles, mainly  
conceptual development  
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### Academic background

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Ph.D., Educa

### Research Activities

- Environme
- Watershed
- Natural Re





**Ed van den Berg, Ph.D.**

Senior Lecturer, Science Teacher Education  
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Ed van den Berg (1951) is currently senior lecturer in Physics Education at the Free University in Amsterdam and lector Science and Technology Education at the Hogeschool van Amsterdam. He completed Bachelor and Master of Physics degrees at the Free University in Amsterdam (1975) and obtained a PhD degree in Science Education from the University of Iowa (1978). Twice in his life he had the opportunity to develop and teach (with colleagues) new science teacher education programs from scratch. He worked in pre-service and in-service teacher education in Indonesia (1981-91), Netherlands (1991-95, 2002-2015), and the Philippines (1996-2002) and supervised curriculum projects in the Netherlands. He is a member of the Editorial Board of the Int. J. of Science Education and published over 350 articles, mainly in journals for teachers, but also research publications on conceptual development in science, use of the laboratory in teaching science, and science teacher education in developing countries.



**Assoc. Prof. Dr. Vichit Rangpan**

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**Academic background :**

Bachelor, Agriculture, Chandrakasaem Rajabhat University, 1974  
Master, Environmental sciences, Kasansart University, 1980  
Ph.D., Environmental Biology, University Science Malaysia, 2008  
Ph.D., Educational Administration Burapa University, 2012

**Research Activities :**

- Environmental Biology
- Watershed Management
- Natural Resources and Environmental Management



- Soil and Water Conservation
- Utilization Management of Biological Diversity
- Environment and Development
- Local Scientific Lesson

#### Award

- |      |  |
|------|--|
| 2006 | Rajabhat University in Thailand Research Award       |
| 2007 | Dissertation in Burapa University Oscar Award        |
| 2010 | The epitome of the Year (Educational Administration) |
| 2012 | The epitome of the Year (Educational Administration) |



**Prof. Ferdy S. Rondonuwu, S.Pd., M.Sc., Ph.D.**

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Ferdy S. Rondonuwu (1969) is currently a lecturer in Physics (Education) and Biology at Satya Wacana Christian University, Salatiga. He completed his Bachelor's Degree in Physics Education at Satya Wacana Christian University, Salatiga (1992) and Master of Physics Degree at Vrije University in Amsterdam (1997). He obtained a PhD Degree in Physics from Kwansei Gakuin University, Japan (2004). He has published over 150 articles concerning Physics (Education) and Spectroscopy, and he currently owns a scopus h-index of 12.



**Prof. Dr. Zulkardi, M.I.Komp., M.Sc.**

University of Sriwijaya, Palembang, Indonesia

Prof. Dr. Zulkardi, is a full professor at the department of mathematics education faculty of teacher training and education University of Sriwijaya Palembang, South Sumatra Indonesia. He got his doctor on (realistic) mathematics education at the university of Twente sandwich with the Utrecht University, in the Netherlands in

2001. After he got his professor on mathematics education in 2005, he was named as an expert in the Dissemination of Pendidikan Matematika Realistik (PMRI) project in Indonesia funded by Dutch government and Ditjen Dikti (2006-2011). He was also one of designers of International master program on mathematics education (IMPOME) in collaboration between University of Indonesia, Uhesa and Utrecht University from 2010 up to now. He has been worked as vice president of Indonesian Mathematics Society (IndoMS) for education since 2010, and in that year, he had a chance to create the first international journal on mathematics education called IndoMS-JME ([www.iims-b.org](http://www.iims-b.org)) in Indonesia. He is also the representative of Indonesia in the ICMI (Indonesian Commission on Mathematics Instruction) since 2012. His research is mainly focused on Curriculum development and professional development (in context of PISA, Assessment (PISA and TIMSS), Design research and ICT in mathematics education. Last year, he was elected as one of the 500 top Indonesian Scientists (Kategori Scholar).



Paper ID : 171Bio

**FARMER EMPOWERING VIA MAIZE AND WASTE MAIZE PROCESSING  
BECOME PRODUCTIVITY ECONOMY AT BOALEMO REGENCY IN  
GORONTALO PROVINCE**

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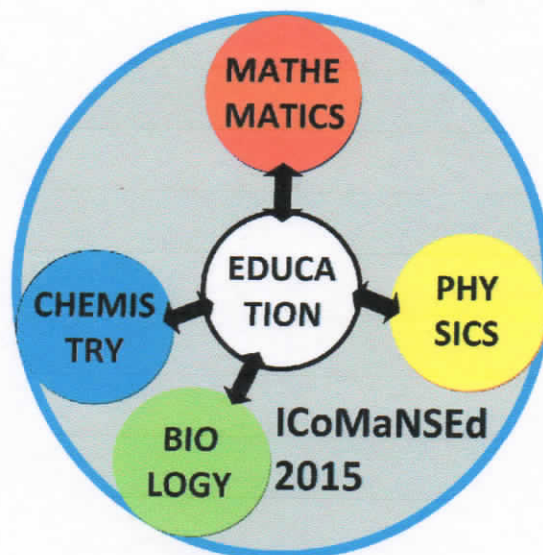
**Abstract**

The objects for this research are: 1).Developed the maize farm capacity in maize and waste maize processing to become economy production; 2)Analysed the target gained such as in empowering the maize farmer via on processing of maize and waste maize commodities. whereas the methode of this research are: 1) For training maize and waste of maize used the active participation about 50% theory and 50% practice, to where it's discribed by speech methode and discussion also due to the practicion for maize and the wasteof maize; 2) Analyzed the profitability of maize and waste processing production by using the organolabtict method also consument responded and allso effective and efficiense of briket from waste of maize; 3) Target analysis is dividing in to two as wel as: a) Absorbed analysis for operating and using the machine used kwalitative method; b) Mize farming financial analysis used quantitave methode. The result analysis showed that, the action in the first years is mapping for maize farmer in natural resources and human resources perspective also based on compatitive and comparative competitifness. The result of the profile potential for land resources is 38.225 Ha, with the maize production is 193.730,39 Ton, with the productibity is 50,68 Kw/Ha. So that the waste of maize is come along with the maize production. The welfare of people at Boalemo Regency is 34.37 % house holder is pre-welfare, 30,24% house holder is near poor, 22,65 house holder is poor, 13% house holder is very poor, and inculed 3,18% house holder is very pooer pluss, so the people in Bolalemo Regency is dominated in farmer proffesion. Based on result analysis above those komodities is very potential and prospect to increase the people of Boalemo Regency. It's found that improved of skills of farmer is relatively low, so, by availability of land resources for maize farm will be one of aternatif to evor come the problems of poor people in Boalemo Regency.

**Keywords:** Farmer empowering, economy productif, maize, waste processing



Basic form of a large circle symbolizes Mathematics, Science and Education as an integral unit of basic education and basic science, and states the symbol of mathematics geometry. Five small circle-shaped model of molymod express linkage development areas of Mathematics and Science which are centered on education activities. Red for Mathematics states: spirit, gives energy, symbol, action, passion, strength and joy. Yellow for Physics states: warmth and happiness, cheerful symbol and optimistic spirit, stimulate the mind and mental activity. Green for Biology states: calm and relax, the impression of balance the emotions, the symbol of openness and communication, color of hope and the future, justice and peace. Blue for Chemistry states: the calming effect and professional impression and trust. Stimulate communication skills, artistic expression, symbol of strength, able to calm the mind and improve concentration. Generally as a corporate base color, gray for Natural Science Education states: security, reliability, simplicity, and maturity. White for Education states: freedom and openness, represent the purity impression, chaste clean, symbol of peace.



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